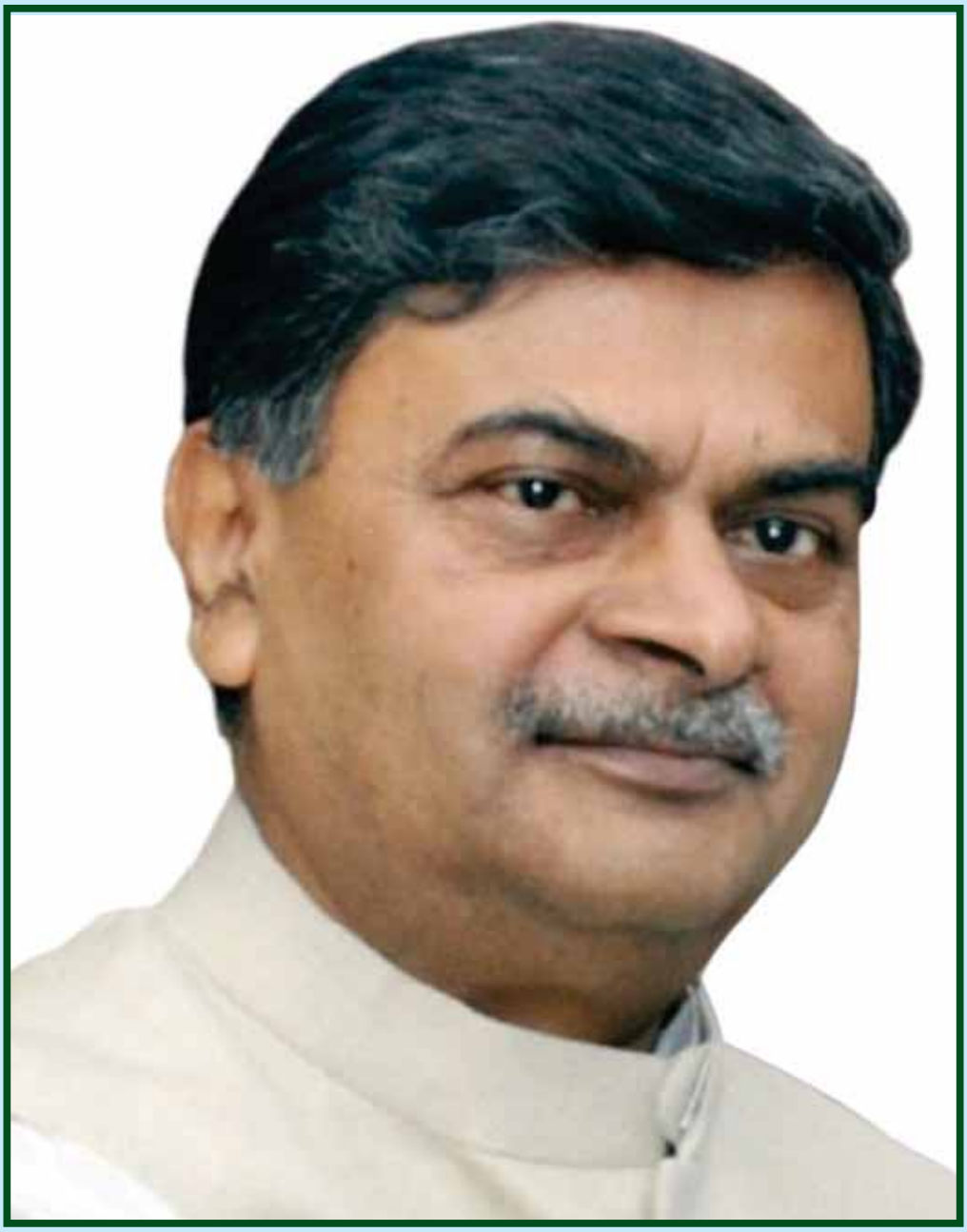
Our Source of Inspiration...



Shri R.K. Singh
Hon'ble Minister of State (Independent Charge)
for
Power and New & Renewable Energy
Govt. of India

भारत की एकता का मुख्य आधार है
एक संस्कृति, जिसका उत्साह कभी नहीं टूटा!
यही इसकी विशेषता है!

मदन मोहन मालवीय

Foreword

The National Training Policy for Power Sector, recognizes and emphasizes the need for training in context of the rapid technological changes, in order to achieve higher productivity and customer satisfaction. National Power Training Institute (NPTI) has been working dedicatedly over the past five decades, in meeting the varied training requirements across the spectrum of organisations in the sector and has trained an impressive 3,00,000 power professionals till date.

The Indian Energy Sector is undergoing an interesting period of transformation. Clean energy capacity additions are clearly way ahead of new thermal generation. At the same time, the evolution of storage technologies is set to herald a clean energy paradigm for the power sector. We are confident that wind and solar shall deliver towards fulfilling the pledge of having 40% share of non-fossil fuel capacity in the power sector by 2030. With the increase of Renewable Energy Sources including Distributed Generation, in the energy landscape, it is inevitable that intermittency and volatility of the Grid would increase and hence it would be important to develop technology solutions to address this issue. Keeping pace with the recent technological advancements, the sector is deploying new types of devices and ICT infrastructure, adopting new monitoring, control and energy management tools, and aiming at fast deployment of smart grid concepts at distribution as well as transmission level. The combination of solar power and cost-effective technologies is paving the path for electrification of transport and convergence of sectors like power and transport. However, coal-based power plants would continue to lead in meeting the country's base load requirements in the next decade, but within the new Government norms targeted at improving efficiency and reducing pollution.

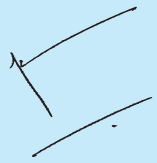
At a time when the sector is undergoing rapid growth amidst the changing environment, it is important that the professionals be adequately oriented in the technological, commercial, social and environmental aspects of the industry. The Government of India's "Power for All" scheme proposes continuous and uninterrupted power to all households and industries by March 2019, with a 132% rise in energy consumption by 2035. Utilities cannot rely on outdated technology in the Smart Grid era. With IoT and allied technologies, utilities may upgrade their present infrastructure to overcome numerous challenges.Having an appropriate pool of qualified professionals is critical to ensuring the continued

reliable delivery of abundant electricity in the country.

In order to meet the requirements, the Power Sector requires augmentation of capacity across the value chain. NPTI endeavors to train professionals at all levels of the utility hierarchy, to implement the future innovations.At the same time, NPTI believes in adapting to the developments in the sector and sincere efforts are put in offering the best training solutions, that are efficient and effective.

NPTI is proud to present the Annual Training Calendar 2018-19, highlighting the various training programs on offer across its 11 branches. NPTI would be honoured to develop customized training programs to suit the requirements of the stakeholders. Any suggestions for improvement of the Training Calendar are most welcome.

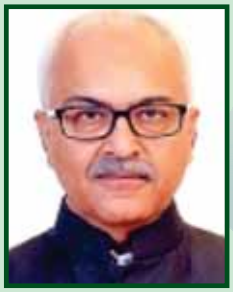
I thank all the stakeholders for their valuable suggestions and guidance throughout our journey. I wish that our training helps all the stakeholders sustain their growth and effectiveness and achieve strategic business results.



Faridabad
March, 2018

Prof. (Dr.) Rajendra Kumar Pandey
Director General

GOVERNING COUNCIL
NATIONAL POWER TRAINING INSTITUTE



Shri Ajay Kumar Bhalla
Secretary, Ministry of Power
Chairman, Governing Council

Sh. R. K. Verma
Chairperson (I/C), CEA
Vice-Chairman, Governing Council

Shri Vivek Kumar Dewangan
Joint Secretary & FA
Ministry of Power, Permanent Member

Shri Raj Pal
Economic Adviser
Ministry of Power, Permanent Member

Prof. (Dr.) Rajendra Kumar Pandey
Director General, NPTI
Member Secretary, Governing Council

NOTE: Besides there are 14 more Members from various utilities.

Shri R. K. Verma, Chairperson Central Electricity Authority and Prof. (Dr.) Rajendra Kumar Pandey, Director General NPTI

NPTI 's contribution in Global Power Sector Vision and Mission

NATIONAL POWER TRAINING INSTITUTE

INTEGRATED MANAGEMENT POLICY

NPTI is committed to enrich Human Resources in the Power Sector with frontier technologies, managerial skills and practical exposure; empowering them for sustainable and environment friendly growth of the Nation in compliance with legal provisions.

VISION

To be the Global Centre of Excellence for Training and Skill Development in Power & Energy Sectors.

MISSION

Enhancing human and organizational excellence in Power and Energy sectors by blending frontier clean energy technologies to achieve economy and energy security.

VALUE

We value our drive and commitment to provide cutting edge technologies and top quality service to our clients, sharing our knowledge and caring for their needs.

ATTITUDE

We constantly strive to motivate every power professional to tap his unique human endowments, consciousness, imagination and willpower. Together we make a difference.

Fifty Years of Service to the Power Sector

DETAILED FRAMEWORK
FOR VISION 2025

NPTI proposes to conduct Skill development Programs in all areas of Renewable Energy Sources, Smart Grid, Smart Village development, Decentralized Generation & Distribution, Programs on Regulatory Framework & Commercial Aspects, Demand Side Management & Energy Efficiency, Power Markets etc. to achieve the Ministry of Power's target of training Seven (7) lakhs Manpower in the Skill development and other associated programs.

The Programs would aim at developing the skill sets of Fresh personnel thereby improving their employability and refining / improving the skills of practicing Engineers, Diploma Engineers & Technicians, Consultants, Entrepreneurs and Faculty of Academic Institutions through Training-of-Trainers programs etc.

- Solar PV, Solar Roof Top, Solar Building Integrated (SBIPV) PV, Solar Thermal Technologies including Project Planning, Execution & Certification comprehensively including Resource assessment, Site selection, Shadow analysis, Load Calculation and Analysis, Procedures, permission & approvals, module mounting structures, Inverters, Cables, DC & AC Junction boxes, Lightning Arresters, Surge Protection, Fault Analysis, Earthing, O&M, Inspection, Testing & Commissioning, DPR preparations, Financial Modelling, commercial and financial aspects etc.
- Introduction to Wind Energy technology, Government policies and supportive schemes, Wind Resource Assessment Techniques, Wind flow modeling, Wind data analysis, Overview of Wind Turbine Design & Foundations, Grid integration, O&M aspects of wind farms
- Introduction to biomass to energy – biofuels, Present status of biomass based energy in India, Biomass Resources, Technologies, Basics of Gasification and types of Gasifiers, Sizing/Selection of Gasifiers, Technology and process overview, Successful Project Examples, Issues and challenges
- Conducting comprehensive training programs for Small Hydro Power development and develop the required operation, maintenance & commissioning skills at all levels such as for engineers, technicians etc.
- Develop smart villages by developing Solar parks in villages, which would not only generate revenue but also develop self-reliant economies including industries at village level bringing urban amenities to rural areas retaining the soul of the village.
- Conducting Training Programs for strengthening Urban Centers infrastructure.

- Decentralized Distributed Generation (DDG) and Micro-grid smart projects (solar, mini & micro hydel etc.) in remote areas & villages to not only make them self-sufficient but also promote the concept of Green Energy etc. and increase local employability as well.
- All Renewable Energy Modules to be equipped with integrated smart grid control to avoid least excursions at the point of connectivity.
- Bringing about complete awareness to personnel in the power sector about MoP initiatives such as DDUGJY, IPDS, UDAY, 24x7 Power to All Schemes etc.
- Programs on DSM & Energy Efficiency may be regularly announced and conducted for maximum awareness. Retailer programs for awareness in energy efficient equipments and Energy Conservation techniques for street lighting including automated switching on-off LEDs, Energy Efficient agriculture pump sets etc. in association with BEE / EESL.
- Awareness Programs on Climate change, carbon credits & Global warming issues.
- Courses on "Regulatory Framework & Commercial Aspects" of Indian Power Sector aggressively through Distance learning Mode educating all Utilities personnel at their doorstep through e-learning Modules & Assignments for greater understanding of Regulatory & Commercial concepts like Tariff calculations, MYT Framework, Trading etc. thereby improving the pace & effectiveness of Power sector reforms at large.
- The addition of 175 GW of renewable generation capacity by 2022 would require improving the System Operators skill-sets for planning, operating, maintaining and governing the power systems. NPTI would conduct Capacity building Programs for POSOCO - SLDCs, RLDCs and others associated to manage green energy corridors effectively. Also, all associated functions of Renewable Energy Management Centres (REMC) such as forecasting, Scheduling, balancing Renewable Energy resources and supporting the national grid etc.
- Programs on Power Market Transactions focusing on the Concept of Power Trading, Power Exchange mechanism in India, Availability Based Tariff & Concept of Deviation Settlement Mechanism, Open Access in Power Sector etc.
- The 24x7 Power for All, scheme of the Govt. of India would need intensive capsule courses for capacity building of personnel in the areas of Generation, Transmission & Distribution including various commercial aspects. This is to be taken up with all the State Utilities which have signed MoU with Ministry of Power under UDAY.

- Entering into proper understanding / agreements etc., and interfacing with Power Sector Skill Council (PSSC) to carry on the mission of Skill development training activities and certifying personnel for their appropriate employment in various areas of power sector and other areas as well.
- Conducting Training Programs for State Distribution Utilities on Smart Meters, AMI and associated infrastructure, Peak Load Management, Demand response and Outage Management System.
- Programs on Smart Grid highlighting the Concept, Understanding of Intelligent Power System, Achievements & Challenges. The Program would also focus on the need of Smart Grid in Indian context.
- The recent significant progress between the South Asian countries on moving towards expanded regional energy cooperation should be exploited to harness programs and NPTI proposes to conduct programs under USAID and for the SAARC countries in several areas of power sector as well as for others.
- Creating academic-industry interface short modular programs to effectively bridge the education-industry gaps for students passing out from Engineering, Diploma & ITI institutes.
- Delivering course modules & training in Supercritical technology to all GENCos using this technology.
- Identify Knowledge Partners for Creating a Global Pool of competent experts in various areas of specializations to maximize connectivity and contribute to the concept of "**Train in India**".
- Collaborating with reputed Institutions & Industries like IIT/IIM/ASCI/TERI/ Nord Pool to be abreast of latest technological & managerial improvements of the industry.
- Create an authenticated institute-industry feedback interactive portal.
- Developing subject specialists in various areas and increasing internal Core Competence of NPTI through Training of Trainers programs.

TRAINING CALENDAR
2018-2019

2017

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

MARCH

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL

S	M	T	W	T	F	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

MAY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JUNE

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY

S	M	T	W	T	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

AUGUST

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER

S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

2018

JANUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

MARCH

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

APRIL

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

MAY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JUNE

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

JULY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

AUGUST

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

SEPTEMBER

S	M	T	W	T	F	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DECEMBER

S	M	T	W	T	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

2019

JANUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

MARCH

S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

APRIL

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE

S	M	T	W	T	F	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

JULY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

List of Holidays to be Observed During the Year 2018 in NPTI

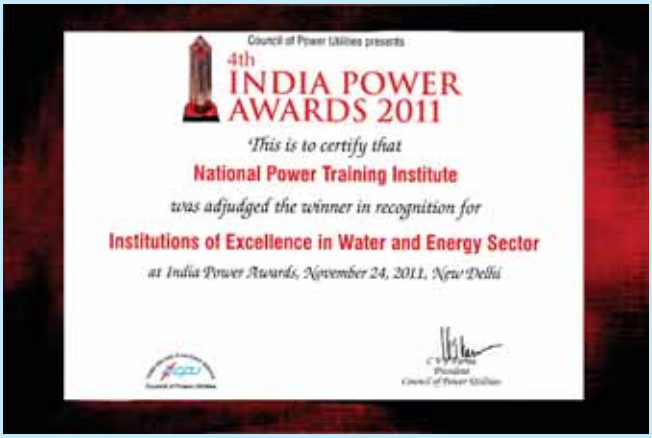
S.No.	Holiday	Date		Day
01.	Republic Day	January	26	Friday
02.	Maha Shivaratri	February	14	Wednesday
03.	Holi	March	02	Friday
04.	Mahavir Jayanti	March	29	Thursday
05.	Good Friday	March	30	Friday
06.	Buddha Purnima	April	30	Monday
07.	Idu'l Fitr	June	16	Saturday
08.	Independence day	August	15	Wednesday
09.	Id-ul-Zuha (Bakrid)	August	22	Wednesday
10.	Janmashtami	September	03	Monday
11.	Muharram	September	21	Friday
12.	Mahatma Gandhi's Birthday	October	02	Tuesday
13.	Dussehra	October	19	Friday
14.	Diwali (Deepavali)	November	07	Wednesday
15.	Milad-un-Nabi or Id-e-Milad	November	21	Wednesday
16.	Guru Nanak's Birthday	November	23	Friday
17.	Christmas Day	December	25	Tuesday

Prof (Dr.) R. K. Pandey,
DG-NPTI giving auspicious start to
National Seminar (ESSFIPS-2018) by
lighting lamp at Kolkata.

Prof (Dr.) R. K. Pandey, DG, NPTI Inaugurating various PGDC Programs 2017-18 at NPTI CO, Faridabad

Shri P. Mukherjee, Executive Director,
ERLDC, POSOCO receiving special
memento from Prof (Dr.) R.K. Pandey,
DG, NPTI for his long association and
support to NPTI(ER), Durgapur.

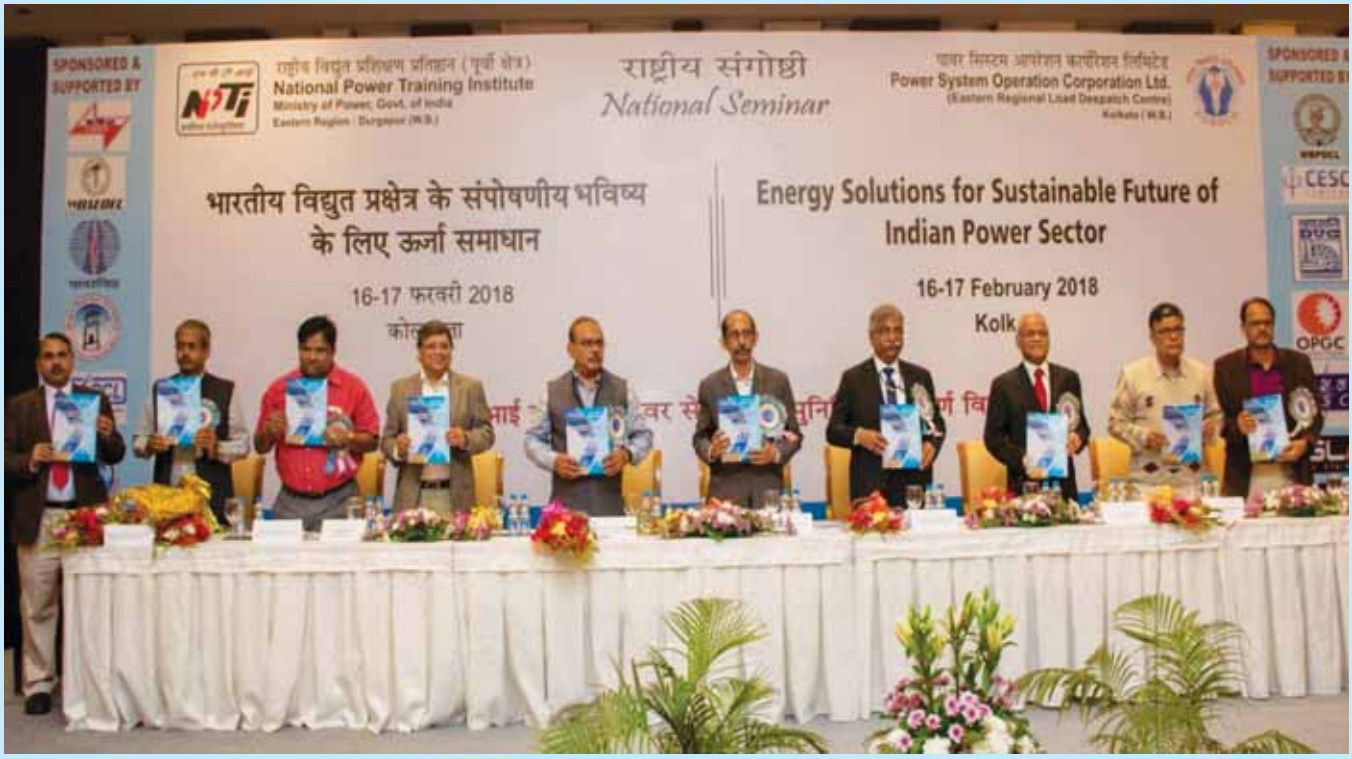
Awards and Recognitions


Council of Power Utilities presents
4th INDIA POWER AWARDS 2011
This is to certify that
National Power Training Institute
was adjudged the winner in recognition for
Institutions of Excellence in Water and Energy Sector
at India Power Awards, November 24, 2011, New Delhi

Awards and Recognitions

TRAINING CALENDAR
2018–2019

(C). NEWLY LAUNCHED TRAINING PROGRAMS IN EMERGING AREAS



National Seminar on **Energy Solutions for sustainable future of Indian Power Sector** from 16-17 Feb. 2018at Kolkata.

MoUs Signs by NPTI with different Organizations

MoU Signed between "NPTI and NISE."

MoU Signed between "NPTI and MINDTECK INDIA LTD."

National Power Training Institute (NPTI), an ISO 9001 & ISO 14001 organization is an autonomous organisation of the Ministry of Power, Govt. of India. NPTI is the National Apex body for Training and Human Resources Development in Power Sector with its Corporate Office at Faridabad. NPTI had been providing its dedicated service for more than five decades.

NPTI has trained over 3,00,000 Power Professionals in regular Programs over the last 5 decades. NPTI is the world's leading integrated power training institute. NPTI is the only institute of its kind in the world with such a wide geographical spread and covering a wide gamut of academic and training programs in Power Sector. NPTI's committed faculty is providing excellent training in the Power Sector, which is the most important sector among various infrastructure sectors. A number of programs for foreign as well as national level organization have been conducted. These programs have benefitted the executives from different organizations. Training provided by NPTI on Power Plant Simulators has improved Plant Load Factor of Generating Units, has increased the availability of Transmission & Distribution System and has decreased Aggregate Technical & Commercial Losses. This in turn is providing more power to the country. Thus the training being provided by NPTI is having a cascading effect in the growth of GDP and economy of the country.

NPTI operates on an all India basis with man-power strength of 259 including 90 officers through its 9 Institutes in different zones of the country as per detail below:

A. Northern Region

1. NPTI Corporate Office Faridabad.
2. NPTI (Northern Region) Badarpur, New Delhi
3. NPTI (Hydro Power Training Centre) Nangal

B. Southern Region

4. NPTI (Power System Training Institute) Bengaluru
5. NPTI (Hot Line Training Centre) Bengaluru
6. NPTI (Southern Region) Neyveli

C. Eastern & North Eastern Region

7. NPTI (Eastern Region) Durgapur
8. NPTI (North Eastern Region) Guwahati

D. Western Region

9. NPTI (Western Region) Nagpur

MANPOWER TRAINING PROGRAMMES

NPTI conducts the following industry interfaced programs with the objective to create a pool of committed and competent professionals equipped with appropriate technical skills to steer the Indian Power Sector

- One Year Post Graduate Diploma Course in Power Plant Engineering
- One Year Post Graduate Diploma Course in Sub-Transmission & Distribution system
- One Year Post Diploma course in Thermal Power Plant Engineering

- One Year Post Diplomat course in PGDC in Energy MarketManagement
- One Year Post Diplomat course in PGDC in Power System Operation
- One Year Post Diplomat course in PGDC in Renewable Energy and Grid Interface Technologies
- One Year Post Diplomat course in PGDC in Smart Grid Technologies
- Nine Months Post Graduate Diploma Course in Hydro Power Plant Engineering.
- Six Months Post Graduate Diploma Course in Transmission and Distribution System for Engineers.
- Six months Post Diploma course in Hydro Power Plant Engineering.

In addition to the above, several long-term, medium term and short-term training programs in the areas of Thermal, Hydro, Transmission & Distribution and Management, Regulatory affairs etc. are being conducted in the various Institutes of NPTI. Customized training programs for various Power Utilities are also organized round the year. NPTI also conducts various training programmes to ensure availability of properly trained personnel covering the syllabus as per Indian Electricity Rules.

NPTI has also been catering to the Training Needs of Power Sector Organisation Process Industries such as Steel, Cement, Aluminum, Fertilizers, Refineries viz., BBMB, BHEL, CEA, DPL, DVC, ECIL, FACT, GAIL, IFFCO, IOCL, IREDA, KRIBHCO, NALCO, NEEPCO, NFL, NHPC, NLC, NPC, NTPC, Power Grid, SAIL, THDC, APGENCO, CESC, HPGCL, KPCL, MPEB, OHPC, OPGCL, RRUVNL, UPRVUNL, ACC, AECO, BSES, HINDALCO etc.

INDUCTION TRAINING

NPTI has imparted induction training to fresh Graduate Engineers/Executives of various Power Sector Organization as indicated below:

Power Grid Corporation of India Ltd., Avantha Power & Infrastructure Ltd., Tata Power Company Ltd., National Hydroelectric Power Corporation Ltd., Rajasthan Rajya Vidyut Utpadan Nigam Ltd., LANCO Power, Dakshin Haryana Bijli Vitran Nigam Ltd., Lanco kondapalli Power Ltd & PPN Power, Generating Company Ltd., GMR Energy Ltd., Lanco Infratech Ltd., Lanco Vidarbha Thermal Power Power Ltd. & Udupi Power Corporation Ltd., UP Rajya Vidyut Utpadan Nigam Ltd., Bokaro Power Supply Corporation Ltd., Sterlite Grid Ltd., CLP (I) Pvt. Ltd., Ideal Energy Power Ltd., L&T Power Ltd., Chhattisgarh State Power, Generation Corporation Ltd., Torrent Power Ltd.

POWER TRAINING SIMULATORS

The Institutes of NPTI are well equipped with Hi-Tech infrastructural facilities for conducting different courses on technical as well as management subjects covering the needs of Thermal, Hydro, Transmission & Distribution Systems, and Energy related fields of the Indian Power and allied Energy sectors. NPTI has a 500MW Thermal Power Plant Training Simulator at Faridabad Institute and 210MW Thermal Power Plant Training Simulator at Nagpur and Badarpur Institute for imparting specialized skills

to operation personnel across the country. Also a 430 MW (2 x 143 MW Gas Turbine and 1 x 144 MW Steam Turbine), Full Scope Combined Cycle Gas Turbine, Replica Simulator has been commissioned at NPTI Corporate Office, Faridabad. A High fidelity Load Dispatch Operator Simulator for the National Grid has been commissioned at PSTI, Bengaluru. A 250MW Hydro Simulator has been commissioned at HPTC, Nangal.

NPTI is in the process of commisioning a 800MW Supercritical Thermal Simulator at NPTI Corporate Office, Faridabad.

6 more DCS based Multi-functional configured simulators is under process of Commissioning.

GIS

A Geographical Information System (GIS) Resource Centre has been set up at NPTI Corporate Office, Faridabad. The Centre is conducting various courses in GIS and Remote Sensing to meet the requirements of the Power Sector.

HOT LINE TRAINING CENTRE

A facility has been created at NPTI's Hot Line Training Centre, Bengaluru for Live Line Maintenance of Transmission Lines upto 400 KV (first of its kind in Asia) which enables trained personnel to attend to maintenance requirements without power interruptions. Facilities for water washing of sub-station equipments is also available.

CONSULTANCY SERVICES

In order to serve the industry requirements and make best usage of infrastructure and expertise, NPTI has ventured into providing consultancy services in Preparation of DPRs under R-APDRP (11th Plan). NPTI was appointed as REC Quality Monitor (RQM) for Tier-II Inspection of RGGVY Works under 11th Plan for six (6) states and completed the assignment. NPTI also completed the Third Party Inspecting Agency (TPIA) works by a few DISCOMs for the RGGVY works under the 10th Plan &11th Plan.

NPTI has provided consultancy services to WAPCOS for preparation of DPR for establishment of Power Training Institute in Bhutan. NPTI also Consultancy services to NHPC for preparation of DPR for establishment of Hydro Power Training Institute in Jammu & Kashmir.

NPTI provided DPR preparation services under IPDS & DDUGJY Schemes to DVVNL-Agra, UP.

NPTI is also providing Project Management Agency (PMA) services for DDUGJY & IPDS Project Works for NESCO & WESCO Utility areas of OPTCL, Odisha.

NPTI in association with TATA Consulting Engineers (TCE) completed an assignment of preparation of a Feasibility Study for establishing a "National Power Academy" in the Kingdom of Saudi Arabia.

NPTI has been awarded a consultancy contract by Bureau of Energy Efficiency (BEE) to create master trainers for imparting training to officials of DISCOMS on DSM and Energy Efficiency under the "Capacity Building of DISCOMs" Program during XII Plan.

NPTI also provides consultancy in the field of Human Resources Development

including Training Need Analysis, Upgradation of training facilities, Customized Course Designs, Capacity Assessment/Evaluation for Promotion etc.

Basic level System Operator Certification and Specialist level System Operator Exam on "Regulatory Frame work in Power Sector"(RFW) and "Power System Reliability" (PSR)

NPTI's Power System Training Institute (PSTI) has been conducting Certification of Power System Operators since 2011. Training Courses at NPTI, Corporate Office, Faridabad and Power System Training Institute (PSTI), Bengaluru equip the System operators with necessary inputs to take up the System Operation Certification Exam.

Basic level on line System Operator Certification Examinations have been conducted in November 2011, December 2012, July 2014, November 2015, December 2016 and March 2018, at various centres across the country. A total of 1195 System Operators were certified against 1500 who appeared for the Basic Level Certification Examinations.

Specialist courses on 'Regulatory Framework in Power Sector', 'Power System Reliability', 'Renewable Energy Sources and Grid Integration', 'Power System Logistics' and 'Power Market Specialist' are being conducted both at Corporate Office, Faridabad and PSTI, Bengaluru. Examinations on all the specialist level subjects have been planned to be conducted.

On line examinations for Specialist Level Certification have been conducted for "Regulatory Framework in Power Sector" in March 2013 and February 2016. 161 System Operators were certified against 254 that appeared. Specialist Level Examinations on "Power System Reliability" have been conducted in February 2015 and July 2017. 154 System Operators against the 203 that appeared, were certified. Specialist Level Examination on "Power System Logistics" was conducted in November 2017. 23 System Operators were certified against the 44 that appeared.

INTERNATIONAL TRAINING

Professionals from various countries like Oman, Bangladesh, Cambodia, Bhutan, Ethiopia, Iraq, Kenya, Malaysia, Mexico, Myammar, Nepal, Nigeria, Afghanistan, Philippines, Sudan, Syria, Zambia, Zimbawe Electricity Supply Authority (ZESA) Zimbawe, Sri Lanka, Libya etc. have also undergone training at NPTI's various training Institutes.

NPTI'S PUBLICATION AND MULTI MEDIA CBTS

NPTI has published around 99 Training Manuals for different courses. NPTI has also developed more than 55 Multimedia Computer Based Training Packages for power professionals and marketing them at reasonable prices to the utilities and educational Institutes.

SETTING UP NEW TRAINING INSTITUTES

New Power Training Institute of NPTI in Southern Region at Pallipuram, Dist. Alappuzha, Kerala

In 12th Five Year Plan, Ministry of Power,

Govt. of India has approved new Power training Institue of NPTI in Southern Region at Pallipuram, Dist. Alappuzha, Kerala. The project will cost about Rs. 58 crores and shall provide training in the area at Thermal, Hydel, Transmission, Distribution, Regulatory Affairs etc. This Training Institute shall also have multi function thermal and hydro training simulator. The Institute is being set up on 15 acres of land provided by Govt. of Kerala and having the infrastructure like Institute Building with classrooms, labs, workshops hostel facilities for trainees, canteen facilities, residential accommodation, conference hall, auditorium and guest house. Work of the said project is in progress.

New Power Training Institute of NPTI in Western Region at Shivpuri, Madhya Pradesh

In 12th Five Year Plan, Ministry of Power, Govt. of India has approved New Power Training Institute of NPTI in Western Region at Shivpuri, Madhya Pradesh.The project will cost about Rs. 64 crores and shall provide training in the area at Thermal, Hydel, Transmission, Distribution, Regulatory Affairs etc. This Training Institute shall also have multi function thermal and hydro training simulator. The Institute will be set up on 15 acres of land for which a suitable land has been handed over to NPTI on 22nd October 2015 for 99 years on lease basis by the Govt. of Madhya Pradesh. The Institute is envisaging the infrastructure like Institute Building with classrooms, labs, workshops hostel facilities for trainees, canteen facilities, residential accommodation, conference hall, auditorium and guest house. Work of the said Project is in Progress.

PLACEMENT

Out students of MBA in Power Management, B.Tech. in Power Engineering, Post Graduate Diploma Course and Post Diploma Courses are finding placement in reqputed companies

'International Yoga Day' being observed in NPTI, Nagpur

like PWC, KPMG, Care, Deloitte, Infraline, Tata Power, Torrent Power, Enercon Capital, Suzlon, Noida power, PTC, Satyam, UJVNL, GMR, Crisil, TERI, Lahmeyer, Enzen Global, NDPL, Erudite, KSK Energy Ventures, Datagen, LNJ Bhilwara, Moser Baer, CFL, Eco Securities, Feedback Ventures, ABPS Advisory, Adani, Care, IL&FS, Vedanta, Lanco, BSES etc.

VISION AHEAD

NPTI is furthering the quality of industry-interfaced education and training being provided by our various Institutes focusing on improvement in the following areas:

- Renovation & Modernization of existing nine (9) Institutes by way of Improvement of infrastructure

"Swatch Bharat Abhiyan" being observed in NPTI Complex, Faridabad

of the Institute office buildings, Labs, hostels etc.

- Augmentation of the existing infrastructure of all Institutes by way of creation of more training infrastructure like class-rooms, conference halls, auditoriums, hostels, residential quarters etc.
- Establishment of more Power Training Institutes in the country.
- Improvement and upgradation of skill and knowledge of existing faculty to keep pace with fast changing technological advancements taking place in power sector.
- Starting of new training programs related to 24 x 7 Power to various State Utilities.
- Starting of new programs for skill development in Power Sector.

AWARDS AND RECOGNITIONS

NPTI has been granted **ISO 9001 & 14001 Quality Environmental Management Integrated System Certifications.**

NPTI's conscious commitments were recognized by the National Foundation of Indian Engineers (NAFEN) and their **'Best Training and HRD Institute of the Millenium Year Award' was conferred on NPTI by the Hon'ble Minister of Power in 2000.**

NPTI was conferred with the **'ISTD National Award 2001-02 for Best HRD Practices: Second Best Organization'** in a National Competition.

"Jawaharlal Nehru Memorial National Award 2002" for Excellence in Energy Conservation was conferred on NPTI by the International Greenland Society, Hyderabad during 2000-01.

NPTI was conferred upon **"Mother Teresa Memorial National Gold Award 2003"** for the best Educational Institution in the country by the MSBR Educational Society, Hyderabad.

The display of NPTI at the **32nd India International Trade Fair, 2012** has

DG NPTI being falicitated during National Power Summit, Hyderabad

been adjudged second for excellence in Display for the Ministries & Departments Pavilion and given the award of **'SILVER MEDAL'** by Union Minister of State for Commerce and Industry, Govt. of India.

NPTI has been awarded a consultancy contract by **Bureau of Energy Efficiency (BEE)** to create master trainers for imparting training to officials of DISCOMS on DSM and Energy Efficiency under the **"Capacity Building of DISCOMs "Program during XII Plan.**

TANGEDCo, has awarded a **Third Party Inspection Agency (TPIA)** Assignment under their **RGGVY works** for their 3 Districts.

NPTI also teamed up with **M/s TCE** for a Feasibility Study to establish **'National Power Academy**' in Saudi Arabia.

NPTI provided **DPR** preparation services under **IPDS & DDUGJY Schemes** to DVVNL-Agra, UP.

NPTI is also providing Project Management Agency (PMA) services for **DDUGJY & IPDS Project Works for NESCO & WESCO** Utility areas of OPTCL, Odisha.

NPTI was conferred with award for **"Institutional Building"** for the year 2008-09 by the World HRD Congress, Mumbai.

NPTI has been conferred the 2nd Asia Best Employer Brand Award 2011 for **"Excellence in Training"** for the year 2010-11 by the World HRD Congress, under the category Employer Branding Award at Singapore.

NPTI has been conferred the award for **"Best Learning and Development Strategy"** for the year 2010-11 by the World HRD Congress, under the category shine.com HR Leadership Award.

NPTI has been conferred the 4th Indian Power Award 2011 instituted by Council of Power utilities for **"Excellent Work in Imparting Training to Power Engineers"**.

NPTI has been adjudged the winner in recognition for Institution of **"Excellence in Water and Energy Sector"** by council of power utility at forth India Power Award 2011 held at New Delhi, Nov. 2011.

NPTI has conferred the 3rd Asia's Best Employer Brand Awards 2012 for **"Excellence in Training"** for the year 2011-12 by the World HRD Congress, under the category Employer Branding Awards at Singapore.

NPTI has been awarded "Siver Medal" for **"Excellence in Display"** for the Ministries and Department Pavilion in the 32nd IITF - 2012 held at Pragti Maidan, New Delhi.

NPTI alongwith all the member organisations of ministry of Power, Govt. of India, has been awarded **"Gold Medal"** for **Excellence in display for Ministries & Departments pavilion** in the 33rd India International Trade Fair-2013.

NPTI alongwith all the member organisations of ministry of Power, Govt. of India, has been awarded **"Gold Medal"** for **Excellence in display for Ministries & Departments pavilion** in the 34th India International Trade Fair-2014.

NPTI alongwith all the member

organisations of ministry of Power, Govt. of India, has been awarded **"Gold Medal"** for **Excellence in display for Ministries & Departments pavilion** in the 35th India International Trade Fair-2015.

NPTI has been conferred the 4th Asia's Best Employer Brand Awards 2013 for **"Executive in Training".** 4th Asia's Best Employer Brand Awards 2013 were hosted by Employer Branding Institute, World HRD Congress and Stars of the Industry Group and endorsed by Asian Confederation of Businesses and presented in a glittering ceremony at Singapore on 31st July, 2013.

NPTI has been conferred the 8th Employer Brand Awards 2014 for **"Excellence in Training"** in Mumbai on 17th February, 2014.

NPTI has been conferred 'Global Training & Development Leadership Award' for **"Training Provider of the Year"** by World Training & Development Congress in Mumbai on 15th February, 2014.

NPTI has been conferred **"Pradeep Pimpley Award Trophy for Institutional Research, Training & Excellence in Academia"** at the 9th Enertia Awards 2015 on 5th November, 2015.

ACHIEVEMENTS & PERFORMANCE

Since the inception of its first Institute in 1965, NPTI has so far imparted training to more than 3,00,000 personnel from Central PSUs, SEB, Power Utilities and Private Sector organizations. More than 22,000 operation engineers have been imparted effective integrated unit operation training on the Simulators available with NPTI.

NOTABLE ACHIEVEMENTS

Some of the notable achievements of NPTI are indicated below :

- Conducted several training programs for foreign nationals of Afghanistan, Nigeria, Sudan, Bhutan, Sri Lanka etc.
- NPTI Faculty conducted training workshops for Senior Executives in Negeria for establishment of a Power Training Institute in Nigeria.
- Providing consultancy for R-APDRP and Inspection works under RGGVY.
- Conducting National Serminars by our various Institutes.
- Provided 100% text books, free of cost through Book Banks to all students of 4-years B.Tech. course in Power Engineering and 2 years MBA course in Power Management.
- Training on the country's only 250MW Hydel Simulator at Nangal.
- Training on the country's only Power System (Load Despatch) Simulator at Bengaluru.
- Country's first System Operators Training for System Operators of Load Despatch Centres and country's first On-line Certification Examination for System Operators.
- NPTI provided consultancy for preparation of DPRs for establishment of a Power Management Institute in Bhutan and to NHPC for setting up of a Hydro Power Training Institute at Kangan, J&K.
- Daily upload of Power News appearing in media on NPTI Website.

- PFC has selected NPTI as a Partner Training Institute for preparation of course material and conduction of Training under R-APDRP, Part C Capacity Building scheme.
- The display of NPTI at the 32nd India International Trade Fair, 2012 has been adjudged second for excellence in Display for the Ministries & Departments Pavilion and given the award of 'SILVER MEDAL' by Union Minister of State for Commerce and Industry, Govt. of India.
- NPTI has been awarded a consultancy contract by Bureau of Energy Efficiency (BEE) to create master trainers for imparting training to officials of DISCOMS on DSM and Energy Efficiency under the "Capacity Building of DISCOMs "Program during XII Plan
- NPTI also teamed up with M/s TCE for a Feasibility Study to establish 'National Power Academy 'in Saudi Arabia.
- NPTI provided DPR preparation services under IPDS & DDUGJY Schemes to DVVNL-Agra, UP.
- NPTI is also providing Project Management Agency (PMA) services for DDUGJY & IPDS Project Works for NESCO & WESCO Utility areas of OPTCL, Odisha.
- NPTI has been conferred the 8th Employer Brand Awards 2014 for **"Excellence in Training"** in Mumbai on 17th February, 2014.
- NPTI has been conferred 'Global Training & Development Leadership Award' for **"Training Provider of the Year"** by World Training & Development Congress in Mumbai on 15th February, 2014.
- NPTI has been conferred **"Pradeep Pimpley Award Trophy for Institutional Research, Training & Excellence in Academia"** at the 9th Enertia Awards 2015 on 5th November, 2015.
- A MoU has been entered into with Abu Dhabi Distribution Compony (ADDC) on 25th January, 2017, for Training their Generation, Transmission & Distrbution personnel and also establishing a Training Centre at Abu Dhabi. The training programs shall be taken up from June, 2017.
- NPTI signed a MoA with IEEMA inthe presence of Hon'ble Power Minister on 30th September 2016, at Mumbai for employment linked skilling programs which includes youth in the villages.
- NPTI entered into an MoU with PTC Financial Services for employment linked skilling programs for youth in villages.
- National Institute of Solar Energy (NISE) has selected NPTI as an Implementing Agency for Surya Mitra Solar Programs for Skill Development of Technicians.
- NPTI has also initiated the process of MoAs with various Organizations such as POSOCO, PGCIL, SECI Tata Power, PRDC etc.
- NPTI is entering into an MoU with India Smart Grid Forum (ISGF) for training in the areas of Smart Grid Technologies and Implementation, Advance Metering Infrastructure (AMI< and Regulatory Framwork.
- NPTI signed a MoA with EESL & BEE for Skilling training to personnel involved in O&M of LED Street Lighting and Retailers Training Programs for Awareness in Energy efficient

equipments respectively.

- NPTI has conducted training program for BSES Linemen and trained more than 1000 trainees during 2017-18.

MANPOWER IN NPTI

NPTI is having on its roll total 259 nos. employees out of which group 'A' officers are 90.

TRAINING PROGRAMS

(I) Post Graduate Diploma Course in Power Plant Engineering (PGDC)

NPTI weaves formal education with industry oriented specialized skills to cater to the needs of Power Sector. In one of its most successful attempts to create a pool of Technically trained man power for ready availability for recruitment by PSUs/SEBs/ Power Utilities, NPTI launched a one year 'Post Graduate Diploma Course in Power Plant Engineering', in 1996 recognised by AICTE, at its institutes in Faridabad, New Delhi, Nagpur, Durgapur, Neyveli, Guwahati and Nangal. The PG Diploma Course is having an exceptionally encouraging response and many Power Companies recruited this trained man power through campus recruitments over the years.

This course is now renamed as PGDC in Power Plant Engineering catering to all Generation areas of Power Sector for fresh and practicing Graduate Engineers for a period of one (1) year.

(II) Post Graduate Diploma Course in Sub-Transimission and Distribution 52 weeks in PSTI

This 52 week duration course cover all aspects of Sub-Transmission and Distribution of Electrical Power and having the objective to create technically trained man power readily available for recruitment.

(III) Post Graduate Diploma Course in Hydro Power Plant Engineering in HPTC Nangal

This 39 week duration course cover all aspects of Hydro Power Plant engineering viz creation O&M commissioning etc. The Course authorised the engineer to operate and maintain Hydro Power Plants.

(IV) Post Graduate Diploma Course in Transmission and Distribution System

This 26 week duration is having the objective to create technically trained man power readily available for recruitment to the power companies in the area of transmission and distribution system. The course is being conducted at Badarpur, Bengaluru, Guwahati and Nagpur.

(V) Post Graduate Diploma Course in Energy Market Management

This 52 weeks Post Graduate Certificate Course in Energy Market Management for the candidates willing to make a career in the Power Industry. The course focuses on the market structures that exist within the electric energy industry. It includes mechanism of energy markets; comparative market systems; determination of prices under different market structures; electricity market architecture; electricity market design; dispatch and new build decisions; risk and risk management, current and proposed policies on the energy industry etc.

(VI) Post Graduate Diploma Course in Power System Operation

This 52 weeks Post Graduate Certificate

Course in Power System Operation for the candidates willing to make a career in the Power Industry. To provide the basics of electric power system generation, operation, and control to the students. The emphasis is on power system operation and operating tools.

(VII) Post Graduate Diploma Course in Renewable Energy and Grid Interface Technologies

This 52 weeks Post Graduate Certificate Course in Renewable Energy and Grid Interface Technologies for the candidates willing to make a career in the Power Industry. To equip the student with technologies, economics and policy involving energy systems and supply with Renewable Energy sources. Detail expertise will be offered in Solar energy systems involving photovoltaic as well as thermal energy systems, wind energy, biomass, Geothermal, Tidal and Wave energy, Hydrogen & Fuel cells, Small Hydro along with problem associated with grid integration of all the sources and concept of SMART grid.

(VIII) Post Graduate Diploma Course in Smart Grid Technologies

This 52 weeks Post Graduate Certificate Course in Smart Grid Technologies for the candidates willing to make a career in the Power Industry. The use of communications and information technologies is likely to cause major shifts in the way energy gets delivered. The objective of this course is to introduce about the smart grid technologies, their applications and control issues covering Smart Generation, Smart Transmission and Smart Distribution.

(IX) Post Diploma Course in Power Plant Engineering (PDC)

Sensing the need for trained man power in the Supervisory cadre a Post Diploma Course in Thermal Power Plant Engineering was also launched in December 2000 at the four Institutes New Delhi, Nagpur, Durgapur, Neyveli and in Guwahati also. This one year course is aimed at developing skills and the attitude for fresh and practicing Diploma engineers.

(X) Post Diploma Course in Hydro Power Plant Engineering

This 26 week duration program is having the objective to prepare Diploma Engineers to become Power Station Managers in operation & maintenance of Hydro Power Station. Venue of this course is NPTI, HPTC-Nangal.

(XI) Post Diploma Course in Distribution & Sub-Station Management

This 26 week duration program is having the objective to prepare technically trained manpower readily available for recruitment to the power companies in the area of Transmission & Distribution of electrical power. Venues of this course are Badarpur, PSTI-Bengaluru and Durgapur.

(XII) Post Diploma Course in Transmission Line Maintenance

This 26 week duration program is having the objective to provide in depth approch and technical knowledge in Live Line Maintenance Techniques. Venue of this course is HLTC, Bengaluru.

NPTI CORPORATE OFFICE

The corporate office of NPTI is situated in Sector-33, Faridabad. While coming from Delhi to Faridabad, NPTI Complex is around 5 Kms. from Badarpur Border and located adjoining to NHPC Corporate office. One has to take local bus up to Badarpur Border form Railway Station, Sarai Kale Khan (Near Nizamuddin Railway Station), ISBT, Lajpat Nagar or Ashram. From Border autorickshaws are available upto NPTI complex, Auto rickshaws are also available form Faridabad to reach NPTI Corporate Centre. The Centre for Advanced Management and Power Studies (CAMPS) is located in the same campus.

NPTI (NORTHERN REGION) BADARPUR, NEW DELHI

The institute is located inside the Badarpur Thermal Power Station (BTPS) Complex, situated on the National Highway No. 2 (Mathura Road); from Delhi & New Delhi Railway Stations, Delhi Transport Corporation (DTC) and private buses ply to Badarpur Border and pass right by the side of Thermal Power Station Gate. DTC and Haryana Roadways buses going to Faridabad and Ballabgarh from Inter State Bus Terminal (ISBT) stop at BTPS Complex DTC and Private Buses of Route No. 405, 415, 460, 473 & 479 ply to Badarpur, Buses are also available form Faridabad to reach the institute.

NPTI (HPTC), NANGAL

The Institute is located at Nangal, (district Ropar), Punjab, just besides Nangal Dam railway Station. It is close to the Bhakra Beas Management Board Township. It is about 390 Km from Delhi and 104 Km from Chandigarh. Nangal Dam can be reached by trains form Delhi Railway Station and by bus from I.S.B.T. Kashmiri Gate, New Delhi. Bus services are also available from Chandigarh.

POWER SYSTEMS TRAINING INSTITUTE, BENGALURU

The Institute is situated on the Subramanyapura Road opposite to 9th Main road, Yarabnagar, Banashankari Second Stage behind Banashankari temple, Bengaluru. The Institute is about 10 Kms. away from Bengaluru City railway Station/ Bengaluru City Bus Stand and 20 Kms. From Bengaluru Airport. Pre-paid Auto Rickshawa servies are available form Bengaluru City railway Station. City buses also ply via Yarabnagar bus stop (Bus Route Nos. 15 C, 15 E, 15 H, 210 A, 210 R and P 210 A from Bengaluru City Bus Station). Pre-paid taxi services are available from the Airport also.

HOT LINE TRAINING CENTRE, BENGALURU

This institute is about 35 Km from Bengaluru city Railway Station and City Bus Stand. It is situated next to 220KV Sub-Station of Karnataka Power Transmission Corporation Ltd. (KPTCL) and 400KV Sub- Station of Powergrid on Kanakapura Road (National Highway 209) and opposite to Acharya Patasala College (APS) of Engineering Campus. Buses are available from Krishna Rajendra (K.R.) Market which is about 3 Km from City railway station/ City Bus Stand. The Institute can be reached by buses with the following route numbers 211, 211D, 211E, 211G, 211N, 211Q, 213, 213A, 213B, 213K, 213F/A etc. The Bengaluru city (International) Airport is about 60 kms North-West of the institute from where prepaid taxies are available.

NPTI (SOUTHERN REGION), NEYVELI

The Institute Complex is located at Block 14 of Neyveli township and is about 6 kms from the Neyveli Central Bus Stand. Auto Rickshaws are available at the bus stand to reach the Institute Complex. Neyveli can be reached from Chennai by Tamil Nadu State Transport Corporation Buses. Neyveli can also be reached by train from Chennai Egmore Railway Station to Virudhachalam Railway Station and by bus from Virudhachalam to Neyveli. Neyveli is about 200 kms. by road and 250 kms. by train from Chennai.

NPTI (EASTERN REGION), DURGAPUR

The institute complex is located at the City Centre area (Michel Faraday Avenue) and is about 9 Kms. From Durgapur Railway Station. Taxis, Auto rickshaws are available at Durgapur Railway Station. City buses also ply upto City Centre from where Rickshaws can be engaged for reaching the Institute.

NPTI (NORTH EASTERN REGION), GUWAHATI

The Institute is located near SLDC Complex, ASEB, Kahilipara, Dakhingaon, Guwahati-19. In order to reach the Institute, city buses, (Route No.-2 at Kachhari), autorickshaws, taxis are available from the Guwahati Railway Station. The Institute is about 10 Km from Guwahati Railway Station and 30 Km from Gopinath Bardoloi International Airport, Guwahati.

NPTI (WESTERN REGION), NAGPUR

The Nagpur Institute is located at about 8 kms. From the Nagpur railway staion. Taxis, auto-ricksahaws and city buses are available to reach the Institute. The Institute is situated opposite to the main gate of Vishweshvarayya National Institute of Technology (VNIT) on South Ambazari Road and the nearby area is called Gopalnagar. The institute is about 10 kms from the Dr. Baba Saheb Ambedkar International Airport

NPTI, SHIVPURI

NPTI, ALAPUZZAHA

MAIN OBJECTIVES

The primary objectives of this organization are:

- To function as a National Organistion for training in the fields of (a) Operation and Maintenance of Power Stations, and (b) All other aspects of Electrical Energy Systems including transmission, sub-transmission and distribution.
- To act as an Apex Body for initiating and coordinating training programs in the Power Sector of the Country.
- To establish and run Training Institutes for Engineers, Operators, Technicians and other personnel of the Power Sector.

Subsidiary Objectives

- To design syllabi/courses for the Graduate Engineers, Operators and Technicians to be inducted in Power Stations.
- To co-ordinate the training activities of the various utilities with those of other technical institutions and industries.
- To establish standard norms regarding qualifications and training for personnel at various levels.
- To serve as a National Certification Authority (NCA) for the purpose of certification of competence and/ or participation to ensure availability of properly trained personnel to man the electricity supply industry.
- To initiate and co-ordinate the research and development in the field of operation, maintenance and management of power generation and transmission distribution systems.
- To establish, maintain and manage laboratories, workshops, experimental transmission lines, sub-stations and other facilities required in the pursuance of its objectives.
- To collect information and maintain documentation in the field of electricity generation and distribution.
- To collect, prepare, edit, print and publish materials, papers, periodicals or reports in furtherance of objectives of the Society.
- To organize seminars and workshops.
- To enter into agreements with any enterprise(s) or institution(s) or person(s) and provide efforts for specific training programs, demonstrations, assignments, preparation of training material or technical guidance.

Training – A Necessity

- Power industry is a multi-disciplinary, highly capital intensive industry.
- Human element is the most vital input of the Power Sector.
- Power Generating Stations require technically trained manpower for project planning, implementation, erection, commissioning, testing, O&M including transmission and distribution of power.
- Formal studies available in educational institutions can not equip a person with knowledge of different inputs required for the job performance in Power Sector.

- Special training becomes necessary for personnel at every level in the industry to keep abreast with rapidly advancing state-of-the-art in the power industry.
- Power is basic to national development and industrialization, thus making it imperative to have optimum efficiency.

Training Methodology

To achieve the objectives of providing total concept of power plant training, different types of learning situations will have to be created/ organized. These are :-

- Class room lectures for imparting formal, theoretical and technical knowledge.
- Case studies/Group discussions.
- Self learning techniques, like computer based self learning training packages etc.
- Practical hands-on training in corrective maintenance methods and techniques.
- Through simulation techniques and on-job training in Power Stations/ Power Systems. The training methodology so adopted creates step by step environment for all round development of skills and knowledge of the participants.

On-job Training

On-job training is an essential supplement to formal training which provides the trainees an understanding of the functions through involvement with real work situations. Special stress is laid on acquisition of required skills for undertaking specific responsibilities in a particular area of work. On-job experience simplifies and consolidates knowledge in a particular sphere for which special type of work books have been designed according to the needs of area where on-job training is conducted.

Training Support Services

A Technical section is setup under NPTI to develop training aids like manuals, periodicals, slides etc., to meet the training needs of the Power Sector. Technical Section is playing crucial role in the following areas:-

- To design appropriate programs for Power Sector personnel.
- To design and develop manuals, lessons, notes, tests including the Audio-Visual training aids.
- To revalidate training programs through evaluation, feed back on training effectiveness and follow-up.
- To advise on training methodology.
- To establish and maintain data bank, and reprographic facilities.
- To collect, prepare, edit, print and publish training manuals, papers, periodicals, annual training programs calender and reports.
- To collect information and maintain documentation in areas related to Power Sector.
- To render assistance in equipping the Regional Training Centres with appropriate training equipments and materials.
- To organize Seminars/Workshops/ Conferences as per the need of the Power Sector.

Multimedia Computer Based Training (CBT)

Multimedia CBT has been identified as one of the cost effective means of delivering consistent high quality training. In view of this, a CBT cell has been established at NPTI, Corporate office at Faridabad and also at other Regional Centres for developing the multi media "Self-Learning" packages in various technical areas concerning Power Generation, T&D and Management. These packages are widely used by the trainees at the open Learning Centres (OLCs) of NPTI as well as by the other power utilities of the country like APGENCO ,BHEL, MSEB, RRVUNL, NTPC, NHPC, SJVNL, J&KPDC, PSEB, NPCL, TNEB, OHPC, NLC, DVB, KLTPS, DVC, WBPDCL, IPPGCL, BBMB, BSES, TATA POWER, Thermax, ACC, APSEB, NDPL, UPRVUN, BSEB, WSEB, JSW energy Ltd., Bellari Karnataka, Adani Power, THDC, Orissa Power Transmission Corpn. Ltd., MP Poorv Kshetra Vidyut Vitran Corpn. Ltd., Mahavitran Maharashtra, Karebo System (P) Ltd., (U.K), Meghalaya SEB etc.

Engineering Institutions: G.B. Pant University of Agriculture and Technology, NIT, Raipur, NIT, Durgapur, Jawaharlal Nehru Technological University (AP), Kalyani University (WB), CMERI (Durgapur), VNIT (Nagpur), Delhi College of Engineering (Delhi), Bharati Vidyapeeth, Deemed University, Pune etc.

These CBT packages developed are available for sale, at cost–effective nominal prices.

This cell also provides assistance to the SEB's and Utilities in developing facilities for use of these packages.

Hostel Facilities

Well furnished Executive hostel and Trainee hostel with modern lodging and boarding facilities are available to accommodate about 550 trainees at NPTI Corporate Centre complex, Faridabad.

Well furnished hostels are also available at each of the regional institute of NPTI where modern and hygienic lodging and boarding facilities are available. Those desirous of availing the hostel facilities will have to intimate in advance to the Principal Director/HoI and obtain confirmation for the same. In case a participant does not stay in the hostel, he has to make his own arrangements to reach the Institute. Recreation and indoor sports facilities like Table Tennis, Badminton, Carom, Chess etc. are available for trainees in Hostel, creating a congenial atmosphere of a Home away from Home.

The hostel accommodation is provided to the trainees only for the period of training course.

Library

NPTI Corporate Centre library has a

Library at NPTI Corporate Office, Faridabad

large collection of books and video packages on modern power station technology and practices, various branches of engineering, science, industrial relations, management etc. It subscribes to a number of Indian and foreign technical journals and periodicals.

All regional institutes have modern libraries having a large collection of books and multimedia films on Power Station Technology, Mechanical Engineering, Electrical Engineering, Power Plant, Chemistry, Control and Instrumentation, Electronics, Computers, Management etc. These libraries also subscribe to a variety of Indian and foreign periodicals and journals for keeping in tune with the latest developments in Engineering & Technology.

As many as 99 Technical manuals/books have been published by NPTI faculty with lucid presentations to enhance the conceptual understanding of various subsystems. These are available at nominal prices for procurement by Power Utilities and individual. Price List of NPTI Publications can be provided on request.

Auditorium, Conference Hall, Residential Quarters

The NPTI Corporate Centre Complex is situated on a picturesque landscape of about 15 acres. The campus houses the main institute building, guest house, hostels, sports complex and residential quarters for the employees. The main Institute building houses lecture halls, a Syndicate room, Sanctum Sanctorum, Library, Administrative Office, a 500MW Simulator, and a 430MW CCGT Simulator etc. A centrally air-conditioned 275 seat capacity Auditorium with the latest Audio/Video System with motorized screen has been established at NPTI Corporate Centre. A cozy conference hall with most modern amenities and seating capacity for 55 persons is also available. Both Conference Hall and Auditorium are being used for conducting Seminars, Conferences, Workshops and for Cultural Activities.

Each Regional Institute has auditorium/ conference hall for conducting Conferences, Seminars and workshops etc. These auditoriums are also provided for conducting of cultural programs by the trainees, staff and their family members.

SIMULATORS

500MW Simulator at NPTI Corporate Office, Faridabad

A. 500 MW Simulator

NPTI has set up a high-quality, high-fidelity real-time full scope 500 MW Fossil Fuel Fired Power Plant Training Simulator, at its Corporate Centre. The Simulator realistically emulates the behavior of the entire process simulation in a real-time scenario for a meaningful and off-job Operator Training. This is a replica of the 500 MW Stage-III, Unit-

Trainees from Abu Dhabi
at PSTI, Bengaluru

5 of Chandrapur Thermal Power Station of MAHAGENCO and has a unique facility of imparting training on the 'Conventional Control Panels' as well as on the 'Video Process Control' (DDC/CRT-Key Board based Unit Operation) Panels in Virtual Panel and Control Schematic modes of Unit Operation, taking care of the needs of futuristic trends in Power Plant Operation. The Simulator training results in Operators making better judgment calls, reduced plant trips, trouble free start-ups and maneuvering of plant sub-systems, optimum usage of auxiliary resources, extended equipment life, less down time and lower costs. The Simulator has more than 250 emergency conditions, including DAS functions for applications ranging from Operator Training to engineering and plant performance analysis and improvements etc.

B. Combined Cycle Gas Turbine Simulator

NPTI has set up a high-quality, high-fidelity real-time 430 MW Combined Cycle Gas Turbine Power Plant Simulator, at its Corporate Centre. The Simulator realistically emulates the behavior of the entire process simulation in a real-time scenario for a meaningful and off-job Operator Training. This is a replica of NTPC Faridabad Gas Power Plant, Siemens Make V-94.2 Model comprising of 2x143 MW Gas Turbines and 1x144 MW steam Turbine. This CCGT replica Simulator is equipped with all the CRT controls with Latest State-of-the art Barco Screens. The training on this simulator will benefit operators and Shift Charge Engineers working or being posted on Combined Cycle Gas Plants.

C. 210 MW Thermal Power Plant Simulators

Regional institutes at Badarpur and Nagpur are equipped with 210 MW Fossil Fuel fired thermal power plant full scope real time Simulators. The Simulator at Badarpur is a replica of 210 MW Unit of Badarpur Thermal Power Station, New Delhi and the one at Nagpur replicates 210 MW unit of Khaperkheda T.P.S. of MAHAGENCO These Simulators provide a unique opportunity for the trainees to experience a full range of operation and stress situations in an integrated mode of Unit Operation. These state-of-the-art Simulator facilities improve the reflex operational skills of Shift Charge Engineers, Unit Controllers, Operators and fresh engineers being inducted into Operation and fine-tune their skills in

Operational emergencies together with tremendous integrated Unit experience, exposure and understanding of normal operations viz., Cold, Warm & Hot Start up processes as well. NPTI has trained more than 10,000 engineers and operators on these simulators, since their installation.

D. Dispatcher Training simulator (DTS)

The DTS laboratory at PSTI Bengaluru is a digital computer based high fidelity Power System Simulator in which a representative system of National Grid is simulated. It has options for all types of generation like Hydro, Thermal, Nuclear, Gas, Pumped Storage System and for Transmission schemes covering 200KV & above and also for the various generation voltages. The transmission equipment like Transformers, Transmission lines, Capacitor banks, Bus Line Reactors, SVCs, CBs, isolators etc. are all suitably represented in the simulator. The real-timesimulation is carried out for normal and emergency conditions of the network with initial conditions. The behaviour of various Power System elements for different

A Training Session in progress at 430MW Combined Cycle Gas Turbine Simulator at NPTI Corporate Office, Faridabad

loading conditions can be studied in the Simulator. Time tagged or manual events can be introduced on-line into the Simulator during exercises. Protection schemes could be implemented with the help of voltage relays, frequency relays, rate of change of frequency relays, over current relays etc. Thus the actual system occurrences can be Simulated and saved as save cases. Hence, it is a comprehensive training tool for training of Power System and Load Dispatch Engineers and Operators.

E. Hydro Simulator, Nangal

NPTI has installed a state of the art real time full scope 250 MW hydro simulator replica of Unit-1 of Nathpa Jhakri Hydro Power Plant at HPTC Nangal.

The Simulator has the facility to operate from the conventional Panel as well as from the VPC mode of operation.

F. 800 MW Supercritical Thermal Training Simulator

NPTI is in the process of commisioning a 800MW Supercritical Thermal Simulator at NPTI Corporate Office, Faridabad.

6 more DCS based Multifunctional configured simulators is under process of Commissioning.

Laboratories/Workshops

The laboratories and Workshops are the prerequisites for providing off-job, hands-on training in the maintenance aspects. The institutes under NPTI have built well equipped laboratories and workshops with wide ranging facilities

State of the Art real time full scope 250 MW hydro simulator Hydro Power Plant at HPTC, Nangal

Sixteen weeks customized Institutional Training Program being organized at NPTI Nagpur for MPPGCL ETs (Chemistry)

for imparting training from Technicians to Operators to Engineers, in various aspects of Power Stations. Some of the areas where expertise have been built up are:

(i) Control and Instrumentation Laboratories with facilities for testing, calibration and repairs of different types of process control instruments.

(ii) Maintenance workshops for Valves, Bearings & Shaft alignment, Pumps, Motors etc.

(iii) Electrical laboratories with facilities for testing of relays, electrical equipments, insulating oils etc., along with repairs as per requirement.

(iv) A lab of 120 nos. computers along with instructor console has been established with the facilities of LAN and Internet connectivity at corporate office Faridabad.

OLCs (Open Learning Centres)

OLC (Open learning Centre) is the infrastructural facility available to help the trainee/trainer to go through the multimedia CBT packages at their own choice and pace without any help of the subject expert. OLCs have been established at all the six Regional Institutes. The multimedia CBT packages developed at NPTI Corporate Centre and other Institutes are being used by the Institutes for training.

Additionally all the OLCs at the Corporte Centre and the Regional Institutes have complete Internet access through all days of the week.

Consultancy Services

In order to serve the industry requirements and make best usage of infrastructure and expertise, NPTI has ventured into providing consultancy services in Preparation of DPRs under R-APDRP (11th Plan). NPTI was appointed as REC Quality Monitor (RQM) for Tier-II Inspection of RGGVY Works under 11th Plan for six (6) states and completed the assignment. NPTI also completed the Third Party Inspecting Agency (TPIA) works by a few DISCOMs for the RGGVY works under the 10th Plan & 11th Plan.

NPTI has provided consultancy services to WAPCOS for preparation of DPR for establishment of Power Training Institute in Bhutan. NPTI also Consultancy services to NHPC for preparation of DPR for establishment of Hydro Power Training Institute in Jammu & Kashmir.

NPTI provided DPR preparation services under IPDS & DDUGJY Schemes to DVVNL-Agra, UP.

NPTI is also providing Project Management Agency (PMA) services for DDUGJY & IPDS Project Works for NESCO & WESCO Utility areas of OPTCL, Odisha.

NPTI in association with TATA Consulting Engineers (TCE) completed an assignment of preparation of a Feasibility Study for establishing a "National Power Academy" in the Kingdom of Saudi Arabia.

NPTI has been awarded a consultancy contract by Bureau of Energy Efficiency (BEE) to create master trainers for imparting training to officials of DISCOMS on DSM and Energy Efficiency under the "Capacity Building of DISCOMs" Program during XII Plan.

NPTI also provides consultancy in the

Inauguration of 34 weeks Program on 'Induction Training Program of Assistant Directors of Central Electricity Authority'

5-Days Program on 'Entrepreneurship Development on Solar PV Rooftop'
organized at NPTI Corporate Office, Faridabad

field of Human Resources Development including Training Need Analysis, Upgradation of training facilities, Customized Course Designs, Capacity Assessment/Evaluation for Promotion etc.

Basic level System Operator Certification and Specialist level System Operator Exam on "Regulatory Frame work in Power Sector"(RFW) and "Power System Reliability" (PSR)

NPTI's Power System Training Institute (PSTI) has been conducting Certification of Power System Operators since 2011. Training Courses at NPTI, Corporate Office, Faridabad and Power System Training Institute (PSTI), Bengaluru equip the System operators with necessary inputs to take up the System Operation Certification Exam.

Basic level on line System Operator Certification Examinations have been conducted in November 2011, December 2012, July 2014, November 2015, December 2016 and March 2018, at various centres across the country. A total of 1195 System Operators were certified against 1500 who appeared for the Basic Level Certification Examinations.

Specialist courses on 'Regulatory Framework in Power Sector', 'Power System Reliability', 'Renewable Energy Sources and Grid Integration', 'Power System Logistics' and 'Power Market Specialist' are being conducted both at Corporate Office, Faridabad and PSTI, Bengaluru. Examinations on all the specialist level subjects have been planned to be conducted.

On line examinations for Specialist Level

Certification have been conducted for "Regulatory Framework in Power Sector" in March 2013 and February 2016. 161 System Operators were certified against 254 that appeared. Specialist Level Examinations on "Power System Reliability" have been conducted in February 2015 and July 2017. 154 System Operators against the 203 that appeared, were certified. Specialist Level Examination on "Power System Logistics" was conducted in November 2017. 23 System Operators were certified against the 44 that appeared.

Models

All the Institutes under NPTI have good number of working and non-working models relating to various main systems and equipments of Thermal Power Stations, Hydro Power Stations and Power Systems. Models for demonstration in the diversified areas of training in NPTI are also available.

Audio Visual Aids

All the institutes are well equipped with Audio Visual aids which are required for efficient running of training programs. Latest computer compatible projection systems have been added to the existing slide projectors, over head projectors, DVD Players televisions, recoding decks, personal computers, slide-synchronized packages for various lessons in operation and maintenance of Power Stations.

Medical Services

Services of well qualified doctors are available on part-time basis in each of the Institute Complex.

General Information

NPTI and its Institute work on five days a week (Monday to Friday) and the working hours are from 09:30 to 18:00 hrs. The changes in program schedule, if any, shall be duly intimated. NPTI regularly organizes Training programs/ Seminars/ Workshops in collaboration

JSS Rao, Principal Director, NPTI addressing participants of Two Days National Workshop on 'Battery Energy Storage & Microgrids in India'

A Free Medical Check-up Camp organized by Fortis Escorts Hospital, Faridabad at NPTI Complex, Faridabad

with National/ International Power Sector Organizations, details of which are circulated separately. NPTI publications provided to the trainees of various courses are also available for sale on specific requests.

How to apply for participation

Nomination along with course fee for various courses may be sent to The Principal Director/ HoI of the respective institute at least 15 days in advance from the date of commencement of the course.

Training Programs

NPTI is conducting the following training programs at its institutes

- One year Post Graduate Diploma in Thermal Power Plant Engineering
- One year Post Graduate Diploma Course in Sub-Transmission and Distribution
- 52 weeks Graduate Engineers Course in Thermal.
- 26 weeks Post Graduate Diploma Course in Transmission and Distribution.
- 52 weeks induction level training course in Operation and Maintenance of TPS for Graduate Engineers, Diploma Engineers/ Operators.
- Nine months Post Graduate Diploma Course in Hydro Power Plant Engineering.
- Six months Post Graduate Diploma course in Transmission and Distribution System.
- Six months Post Diploma course in Thermal Power Plant Engineering.
- 26 weeks Post Diploma Course in Distribution & Sub-Station Management
- 26 weeks Post Diploma Course in Transmission Line Maintenance
- Short-term refresher courses for in-service Engineers/supervisors/ Operators.
- Short-term courses for maintenance Technicians.
- Simulator training courses.
- Power System Training Courses at PSTI.
- Live Line Maintenance Courses at HLTC.
- Short Term Training Course in Hydro- Power Training Centre at Nangal.

NPTI ORGANISATION

Besides its Corporate Office at Faridabad (Haryana), National Power Training Institute operates on all India basis through its Regional Institutes located in the different Power Zones of the country. These Institutes are headed by Principal Directors/Directors under the overall control of the Director General, NPTI. The addresses of NPTI Corporate Office and Regional Training Institutes are given below:

NPTI CORPORTATE OFFICE

Director General
National Power Training Institute
NPTI Complex, Sector-33, Faridabad – 121 003 (Haryana)
Telephone: 0129-2275475, 2257131, 2272142, **EPABX :** 0129-2274916, 2274917
Fax: 0-129-2277412 **e-mail:** akmalik.npti@gov.in akmalik60@ymail.com **Website:** www.npti.in

TRAINING INSTITUTES

01. Principal Director
NPTI Complex, Sector-33, Faridabad-121003 (Haryana)
Ph.: (0129) 2255213
e-mail: jssrao.npti@gov.in

02. Director, (F&A)
NPTI Complex, Sector-33, Faridabad-121003 (Haryana)
Ph.: (0129) 2272210
e-mail: rkmishra.npti@gov.in

03. Head of Institute, National Power Training Institute (N.R.)
Badarpur, New Delhi -110044
Ph.: (011) 26940722, 26976516
Fax: (011) 26940722
e-mail: jssrao.npti@gov.in;
mvpandey.npti@gov.in

04. Head of Institute, National Power Training Institute (HPTC)
Opp. Nangal Dam Rly. Station, Nangal, Distt. Ropar, Punjab - 140124
Ph.: (01887) 220573, 221129
Fax: (01887) 221129
e-mail: sksinha.npti@gov.in
hptc_npti@rediffmail.com

05. Head of Institute, Power Systems Training Institute, National Power Training Institute
P. O. Box: 8201 Subramanyapura Road, Banashankari II Stage, Bengaluru-560070 (Karnataka)
Ph.: (080) 26713758, 26718185
Fax: (080) 26713758
e-mail: bngpsti@kar.nic.in
mnmurthy.npti@gov.in

06. Head of Institute, Hotline Training Centre, National Power Training Institute
26th Km, Kanakapura Road, Somanahalli Gate Udaypura Post, Bengaluru-560082 (Karnataka)
Ph.: (080) 28432596, 28432212
Fax: (080) 28432596
e-mail: ksvenu.npti@gov.in

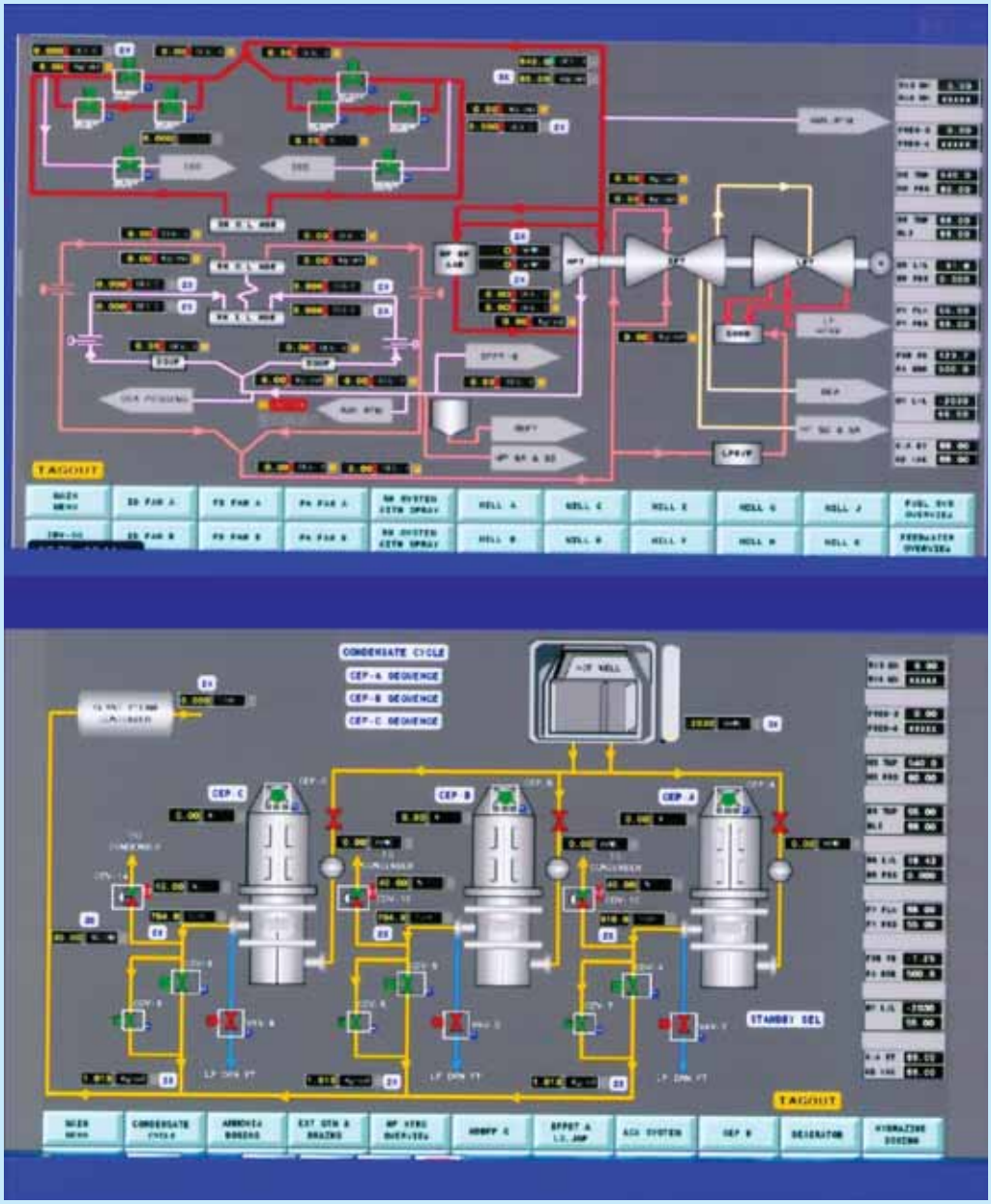
07. Head of Institute, National Power Training Institute (S.R.)
Block 14, NLC Township,
Neyveli – 607803 (Tamil Nadu)
Ph.: (04142) 269427, 257873
Fax: (04142) 269427
e-mail: jayasamraj.npti@gov.in

08. Head of Institute, National Power Training Institute (E.R.)
City Centre, Durgapur-7132616 (WB)
Ph.: (0343) 2545888, 2546887
Fax: (0343) 2545888
e-mail: nptidurgapur@npti.in

09. Head of Institute, National Power Training Institute (NER)
Dakhingaon, Kahilipara (Assam),
Guwahati-781019
Ph.: (0361) 2381329, 2381346
Fax: (0361) 2381329
e-mail: nptiguwahati@npti.in
svmaple.npti@gov.in

10. Head of Institute, National Power Training Institute (W.R.)
South Ambazari Road, Gopal Nagar,
Nagpur – 440 022, (Maharashtra)
Ph.: (0712) 2231478, 2226176
Fax: (0712) 2220413
e-mail: nptinagpur@npti.in
dmlokhande.npti@gov.in

800 MW Super Critical, Coal Fired Operator Training Simulator



NPTI is in process of commissioning 800 MW GUI based, Super Critical, Coal Fired Operator Training Simulator being developed by M/s BHEL, EDN-Bengaluru. The system is equipped with latest hardware with high end servers, Six nos. Operator's work stations, 5 nos. large video screens with latest Instructor's features viz. Backtrack, condition override, cry wolf alarm, replay, snapshots and malfunctions etc.

The real-time replica simulator of 800 MW Super Critical unit of NTPC's Kudgi T.P.P. is likely to be available for training at NPTI, Corporate Office, Faridabad in July 2016. This is the First 800 MW Super Critical Thermal Simulator in the Country to be owned by Government Sector.

TRANSNATIONAL TRAINING

NPTI and its Regional Institutes are equipped with state-of-the-art infrastructural facilities to meet the specific requirements of training foreign nationals. NPTI offers all the courses detailed out in this calendar and also tailor-made/customized need base programs to suit the organization's objectives. Typical training capsules have been designed on Power Plant Management, Combined Cycle Gas Turbine Power Plants, Transmission & Distribution areas etc.

NPTI in its various courses has trained many foreign Nationals from Zimbabwe, Iraq, Oman, Bhutan, Bangladesh, Sudan, Ethiopia, Syria, Malaysia, Philippines, Cambodia, Myanmar, Zambia, Mexico, Nigeria, Kenya, Afghanistan, Papua New Guinea, Ecuador, South America etc. Programs conducted for these Nationals did receive exceptionally encouraging feedback with rave reviews.

Foreign Training Course Fee: 2018 - 2019

S.No.	Course	All Foreign Countries
1.	Regular Course on Power Plant Engg.	US $ 1000 per week per participant subject to maximum of US $ 20000 up to 52 weeks duration
2.	Simulator Training	US $ 2000 per week per participant
3.	Boarding and Lodging in NPTI Hostel	US $ 800 per week per participant (AC Rooms on single sharing basis)
4.	Specialized need based Tailor made Courses	On Mutual Agreement

FEE STRUCTURE FOR VARIOUS TRAINING PROGRAMS OF NPTI FOR THE YEAR 2018-2019

S.No.	Name of the Course	Duration	Training Fee (Common for all viz. SEBs/PSUs/ Private organisations) (₹)
	LONG TERM COURSES (Period 17 to 52 Weeks)		
1	Graduate Engineer (Thermal)*		
	i) Non-sponsored candidates	52 Weeks	2,30,000
	ii) Sponsored candidates	52 Weeks	3,60,000
2	Graduate Engineers (Thermal Condensed)*	26 Weeks	2,00,000
3	Post Graduate Diploma course in Power Plant Engineering*		
	i) Non-sponsored candidates	52 Weeks	2,30,000
	ii) Sponsored candidates	52 Weeks	3,60,000
4	Post Graduate Diploma Course in Hydro Power Plant Engineering*		
	i) Non-sponsored candidates	39 Weeks	1,75,000
	ii) Sponsored candidates	39 Weeks	2,00,000
5	Post Graduate Diploma Course (PGDC) in Sub Transmission & Distribution System*		
	i) Non-sponsored candidates	52 weeks	2,30,000
	ii) Sponsored candidates	52 weeks	3,60,000
6	Post Graduate Diploma Course (PGDC) in		
	Energy Market Management		
	i) Non-sponsored candidates	52 weeks	2,30,000
	ii) Sponsored candidates	52 weeks	3,60,000
7	Post Graduate Diploma Course (PGDC) in		
	Power System Operation		
	i) Non-sponsored candidates	52 weeks	2,30,000
	ii) Sponsored candidates	52 weeks	3,60,000
8	Post Graduate Diploma Course (PGDC) in Renewable Energy and Grid Interface Tecchnologies		
	i) Non-sponsored candidates	52 weeks	2,30,000
	ii) Sponsored candidates	52 weeks	3,60,000
9	Post Graduate Diploma Course (PGDC) in Smart Grid Technologies		
	i) Non-sponsored candidates	52 weeks	2,30,000
	ii) Sponsored candidates	52 weeks	3,60,000
10	Post Graduate Diploma Course in T&D Systems*		
	i) Non-sponsored candidates	26 Weeks	1,45,000
	ii) Sponsored candidates	26 Weeks	1,90,000
11	Post Diploma Course in Thermal Power Plant Engineering*		
	i) Non-sponsored candidates	52 Weeks	1,45,000
	ii) Sponsored candidates	52 Weeks	2,20,000

12	Post Diploma Courses		
	i) Non-sponsored candidates	26 Weeks	80,000
	ii) Sponsored candidates	26 Weeks	1,35,000
	MEDIUM TERM COURSE: (Period 5 to 16 Weeks)		
9	Specialized Courses	16 weeks	1,44,000
10	Specialized Courses	15 weeks	1,38,000
11	Specialized Courses	14 weeks	1,32,000
12	Specialized Courses	13 weeks	1,26,000
13	Specialized Courses	12 weeks	1,20,000
14	Specialized Courses	11 weeks	1,14,000
15	Specialized Courses	10 weeks	1,08,000
16	Specialized Courses	9 weeks	1,00,500
17	Specialized Courses	8 weeks	93,500
18	Specialized Courses	7 weeks	86,500
19	Specialized Courses	6 weeks	78,000
20	Specialized Courses	5 weeks	68,500
	SHORT TERM COURSES: **(Period 1 to 4 Weeks)		
21	Specialized Courses	4 weeks	57,000
22	Specialized Courses	3 weeks	45,000
23	Specialized Courses	2 weeks	33,000
24	Specialized Courses	1 week	18,000
25	Specialized Courses	4 Days	16,000
26	Specialized Courses	3 Days	13,000
27	Specialized Courses	2 Days	9,000
28	Specialized Courses	1 Day	4,800
29	Training Fees for On-site/On-plant training Programs	1 week	30,000
30	Training Fees for On-site/On-plant training Programs	4 Days	27,500
31	Training Fees for On-site/On-plant training Programs	3 Days	22,000
32	Training Fees for On-site/On-plant training Programs	2 Days	15,500
33	Training Fees for On-site/On-plant training Programs	1 Day	8,500

***Includes Thermal Simulator Training fee of 2 weeks/ CCGT Simulator Training fee of 2 weeks / Hydel Simulator Training fees of 1 week / Power System Training Simulator fee of 1 week as applicable.**

****In respect of short term courses, fee is inclusive of tea/snacks and working lunch. In respect of other courses, fee is exclusive of tea/snacks and working lunch.**

Note: For specialized courses/on-site/on-plant Training Programs minimum no. of participants should be 10. If no. of participants are less than 10, then fee for 10 participants will be charged.

HLTC, BENGALURU
REGULAR PROGRAMS – RESIDENTIAL (2018-2019)

S.No.	Name of Course	Duration	*Training fee ₹ Per Participant
1	Live Line Maintenance Techniques(LLMT) using Hot Stick Method	11 weeks	1,75,000
2	Live Line Maintenance Techniques(LLMT) using Bare Hand Method (BHM)	05 weeks	1,38,000
3	Switchgear Maintenance Techniques using LLMT for Linemen/Supervisors	04 weeks	1,08,000
4	Familiarization Training Programme on 400 Kv Cold Lines	04 weeks	86,500
5	One Week Awareness Course for Executives in Hot line Activites	01 week	21,500
6	Live Line Punctured Insulator Detection (PID)	01 week	24,000
7	Live Line Insulator Washing Techniques (LLIW)	04 days	24,000

*** Training Fee includes Boarding and Lodging Charges.**

SIMULATOR TRAINING FEE FOR THE YEAR 2018-19

Name of Simulator	* Training Fee (₹) / Week / Participant
Thermal Simulator	33,000
Hydel Simulator	24,000
CCGT Simulator	33,000
Power System Simulator	24,000
800 MW Super Critical Simulator	33,000

***Training fee includes Tea/ Snacks and working lunch**

RATE OF SIMULATOR (THERMAL/CCGT) TRAINING FEE FOR INTER UNIT PARTICIPANTS OF PGDC, B.E./B.TECH. (POWER) AND PDC STUDENTS ETC.

(Applicable for the Programs commencing during Financial Year 2018-2019)

Inter-unit Participants	Training Fee (₹) Per Participant (For two weeks duration) 2018-19
PGDC	32,500
B. Tech. (Power)	25,000
PDC	20,000

NOTE : GST or any other tax as applicable on various components like Training Fee, Boarding & Lodging Charges, Transportation Charges.

Shri Shri Vishwakarma Puja Celebration at NPTI (CO), Faridabad

(A). TRAINING COURSES

01. POST GRADUATE DIPLOMA COURSE IN POWER PLANT ENGINEERING

Objective

To prepare the fresh Graduate Engineers to become Power Station Managers in Operation and Maintenance of Thermal Power Stations. The admission to this course is done through a common entrance test held on all India Basis.

Program Profile

Module No.	Description	Duration
GF-1	Power Plant Familiarization & Industrial Safety	5 weeks
GF-2	CCGT, Co-Generation & Hybrid Systems	2 weeks
GF-3	Power Plant Briefing & Scheme Tracing work	3 weeks
GF-4	Power Plant Operation	2 weeks
GF-5	Power Plant Performance & Efficiency Calculation	1 week
GF-6	Nuclear Power Plants	1 week
GF-7	Advanced Steam Generation Technology-Supercritical and FBC	1 week
GOJ-1	Rotational On-Job (Operation)	3 weeks
GF-9	Chemistry, Metallurgy, NDT & Welding	1 week
GF-10	Renewable energy resources, Conventional and Renewable Energy Systems	1 week
GF-11	Solar PV & Thermal Technologies	3 weeks
GF-12	Business Communication & Personality Development	1 week
	First Semester Examination	1 week
GF-13	Power Sector Reforms and Regulations	1 week
GF-14	Wind Energy and Hydro	2 weeks
GF-15	Bio Mass, Bio Energy and Waste to Energy	2 weeks
GF-16	Energy Storage Technologies	1 week
GF-17	Power Plant Protection	2 weeks
GF-18	Maintenance Planning Inspection, & Cost Control	2 weeks
GF-19	Control & Instrumentation	2 weeks
GF-20	IT Application in Power Sector & GIS	1 week
GF-21	Load Dispatch	1 week
GF-22	Renewable Energy Grid Interface Technologies	1 week

GF-23	Erection, Commissioning & Construction Management	2 weeks
GF-24	Energy Audit & Project Management	1 week
GF-25	Environment Management	1 week
GOJ-2	Rotational On Job (Maint.)	4 weeks
GF-26	Simulator Training, visit to Mfrs. Works	3 weeks
	Second Semester Exam	1 week
	Total	**52 Weeks**

Venue	Duration	Date of Commencement
Faridabad	52 weeks	20-08-2018
Badarpur	52 weeks	20-08-2018
Nangal	52 weeks	20-08-2018
Neyveli	52 weeks	20-08-2018
Durgapur	52 weeks	20-08-2018
Guwahati	52 weeks	20-08-2018
Nagpur	52 weeks	20-08-2018

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Mechanical/Electrical/ Electrical & Electronics/Power Engineering and related branches

02. POST GRADUATE DIPLOMA COURSE IN TRANSMISSION & DISTRIBUTION SYSTEM

Objective

The main objective of the course is to create technically trained manpower readily available for recruitment to the power companies in the area of Transmission & Distribution of electrical power.

Program Profile	Duration
• General Introduction Power Senerio & General Introduction	1 week
• Power Generation Thermal Power Plant Familiarization	1 week
• Power Transmission Lines Engineering and O&M	2 weeks
• Live Line Maintenance Technique	1 week
• Substation Planning & engineering	1 week
• Substation Operation & Maintenance	1 week
• Load Despatch & Grid Management	2 weeks
• Communications in Power Systems	1 week
• Power Distribution /Distribution Lines/Cables	1week
• Systems Engineering O&M	2 weeks
• Distribution Sub-Stations	1 week
• Distribution Metering	1 week
• Energy Audit and Conservation in Distribution Systems	1 week
• Information Technology Office applications	1 week

• In T & D Power System Planning Studies	1 week
• Safety, Statutory Safety & Statutory regulations	1 week
• Commercial aspects Commercial aspects in T&D systems	1 week
• Management of Electrical Contract	1 week
• New Technologies Power System Protection	1 week
• High Voltage Testing Power System Equipment	1 week
• HVDC Transmission System	1 week
• Simulator Training/Lab Simulator Training, Relay Testing	1 week
• Appraisal	1 week
Total	**26 Weeks**

Venue	Duration	Date of Commencement
Badarpur	26 weeks	16-07-2018 & 07-01-2019
PSTI Bengaluru	26 weeks	19-03-2018 & 18-10-2018
Guwahati	26 Weeks	08-10-2018
Nagpur	26 Weeks	04-06-2018 & 03-12-2018

Who may attend

B.E./B. Tech. or equivalent in Electrical/Electrical & Electronics/Power Engg.

03. POST GRADUATE DIPLOMA COURSE (PGDC) IN POWER SYSTEMS

Objective

The main objective of the course is to create a technically trained manpower readily available for recruitment by the power companies and electrical service divisions of large industries in the area of Transmission & Distribution of Electrical Power.

This is a **Post Graduate Diploma Course** for those who desire to make a career in the power sector. On successfully undergoing this course the Electrical Graduate Engineers will find immense opportunities and preference in employment with various power companies. The course covers the Syllabus as per Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010

	Program Profile	Duration
1.0	General Introduction, Power Sector scenario	
2.0	Fundamentals of Electricity, Power Quality, Harmonics & Mitigation	
3.0	Generation Systems – Thermal, Hydro, Nuclear, CCGT, Diesel Power Plant	
4.0	RES - Site selection, RE System Sizing, Feasibility reports	
5.0	Power Electronics Controls, Rectifier, Inverter, Power Control Unit	
6.0	Solar Photo Voltaic (SPV) Systems	
7.0	Sub T & D Planning, Optimization, Design & Engineering	

8.0 Engineering of Transmission and Distribution Sub-stations
9.0 HT & LT Switchgears, Battery, Battery Chargers & DCDB, UPS & UPS Batteries
10.0 Metering
11.0 Power Cables, LT Cables
12.0 Engineering of Transmission and Distribution Lines
13.0 Inspection of Electrical Installations and IE Safety Regulations
14.0 Protective Relays
15.0 Sub Transmission and Distribution System Protection
16.0 Power System Operation
17.0 Flexible AC Transmission Systems
18.0 Grid Integration of Distributed Generation
19.0 Energy Storage, Scheduling and Despatch
20.0 Distribution Automation, SCADA, EMS, PMU and Wide Area Monitoring
21.0 Smart Grids
22.0 Project Management of T&D Systems
23.0 Reliability issues
24.0 O&M of T&D Systems
25.0 O&M of REPS, Converters, Battery and Control Panel
26.0 Service Connections, H R Aspects & CRM
27.0 Energy Efficiency and Energy Audit
28.0 Demand Side Management
29.0 Best Practices in Transmission & Distribution Loss Reduction
30.0 Power System Planning, Optimization, Design & Engineering
31.0 Power System Protection
32.0 General Principles of Live Line Maintenance Techniques (LLMT)
33.0 Demo of LLMT on 11 kV and 33 kV systems

Total 52 Weeks

Venue	Duration	Date of Commencement
PSTI Bengaluru	52 weeks	20-08-2018

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Mechanical/ Electrical/ Electrical & Electronics / Power Engineering and related branches

Methodology

Lectures, Lab Sessions, Demonstration, Field Visits

04. POST GRADUATE DIPLOMA IN HYDRO POWER PLANT ENGINEERING

Objective

To prepare engineers to become Power Station Managers in Operation and Maintenance of Hydro Power Stations.

Program Profile

Module No.	Description	Duration
1	General Introduction of Hydro Power Plant Engineering	2 Weeks
2	Power plant familiarization of Hydro Power Plant Engineering	3 Weeks
3	Planning & cost control	1 Week
4	Safety & First aid	1 Week
5	Construction activity of a Hydro Power Plants	2 Weeks
6	Electro mechanical equipment using in HYDRO Power Plants	3 Weeks
7	Hydro mechanical equipment Testing Erection & Commissioning	1 Week
8	Welding and NDT	1 Week
9	Control & Instrumentation	2 Weeks
10	Computer application in Hydro Power plant	1 Week
11	Power Plant Protections	2 Weeks
12	Switchyard Equipments	1 Week
13	Power Plant Operation	2 Weeks
14	Load dispatch	1 Week
15	Maintenance of Hydro Power Plant Equipments	1 Week
16	Inspection of Hydro Power Plant Equipments	1 Week
17	Hydro Power Plant Simulator	1 Week
18	Introduction to Management	1 Week
19	Plant Operational Training at Hydro Power Plant (On-JOB)	6 Weeks
20	Plant maintenance Training at Hydro Power Plant (ON-JOB)	5 Week
21	Final assessment & Evaluation	1 Week
	Total	**39 Weeks**

Venue	Duration	Date of Commencement
Nangal	39 weeks	03-09-2018

Who may attend

B.E./B. Tech. or equivalent in Mechanical/Electrical/Electrical & Electronics/Power Engg.

05. PGDC IN ENERGY MARKET MANAGEMENT

Objective

With a view to build adequate technical capacity and develop economically viable Energy sector and energy efficient systems and compliance of laudable objectives of the GoI, adequate scientific and technical manpower of all levels is a pre-requisite. The main aim of the courses is to create a pool of technically trained manpower readily available for recruitment to the State, Central and Private Power Utilities and allied Industries.

The course focuses on the market structures that exist within the electric energy industry. It includes mechanism of energy markets; comparative market systems; determination of prices under different market structures; electricity market architecture; electricity market design; dispatch and new build decisions; risk and risk management, current and proposed policies on the energy industry etc.

Module No.	Description
1.0	Energy Resources and Electricity Generation Options
2.0	Transmission Networks
3.0	Power System Operation and Management
4.0	Electricity Industry Structure and Regulations
5.0	Overview of Economic Theory
6.0	Commercial Systems & Transmission Pricing
7.0	Electricity Markets Design
8.0	Managerial and Interpersonal Skills
9.0	Communication Skills and Technical Writing
10.0	Visits to IEX/PXIL/RLDC
11.0	Load Dispatch Simulator Training
12.0	Investing in Generation and Transmission
13.0	Ancillary Services Markets
14.0	Operation of Market Oriented Power Systems
15.0	Electricity Storage Technology and Management
16.0	Managing Risk
17.0	Integration of Renewables and Effect on Power Markets
18.0	Introduction to Smart Grids
19.0	Power System Optimisation
20.0	Smart Power Flow Controllers and Intelligent Automation
21.0	Cyber Security in Power Systems
22.0	Climate Change and the impact on Energy Systems
23.0	Power Market Simulation Lab
24.0	Project Presentation
	Total 52 Weeks

Note: The students have to select Topics for the Project before commencement of the second semester and complete by the end of second semester.

Venue	Duration	Date of Commencement
Faridabad	52 Weeks	20-08-2018
Durgapur	52 Weeks	20-08-2018
Nagpur	52 Weeks	20-08-2018
PSTI, Bengaluru	52 Weeks	20-08-2018

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Electrical /Electrical & Electronics / Power Engineering and related branches

06. PGDC IN POWER SYSTEM OPERATION

Objective

With a view to build adequate technical capacity and develop economically viable Energy sector and energy efficient systems and compliance of laudable objectives of the GoI, adequate scientific and technical manpower of all levels is a pre-requisite. The main aim of the courses is to create a pool of technically trained manpower readily available for recruitment to the State, Central and Private Power Utilities and allied Industries.

To provide the basics of electric power system generation, operation, and control to the students. The emphasis is on power system operation and operating tools

Module No.	Description
1.0	Evolution of Indian Power Systems
2.0	Legislative and Regulatory Framework
3.0	Managerial and Interpersonal Skills
4.0	Communication Skills and Technical Writing
5.0	Elements of Power System
6.0	Principles of Power System Operation
7.0	Power System Stability and Control - I
8.0	Reactive Power Management
9.0	Power System Analysis
10.0	**On Job Training** and Site Visits to Transmission Substation/ O & M of Substation/ Switchyard/NLDC/ HVDC/FACTS facility
11.0	**On Job Training** on Load Dispatch Simulator and Power Systems

	Lab /HV Lab
12.0	Legislative and Regulatory Framework - II
13.0	Commercial Aspects and Contracts Management
14.0	Transmission Pricing
15.0	Power System Stability and Control -II
16.0	Power Systems Planning and New Technologies
17.0	System Security and Reliability
18.0	Smart Power Flow Controllers and Intelligent Automation
19.0	Power Markets
20.0	Ancillary Services Management
21.0	SCADA / EMS and IT & Telecommunication Systems
22.0	Protection Systems
23.0	Power System Operation in emergency
24.0	Power System Restoration
25.0	Optimization Techniques and MATLAB
26.0	Power Markets Simulation Lab.
27.0	Training & visit to RLDC/SCADA facility
28.0	Project Presentation
	Total 52 Weeks

Note: The students have to select Topics for the Project before commencement of the second semester and complete by the end of second semester.

Venue	Duration	Date of Commencement
Faridabad	52 Weeks	20-08-2018
Durgapur	52 Weeks	20-08-2018
Nagpur	52 Weeks	20-08-2018
PSTI, Bengaluru	52 Weeks	20-08-2018

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Electrical/Electrical & Electronics/Power Engineering and related branches

07. PGDC IN RENEWABLE ENERGY AND GRID INTERFACE TECHNOLOGIES

Objective

With a view to build adequate technical capacity and develop economically viable Energy sector and energy efficient systems and compliance of laudable objectives of the GoI, adequate scientific and technical manpower of all levels is a pre-requisite. The main aim of the courses is to create a pool of technically trained manpower readily available for recruitment to the State, Central and Private Power Utilities and allied Industries.

To equip the student with technologies, economics and policy involving energy systems and supply with Renewable Energy sources. Detail expertise will be offered in Solar energy systems involving photovoltaic as well as thermal energy systems, wind energy, biomass, Geothermal, Tidal and Wave energy, Hydrogen & Fuel cells, Small Hydro along with problems associated with grid integration of all the sources and concept of SMART Grid.

Module No.	Description
1.0	Energy Resources and Conventional Energy Systems
2.0	Applied Heat and Power Technology
3.0	Legislative and Regulatory Framework
4.0	Managerial and Interpersonal Skills
5.0	Energy Economics
6.0	Communication Skills and Technical Writing
7.0	Solar Thermal Systems
8.0	Solar Photo-Voltaic Systems
9.0	Grid Interface Technologies -I
10.0	Tariff and Commercial Aspects
11.0	Contracts Management
12.0	On Job Training / Visits to Solar Thermal/ Solar PV and other RE sites and Laboratory work
13.0	Wind Energy and Small Hydro
14.0	Bio Mass& Bio Energy and Waste to Energy
15.0	Hydrogen and Fuel Cells
16.0	Geo-thermal, Tidal and Wave Energy
17.0	Co-Generation & Hybrid Systems
18.0	Energy Storage Technologies
19.0	Appraisal & Financing of Renewable Energy Projects
20.0	Energy, Environment and Sustainable Development
21.0	Grid Interface Technologies – II
22.0	Smart Power Flow Controllers and Intelligent Automation

23.0 On Job Training/ Visits to RLDC/SCADA facility
24.0 Project Presentation

Total 52 Weeks

Note: The students have to select Topics for the Project before commencement of the second semester and complete by the end of second semester.

Venue	Duration	Date of Commencement
Faridabad	52 Weeks	01-08-2018 & 05-02-2019
Durgapur	52 Weeks	01-08-2018 & 05-02-2019
Nagpur	52 Weeks	01-08-2018 & 05-02-2019
PSTI, Bengaluru	52 Weeks	01-08-2018 & 05-02-2019

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Electrical /Electrical & Electronics /Power Engineering and related branches

08. PGDC IN SMART GRID TECHNOLOGIES

Objective

With a view to build adequate technical capacity and develop economically viable Energy sector and energy efficient systems and compliance of laudable objectives of the GoI, adequate scientific and technical manpower of all levels is a pre-requisite. The main aim of the courses is to create a pool of technically trained manpower readily available for recruitment to the State, Central and Private Power Utilities and allied Industries.

The use of communications and information technologies is likely to cause major shifts in the way energy gets delivered. The objective of this course is to introduce about the smart grid technologies, their applications and control issues covering Smart Generation, Smart Transmission and Smart Distribution.

Module No.	Description
1.0	Evolution of the Indian Power Sector
2.0	Legislative & Regulatory Framework
3.0	Managerial & Interpersonal Skills
4.0	Communication Skills and Technical Writing
5.0	Smart Grid Policy and Regulations
6.0	Introduction to Traditional Power Systems
7.0	Introduction to Smart Grids.

8.0 Smart Grid Control Elements& Internet of Things
9.0 Smart Distribution technologies
10.0 Energy storage, micro-grids, alternative grid designs,
11.0 Demand Side Management & Demand Response
12.0 Integration of Renewable Energy into theGrid -I
13.0 Transmission and Distribution Challenges in Smart Grids
14.0 On Job Training / Visits/ Simulator
15.0 Communications and Interoperability
16.0 Load Forecasting
17.0 Energy Management Systems
18.0 Smart Grid Operations
19.0 Smart Grid Controls & Smart Power Flow controllers and Intelligent Automation
20.0 Smart Grid Applications Layer
21.0 Cyber Security
22.0 Integration of Legacy Systems
23.0 E-mobility
24.0 Integration of RE Sources -II
25.0 Smart Grid as enablers for Smart Cities
26.0 International Benchmarks and Lessons learnt
27.0 Smart Grid Maturity Models
28.0 Pilot Projects/ Case Studies and Business Models for Smart Grids
29.0 Visits/ Lab./Simulation
30.0 Project Presentation

Total 52 Weeks

Note: The students have to select Topics for the Project before commencement of the second semester and complete by the end of second semester.

Venue	Duration	Date of Commencement
Faridabad	52 Weeks	01-08-2018 & 05-02-2019
Durgapur	52 Weeks	01-08-2018 & 05-02-2019
Nagpur	52 Weeks	01-08-2018 & 05-02-2019
PSTI, Bengaluru	52 Weeks	01-08-2018 & 05-02-2019

Who may attend

B.Tech. / B.E. or its equivalent with minimum 60% marks in Electrical /Electrical & Electronics /Electronics & Communication /Computer Science/ Information & Communication Technology and related branches.

09. POST DIPLOMA COURSE IN POWER PLANT ENGG.

Objective

To give the Operators/Supervisors the knowledge and skill of overall operation and maintenance of thermal Power Plants along with specific background in Distribution Engineering.

Program Profile

Module No.	Description	Duration
1.	General Introduction and Orientation	01 week
2.	Environment & Personal Safety	08 week
3.	Power Plant Description	06 weeks
4.	Power Plant Scheme Description and Tracing	02 weeks
5.	Power Plant Operation (Supervisory)	02 weeks
6.	Power Plant Chemistry	01 week
7.	Power Plant Instrumentation	01 week
8.	Power Plant Efficiency Performance	01 week
9.	Basic Welding Practice & NDT	01 week
10.	Maintenance Planning Inspection and Cost Control	06 weeks
11.	Power Plant O&M (On-Job)	10 weeks
12.	Introduction to Management	01 week
13.	Computer Application	01 week
14.	Power System Operation and Electrical Protection	01 week
15.	Power Distribution Engineering and Systems	03 weeks
16.	Distribution Metering and Techniques of loss minimization	03 week
17.	Simulator	02 week
18.	Protection	01 week
19.	Final Appraisal	01 week
	Total	**52 Weeks**

Venue	Duration	Date of Commencement
Badarpur	52 weeks	17-09-2018
Neyveli	52 Weeks	26-11-2018
Durgapur	52 Weeks	01-08-2018
Guwahati	52 weeks	
Nagpur	52 Weeks	05-03-2019
PSTI, Bengaluru	52 Weeks	

Who may attend

Diploma or equivalent in Mechanical/Electrical/Electrical & Electronics Engg.

10. POST DIPLOMA COURSE IN HYDRO POWER PLANT ENGINEERING

Objective

To prepare Engineers to become Power Station Managers in Operation and Maintenance of Hydro Power Station

Module No.	Description	Duration
1.	General Introduction & Orientation	0.5 weeks
2.	Concept of Hydro Power Stations, Site Section, Component & Layout	1.5 weeks
3.	Hydro Mechanical Equipments	1 week
4.	Hydro Turbines	1 week
5.	Hydro Generator & Excitation	1 week
6.	Transformers	1 week
7.	Switchyard & GIS	1 week
8.	Working Principles, Characteristics and Operation of Auxiliary System	1 week
9.	Hydro Lab. Practical	1 week
10.	Control & Instrumentation	1 week
11.	C & I Lab. Practical	1 week
12.	Electrical Lab. Practical	1 week
13.	Protection & Interlocks	1 week
14.	Power Plant Operation	1 week
15.	Erection, Testing and Commissioning	1 week
16.	Load Dispatch & SCADA	1 week
17.	Power Plant Safety & Acts	1 week
18.	On Job Training	2 weeks
19.	Mechanical Maintenance	1 week
20.	On Job Training in Mechanical Maintenance	1 week
21.	Electrical Maintenance	1 week
22.	On Job Training in Electrical Maintenance	1 week
23.	Hydro Power Plant Simulator	1 week
24.	Final Evaluation & Project Assessment	2 weeks
	Total	**26 Weeks**

Venue	Duration	Date of Commencement
Nangal	26 weeks	06-08-2018

Who may attend

Diploma or equivalent in Mechanical/Electrical/Electrical & Electronics Engg.

11. POST DIPLOMA COURSE IN DISTRIBUTION & SUBSTATION MANAGEMENT

Objective

The main objective of the course is to create technically trained manpower readily available for recruitment to the power companies in the area of Transmission & Distribution of electrical power.

Venue	Duration	Date of Commencement
Badarpur	26 weeks	To be announced
Durgapur	26 Weeks	To be announced
PSTI, Bengaluru	26 Weeks	To be announced

Who may attend

Diploma or equivalent in Mechanical/Electrical/Electrical & Electronics Engg.

12. POST DIPLOMA COURSE IN TRANSMISSION LINE MAINTENANCE

Objective

To provide in depth approch and technical knowledge in Live Line Maintenance Techniques.

Venue	Duration	Date of Commencement
HLTC, Bengaluru	26 weeks	To be announced

Who may attend

Diploma or equivalent in Mechanical/Electrical/Electrical & Electronics Engg.

(B). LONG TERM COURSES FOR ENGINEERS/ SUPERVISORS/ OPERATORS (17 WEEKS AND ABOVE)

01. GRADUATE ENGINEERS COURSE (POWER PLANT ENGINEERING)

Objective

To prepare the fresh Graduate Engineers to become Power Station Managers in Operation and Maintenance of Thermal Power Stations.

Program Profile

Module No.	Description	Duration
GF-1	Introduction	
GF-2	Power Plant Description	5 weeks
GF-3	Power Plant Scheme Tracing & System Discussion	2 weeks
GF-4	Power Plant Operation	3 weeks
GOJ-1	Power Plant Operation (Manual)	4 weeks
GOJ-2	Power Plant Operation (Supervisory)	4 weeks
GF-5	Performance (Formal)	1 weeks
GF-6	Safety	1 week
GF-7	Plant training (Practicals)	5 weeks
GF-8	Planning & Cost Control	1 week
GOJ-3	Maintenance (Supervisory)	8 weeks
GOJ-4	Performance (On-job)	1 week
GF-9	Chemistry	1 week
GF-10	Basic Welding	1/2 week
GF-11	Non-Destructive Testing	1/2 week
GF-12	Protection	1 week
GF-13	Introduction to Management	2 weeks
GF-14	Simulator Training	2 weeks
GF-15	Metallurgy	1 week
GF-16	Computer Applications	1 week
GF-17	Load Dispatch	1 week
GF-18	Control & Instrumentation	2 weeks
GF-19	Maintenance & Inspection	4 weeks
	Appraisal & Valedictory	1 week
	Total	**52 Weeks**

Venue	Duration	Date of Commencement
Badarpur	52 weeks	To be announced
Neyveli	52 weeks	To be announced

Guwahati	52 weeks	To be announced

Who may attend

B.E./B. Tech. or equivalent in Mechanical/Electrical/Electrical & Electronics/Power Engg.

02. CERTIFICATE COURSE ON "REGULATORY FRAMEWORK & COMMERCIAL ASPECTS" OF INDIAN POWER SECTOR

Objective

Devlop an understanding of regulatory & Policy Framework of the Indian Power Sector

Program Profile

Module No.	Description
1.	Overview of Indian Power Sector & Phase-wise Sectoral Reforms Global Regulatory Frameworks in Power Sector
2.	Electricity Act 2003, Electricity Amendment bill 2014 & Policy Guide lines
3.	Regulatory Institutions in Indian PowerSector & their Functioning
4.	Tariff determination methodology Tariff based bidding for Thermal Projects
5.	Power market Transactions
6.	Challenges & Way Forward

Venue	Duration	Date of Commencement
Faridabad	6 Months	01-09-2018

Who may attend

Power Sector Professionals through online admission

03. PGCC IN GIS & REMOTE SENSING

Objective

Awareness on different GIS & RS software and their applications in different sectors

Program Profile

This program will help in acquiring good knowledge and skill on GIS & Remote Sensing by providing the best comprehensive knowledge to professionals & technical officers from the government and private sector organizations. This

emphasize the importance and need of GIS & its application in power industry and other sectors

Module No.	Description
1.	Concept of Remote Sensing:- Elements of Remote Sensing, Satellite Remote Sensing & Sensors
2.	Fundamentals of GIS:- Basics of Geography & Cartography, Map Projections
3.	GIS Data Preparation & Analysis
4.	DIP using ERDAS Imagines :- Image Interpretation & Analysis
5.	Case Studies of GIS Applications
6.	Application GIS Development, Web based GIS & Open Source GIS

Venue	Duration	Date of Commencement
Faridabad	26 Weeks	02-04-2018
		01-08-2018
		01-12-2018

Who may attend

This Course can be attended by junior and middle level managers'/executives/ officers andsponsored candidates

Prof. (Dr.) Rajendra Kumar Pandey, Director General, NPTI during his visit to NPTI-NER, Guwahati for 2 Days National Seminar on Electrical Safety

Control & Instrumentation Lab at NPTI Nangal

5-day Residential training EDP on Solar PV Rooftop for buddy Entrepreneur at NPTI, Durgapur.

NATIONAL POWER TRAINING INSTITUTE

Newly Launched Training

एन पी टी आई
NPTI
प्रावीण्यं परोपवृत्तिश्च

Programs in Emerging Areas

Fifty Years of Service to the Power Sector

(C.) MEDIUM TERM COURSES

I. 3 Months Course on "Design, Erection and Commissioning of Solar Power Plants
II. 3 Months Course on Distribution Substation Management & Optimal Utilization of Components
III. 4 Weeks Skill Development Program on 'Renewable Energy'.

SHORT TERM COURSES (1 DAY – 4 WEEKS)

1. Battery Energy Storage & Microgrids in India
2. E-mobility Mission of India: Concepts & Implications
3. Entrepreneurship Development Program on Solar PV Rooftop
4. Accelerating Energy Efficiency in India: Initiatives & Opportunities
5. Solar Photovoltaic Training for Master Trainers of Technicians
6. Geo-Spatial Approach in Power Sector
7. Green Energy for Clean Environment
8. Smart Power Flow Controller for Smarter Grid Applications
9. Solar Photovoltaic System Design and Installation
10. Regulatory Issues in Power Sector
11. Disaster Management, Electrical Safety Procedures and Accident Prevention
12. Best Practices in Distribution Operation & Management
13. IT General for Utility Engineers
14. Smart Grids and Renewable Energy Integration
15. Cyber Security in Power Sector
16. Renewable Energy Grid Interface Technology & Regulatory Framework
17. Advanced Operational Practice of Supercritical Thermal Power Plant
18. Environment Impact Assessment and Environment Management Plan
19. Waste to Energy: Green Energy Development
20. Flexible Operation of Thermal Power Plants in India
21. Development Of Floating Solar PV System (FSPV) in India
22. Hybrid Renewable Energy System (HRES)
23. Power Quality Measurement
24. Renewable Energy Integration and Grid Operation
25. Development of Microgrid (MG) and Macrogrid(MCG) in India
26. Synchronization and Automatic Power Control
27. Dynamic Operation of Transformer and Control
28. High-Voltage Direct Current Transmission System
29. Efficient Energy Management
30. Adoption of Big Data and Analtyics - Towards Utiities Transformation

I. 3 MONTHS COURSE ON "DESIGN, ERECTION AND COMMISSIONING OF SOLAR POWER PLANTS

Objective

The Program has been designed to help the participants learn the basics of Design, Erection and Commissioning, of Solar Power Plants through lectures, experiments and Lab sessions.All concepts related to Technology, Design and Planning of Solar Power Plants along with balance of Plants shall be explained. Financial and Economic aspects shall also be covered.

Program Profile

- **Module 1**: **(1 week)**
  General: Global Energy scenario, Indian Energy Scenario, Energy Policy.
- **Module 2**: **(1 week)**
  Solar Radiation: Physics of Solar radiation, Global Beam and diffuse radiation.
  Related Lab experiments
- **Module 3:** **(2 weeks)**
  Fundamentals of Solar Cell: Solar PV basics, Solar PV Module, Solar Cell technologies, Crystalline cell, solar photovoltaic modules, Concentrators and PV Modules.
  Related lab experiments
  Field Visits/Manufacturer's works
- **Module 4:** **(1 week)**
  Balance of Solar PV Systems: Battery technology, Batteries for PV systems, DC –DC converters, Charge Controllers, DC–AC inverters, Single phase, three phase, MPPT
- **Module 5:** **(1 week)**
  Photovoltaic Power System:PV system configuration, Standalone system with DC / AC load without battery and with battery, Hybrid system, Grid connected systems, Plant Visits.
- **Module 6:** **(1 week)**
  Planning & Design : Planning Procedure, System capacity and Energy Demand, Site selection, System concept, Module selection and PV Generator, Selection and sizing of cables, Standalone System; Battery sizing, Charge Controller and Inverter, Grid Connected Systems; Selection and inverter sizing, Generator Junction Box and DC Main Switch, Safety Measures, Grid Interface, Mounting System, tender specification, Standards and certification.
- **Module 7:** **(1 Week)**
  Aspects of Owner's Engineering of Solar Power Projects : Pre-feasibility study, Feasibility study, Detailed project report , Design basis report, Technical speciation, Packaging of the contracts, Preparing of RFP, Review engineering,

Detailed engineering, Construction monitoring, Commissioning of the projects, Aspects of technical due diligence, Detailed due diligence report, Construction monitoring PG test and handover practices, O&M approach and feasibility, EPC Contracts, Suppliers and Manufacturers, warranty, guarantee, Liquidity damages, Project Cost Adequacy, Integration of contracts(Sub contracts).

- **Module 8** **(1 Week)**
  Installation and Commissioning: Mounting System Cables, Earthing, Junction Box, Commissioning Related lab experiments.
- **Module 9** **(1 Week)**
  Grid integration : Control techniques and RE integration systems (AC/DC Drives Control, Predictive direct power control of system connected into the grid, Technological aspects, Active network devices, Controls, Micro Grid), Power Grid Analysis and Studies (Electrical System Modeling, Power supply quality, Optimization and Grid Planning)
- **Module 10** **(1 Week)**
  Instrumentation & Measurements, Economical and Financial Analysis : SCADA system, sensors, data logger, Monitoring, data management, Analysis and performance, Financial Analysis, Life Cycle Costing, Environmental Analysis and Social Costs, Case Study.

Project Work:

All participants are required to submit a Project Report

Venue	Duration	Date
Alapuzzaha/Shivpuri	3 months	To be announced

Who may attend

Diploma and Graduate Engineers

II. 3 MONTHS COURSE ON 'DISTRIBUTION SUBSTATION MANAGEMENT & OPTIMAL UTILIZATION OF COMPONENTS'

Objective

The Program has been designed to help the participants learn the basics of Distribution Systems, Substation Layouts, Design, Erection and Commissioning, through lectures, experiments and Lab sessions. Financial and Economic aspects shall also be covered.

- **Module 1:** **(1 Week)**
  Introduction to Power Plants & Power Scenario: Power scenario and growth of power industry in India, Organisation / Power Sector set up in

India, Distribution reform in India, Transmission and Distribution of Electricity in India, Role of Private Participants in Transmission and Distribution, Introduction to Thermal Power Plant, Introduction to Hydro Power Station, Introduction to Gas Power Plant, Introduction to Nuclear Power Plant, Non - Conventional energy sources overview.

- **Module 2:** **(1 Week)**

Fundamentals of Electricity, Power Quality & Harmonics: Active and Reactive Power, fundamentals of load compensation, Balanced System and Unbalanced Fundamentals of load compensation, practical aspects of compensator used as voltage regulator, Conventional methods to regulate voltage, dynamic voltage restorer: principal for operation, mathematical description, Transient operation of DVR, realization of DVR voltage using voltage source inverter, maximum compensation capacity of the DVR.

- **Module 3:** **(1 Week)**

Planning & Engineering Design of Distribution Substation: Load forecasting, Philosophy of distribution planning, Acquaintance with software for distribution planning and optimization, Distribution substation types, layouts, bus bar arrangements, Civil engineering requirements, Bay design, Selection of Distribution substation Transformers, circuit breakers, etc, General rules for Electrical Installation design: Rules and statutory regulations, Installed power loads – Characteristics, Power loading of an installation, Procedure for the establishment of a new substation- Preliminary investigation, Project studies, Implementation and Commissioning, Distribution analysis , design and equipment sizing, Single feed, dual feed and dual transformer substations, Design of lighting for Sub Stations, SWYD, Control room & Switchgear Rooms, Design and Engineering of Gas Insulated Substation, Overview of Geographical information systems and Remote Sensing,Global positioning system & applications and Surveying techniques.

- **Module 4:** **(1 Week)**

Erection& Commissioning of Distribution Sub-Stations: Erection of Distribution Transformers/ Sub-stations/ Earthing stations/ GIS, Code of Practice of sub-station operators, Instrument Transformers/ CTs and PTs, Technical Visit to 220 /66/33 kV Sub-Station.

- **Module 5:** **(1 Week)**

HT & LT Switchgears, & Batteries: Types of switchgears and Selection of switchgear, Features of circuit breaker, types of quenching medium used in circuit breakers, Air Circuit Breaker, Vacuum Circuit Breaker & SF6 Circuit Breaker, MCB, MCCB, ACDB, PDB Soft Starters, DOL Starters , VFD & VVFD drives starters, Types of Batteries, Selection and sizing, sizing of Battery Chargers for Sub Stations, UPS system, sizing of UPS Batteries Selection, Sizing and performance of circuit breakers, Testing of circuit breakers, Maintenance of Switchgear.

Technical Visit to Switchgear factory.

- **Module 6: (1 Week)**
  Cables & Metering: Types of metering, viz. DT metering, feeder metering and consumer metering: setting and operation, testing and sealing, Design and construction of distribution meters, Indian electricity rules of metering; detection of theft/ tempering, unauthorized loads, investigation, legal aspects, anti-theft measures and case studies, Familiarity with hardware (CMRI) and software for meter data download, analysis and detection of meter tampering, Tariff: Types, method of fixing, penalty clauses, etc, Power Cable Design, Construction, Testing, Operation & Maintenance, LT and HT Cable jointing, Termination and Accessories, Cable fault detection and repair, Demo on Power cable jointing- End joint & Straight through joint.
- **Module 7: (1 Week)**
  Distribution Lines & PLC: Survey, Route alignment, GPS application, Line Components, Bill of Quantities, Types of Poles, foundation, Design and selection aspects of tower/ pole structures, conductors insulators and other hardwares, Conductors, Insulators, Bushings, Erection of Distribution structures, Line Stringing, Sagging, Line construction, Line Reconfiguration, Compact Lines, Aerial Bunched Cable systems, PLC elements, Memory – RAM, ROM, EPROM, I/O Point address, Digital, Analog input output signals, A/D, D/A conversion protection against signal noise, Programming of PLCs, Digging holes and pole erection, Fixing of different fittings on poles such as cross arms, insulators, stay wires etc Stringing and sagging overhead line conductors, Jointing overhead line conductors, Installation of overhead service lines.
- **Module 8: (1 Week)**
  Protective Relays, Grounding & IE Safety Regulations: Relays – Types, construction, characteristics and location in substation, IR rules, safety Regulations, Design of Earthing MAT, Fire Safety and demo
- **Module 9: (1 week)**
  Distribution System Protection: Steady State Fault Analysis (SSFA) & Tutorial on Fault Analysis, Voltage calculation at fault locations, Overvoltage protection, Principles of lightning protection, Design of the electrical installation protection system, Fault interrupting devices and non-fault interrupting devices.
- **Module 10: (1 week)**
  Distribution Automation, Distributed Generation & Integration : Customer Site Automation functions: Load control, Remote meter reading, Time-of-use rates, Feeder reconfiguration & Transformer balancing, oltage/VAR control using: Capacitors, Regulators, and LTC, Distribution system monitoring, Digital protection of substations and feeders, SCADA and Equipment for Feeder Automation & Customer Automation, Distributed Generation (DG) - Overview and technology trends; DG planning, cost implications of power quality, Cost of energy and net present value calculations and implications

on power converter design, Import/export metering, net metering, generation based incentives, accelerated depreciation, Grid connected RES systems & Power quality issues, Power quality implication, acceptable ranges of voltage and frequency, flicker, reactive power compensation, and active filtering and low voltage ride through requirements, Familiarisation with distribution software packages and latest software tools and use thereof for billing and revenue realisation, GIS mapping and consumer indexing.

- **Module 11: (1 week)**
  Simulator Training at PSTI, Bengaluru, RT lab/ HV lab/ DTS lab
- **Module 12: (1 week)**
  Rural Electrification & Smart Grids: Outsourcing of distribution activities, appointment of franchisees and self load management by villagers and Gram Panchayats, Maintenance of complaint centres and fault removal etc. by village Panchayatsetc, Separation of rural and urban supply system, Rajiv Gandhi GrameenVidyutikaranYojana, Technical Visit to Distribution Substation/ LDC, Outsourcing of distribution activities, appointment of franchisees and self load management by villagers and Gram Panchayats, Maintenance of complaint centres and fault removal etc. by village Panchayats etc., Smart Grid – Basic overview – Evaluation of Smart Grid road map in India, on-going Smart Grid activities in India, Smart Grid – Basic overview – Evaluation of Smart Grid road map in India, on-going Smart Grid activities in India, Smart Grid Distribution network and initiative,Policy and Regulation – Requirement of Smart Grid.

Venue	Duration	Date
Alapuzzaha/Shivpuri	3 months	To be announced

Who may attend

Diploma and Graduate Engineers

III. 4 WEEKS SKILL DEVELOPMENT PROGRAM ON "RENEWABLE ENERGY"

Objective

This Program is designed with the objective of developing the skills of the participants in tapping various sources of Renewable Energy including solar, wind, bio energy, Small hydro etc., its engineering design, and related equipment details.

Program Schedule

- **Module 1: Statistics on Conventional Energy Sources & Introduction to Renewable Energy Sources:**
  Basics of Electrical Engineering, Different types of Electrical Load, Wires

and Cables, Concept of Magnetism & Alternating Current, Generation, Transmission and Distribution of Electricity, Concepts and Classification of Non Conventional Energy Sources, Renewable Energy and its prospects various RE Sources, Energy Flow in Ecosystem, Physics of semiconductors and Solar cell technologies, Solar Radiation and its Measurements.

- **Module 2: Solar Energy**
  Components of a PV System: Battery, inverter and Charge controllers, Various Tracking mechanisms, Trouble Shooting of different PV system and its important tools used, Solar Thermal Systems, Installation of Solar Power Plant, Commissioning and Testing of Solar Power Plant, O & M of Solar Power Plant, Importance of Tools and its applications used in the field of Solar Technology, Techno-economic analysis of solar thermal and solar PV power plants, Grid Integration and System Operational Aspects, Jawaharlal Nehru National Solar Mission, MNRE guidelines, DPR preparation for power plants.

  Visit to a solar power plant
- **Module 3**
  Wind Energy:Basics and Physics of Wind Energy, Wind systems in India, Wind measurements, instrumentation and data characteristics, Spatial wind resource assessment tools, Grid Integration and System Operational Aspects, Generation Modeling and Control Wind Power Project, Planning & Structuring, Solar Wind Hybrid System.*Technical visit to a Wind farm*
- **Module 4**
  Other Renewable Energy Sources: Small Hydro Resources, Geothermal and Ocean Energy Resources, Bio Energy Resources, Wave and Tidal Energy Resources, RE Grid Integration and System Operational Aspects, Financial feasibility of Renewable Energy Technologies.

Venue	Duration	Date
Alapuzzaha/Shivpuri	1 month	To be announced

Who may attend

Diploma and Graduate Engineers

SHORT TERM COURSES (1 DAY - 4 WEEKS)

01. BATTERY ENERGY STORAGE & MICROGRIDS IN INDIA

Objective

To deliberate on issues regarding battery energy storage its testing, quality analysis & battery management systems and microgrids as mentioned below:

Program Profile

- **Energy Storage System Status in Global & Indian Market**
  - Current Energy Storage Systems
  - Types and features of energy storage systems **(**Classification of EES systems, Mechanical storage systems, electrochemical storage systems, Chemical energy storage, Electrical storage systems & Thermal storage systems)
- **Standards & Technical Comparisons**
  - Standards for EES
  - Technical comparison of EES technologies and On-grid solutions &off-grid solutions
- **Peak Load Management & DSM**
  - Benefits of storage and managing peak load
  - Demand side management and grid storage
- **Markets for EES**
  - Present status of applications
  - Utility use (conventional power generation, grid operation & service)
  - New trends in applications (Smart Grid, Smart Microgrid, Smart House, Electric vehicles)
- **Lead acid batteries**
  - Basics operating technology and battery performance requirement for different applications
  - Different designs of lead acid to meet the performance requirements
  - Materials & methods of manufacture of lead acid batteries
  - Effect of material used Vs different performance requirements
- **T Q A of Lead acid batteries**
  - Understand various manufacturing processes, advantages and shortcomings of these processes
  - Basic process of quality assurance
  - Key quality control & test points for acceptance or rejection
  - Symptoms for trouble and corrective measures
- **Lithium ion batteries**
  - Basic chemistry and their comparison related to performance, applications & cost
  - Manufacturing advances, Battery components, Equipment & Recycling
  - Energy Storage system Design considerations for grid applications
- **T Q A of Lithium ion batteries**
  - Safety, Standards, Testing and Certification related to ESS

- Key quality control & test points for acceptance and rejection
- Case studies of Energy storage projects in global scenario

This two-day workshop will provide participants with knowledge of Microgrids, its architecture, Battery energy storage systems of both lead acid type and Lithium ion type its testing & quality analysis.

Venue	Duration	Date
Faridabad	2 Days	14-03-2019

Who may attend

Officers of the power sector organizations, GENCO's, DISCOMs, Regulatory commissions, TRANSCOs and all power sector stakeholders.

02. E-MOBILITY MISSION OF INDIA: CONCEPTS & IMPLICATIONS

Objective

The objective of this seminar is to discuss, in a convenient environment, the opportunities and prospects of the sector, improve cooperation and business environments for sustainable transport sector, define jointly and share the vision of electric mobility. India has announced a major transformation to electric vehicles by 2030. The Government has also initiated Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME) scheme which provides incentives for purchasing electric vehicles. Substantially, the 'National Electric Mobility Mission Plan (NEMMP) 2020' which was formed in 2013 addresses issues of National energy security, vehicular pollution and growth of domestic manufacturing capabilities.

The Seminar will address the competitive landscape of electric vehicles worldwide, coupled with the vast opportunities and potential challenges of EV development in India. This Program will gather policymakers all over from India, representatives from the Indian EV industry, relevant research communities and provide them the platform for networking. You will also get updates on how Indian EV industry, research communities, policymakers and citizens together can create a sustainable mobility sector.

Program Profile

- Hybrid and Electric Vehicles for India(E-Mobility - Road, Rail, Metro & Drones)
- International Standards for EVs and their impact on EV deployment, R&D and manufacturing in India(Future Trends and Market in EV deployment)
- EV System architecture concepts
- EV Motor drives and controllers
- Storage Systems & New Battery Technologies, Potential and Forecasts
- EV Charging Systems (Smart Grid, Charging Infrastructure and V2G)
- Power grid and renewable energy resources interfacing for EV Development(ICT services for EV ecosystem)

Venue	Duration	Date
Faridabad	1 Days	07 -09-2018

Who may attend

Indian and global H /EV manufacturing

industry in the automotive hub of India automotive industry leaders, Govt. leaders, policy makers, business people, innovators, technicians, consultants, and research and development professionals, all looking for greater efficiency, safety, and low carbon vehicle.

03. ENTREPRENEURSHIP DEVELOPMENT PROGRAM ON SOLAR PV ROOFTOP

Objective

The primary objective of the proposed training program is to ensure a comprehensive understanding of the solar PV Rooftop amongst stakeholders entering this sector. The five-days training programs are particularly focused on entrepreneurs who wish to start a Solar PV Rooftop business.

Program Profile

- Provide basic information on solar PV Rooftop and raise awareness amongst entrepreneurs on the following:
  - Concept, design and components with specific focus on technical architecture of solar PV rooftop system.
  - Policy and regulatory framework for Solar PV Rooftop at the national and state level.
  - Business models followed in the solar PV Rooftop market and role of respective stakeholders.
  - Provide specific information to the entrepreneurs on Solar PV Rooftop project costing and financing, Preparation of feasibility reports.

Venue	Duration	Date
Faridabad	05 Days	18-03-2019
Durgapur	05 Days	18-03-2019
Guwahati	05 Days	18-03-2019
Nangal	05 Days	18-03-2019

Who may attend

Science Graduates, Engineering Graduates (Mechanical, Industrial, Production, Electrical and Electronics), Management Graduates (Preference will be given to Science and Engineering Graduates)

04. ACCELERATING ENERGY EFFICIENCY IN INDIA: INITIATIVES & OPPORTUNITIES

Objective

The workshop would give an opportunity to the Participants to deliberate upon the initiatives & opportunities to accelerate energy efficiency in India. Energy efficiency is one of the most important aspect to reduce demand-supply gap. Focus on energy efficiency is required as it is easiest way to implement in shorter time. Immense investment opportunities have emerged in the field of energy efficiency in various sectors including Iron and Steel, Textile, Cement, Pulp & Paper, Thermal Power Plants, Aluminium, Chemical, Street Light, Transportation, Railways, Transmission & Distribution, Residential & Commercial Buildings, Agricultural and Municipal water pumps, Ceramic, Coal and Small & Medium Enterprises (SMEs) etc. To ensure national energy security and sustainable supply the country's energy sector needs rapid

renovation. Awareness regarding efficient usage of energy in all sectors is the need of the time.

Program Profile

- **Energy Efficiency:** Potential and Benefits
- **Energy Efficiency initiatives:** Targets, Strategies and Engagement
- **Energy Efficiency in Transport Sector:** Potential, Saving measures & Investment
- **Energy Efficiency in Buildings Sector:** Potential, Saving measures & Investment
- **Energy Efficiency in Industrial Sector:** Potential, Saving measures & Investment
- Lighting and Appliances — Instruments, Policies, Schemes/ Programmes, Innovations
- **Energy Efficiency Finance:** Public and Private Sector Investment
- **Energy Efficiency Progress:** Examples from Developed and Emerging Economies

Venue	Duration	Date
Faridabad	02 Days	11-01-2019

Who may attend

The Workshop is Sector neutral and participation from across Industries, Transportation sector, Municipal corporations, Real estate developers, Researchers, Professionals from academic and R&D Institutions is solicited.

05. SOLAR PHOTOVOLTAIC TRAINING FOR MASTER TRAINERS OF TECHNICIANS

Objective

This program aims at training people in installation, operation and maintenance of solar PV systems. The program is useful for master trainers of technicians in Indian Technical Institutes (ITI s) and Polytechnics as well as supervising technicians working in the field. The program is useful for technician trainers in various disciplines: electrical, mechanical, civil, computer and systems.

Program Profile:

- **Classroom Topics:**
  - Introduction to Renewable energy and Photovoltaics (PV)
  - Solar Radiation Basics and Measurement
  - Solar Cells, Modules and Arrays, Basics of Electricity
  - Battery, Charge Controller and Inverter Basics
  - Solar PV Systems Design and Components Selection
  - Balance of Systems Components
  - Plant Safety, Tools and Assembly, Plant Installation and Testing and O&M.
- **Proposed Laboratory Experiments**

  Solar Radiation Measurement, Measurement of PV module parameters, Series and Parallel connections of modules, Solar LED

Light, Inverter, Rectifier and Transformer, Measurement of Battery, Charge Controller and Inverter parameters, Testing of Standalone PV system.

- **Proposed Field Sessions**

  PV Panel Assembly, PV String Assembly, Grid connected PV Plant Assembly and Testing, PV plant Operation and Maintenance checks, Solar PV Modules/ BoS components manufacturing site visit.

Venue	Duration	Date
Faridabad	05 Days	11-06-2018
Durgapur	05 Days	11-06-2018

Who may attend

Faculty members from ITI and polytechnic colleges, Supervising Technicians having ITI or polytechnic degrees.

06. GEO-SPATIAL APPROACH IN POWER SECTOR

Objective

The objective of the workshop is to enhance the knowledge of the participants in the area of Integration of Geospatial Technologies in Power Sector, with practical strategies that energy generators, project developers and grid operators can implement to overcome obstacles posed by local planning schemes and regulations and importantly, how this can be done in an intelligent, cost-efficient and timely way.

Program Profile

- GIS based Electrical network mapping
- GIS based Consumer database indexing, Metering, Billing & Collection Efficiency
- System & Distribution Automation
- Load forecasting and load planning
- Remote Sensing application in Power Sector

Venue	Duration	Date
Faridabad	03 Days	07-12-2018

Who may attend

Engineers and Researchers from Power industry including R&D Labs, Student or Faculty interested in the area of Geospatial Integration in Generation, Transmission & Distribution.

07. GREEN ENERGY FOR CLEAN ENVIRONMENT

Objective

The main aim of the workshop would be to understand the scenario, issues and challenges, technological developments of Green Energy in India and Government initiatives and Schemes. Issues related to evacuation of Green Energy and the efforts made by the Govt. for creation of green Energy Corridor shall be highlighted.

Program Profile

- Issues and Challenges for development of Green Energy in India
- Current Technologies for Green Energy Development
- Regulatory Framework for Green Energy in India
- Green Energy Corridors

- Greening the Grid Report.

Venue	Duration	Date
Faridabad	01 Day	26-03-2019

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering and Science Graduates and Entrepreneurs.

08. SMART POWER FLOW CONTROLLER FOR SMARTER GRID APPLICATIONS

Objective

Smart Grid is an initiative to modernize the existing electric power system, which is envisioned to be integrating necessary devices for its most reliable and efficient operation. One such operation is an independent control of the active and reactive power flows in existing transmission lines with the use of a goal-oriented SMART power flow controller (SPFC) that enhances the controllability in an electric power transmission system by using functional requirements and cost-effective solutions. The direct benefit of independent control is to maximize the useful active power flow while minimizing the less desirable reactive power flow, thereby reducing losses due to the reactive power flow in a transmission line, which increases the system efficiency. A SPFC fulfills the true needs of a utility for its everyday use and they are high reliability, high efficiency, low installation and operating costs, component non-obsolescence, fast enough response for utility applications, high power density, interoperability, and easy relocation to adapt to changing power system's needs while providing the optimal power flow control capability. The participants will hear from an expert who actually designed and commissioned a few power electronics-based power flow controllers since its inception in the 1990s.

Program Profile

- Principles of active and reactive power compensation.
- Traditional power flow controllers – voltage regulating transformer, phase angle regulator, shunt inductor/capacitor, and series inductor/capacitor.
- Voltage-sourced converter (VSC) – 2 and 3 level poles
- 6, 12, 24 and 48-pulse harmonic neutralized VSCs;
- PWM VSC, VSC-based technology and its implementation, comparison of simulation and field results; Sen Transformer.

Venue	Duration	Date
Faridabad	01 Day	04-10-2018
PSTI, Bengaluru	01 Day	04-10-2018

Who may attend

Junior and Middle Level Managers/ Executives from DISCOMs/TRANSCOs/ Regulators/Consultants/ Faculty/ Researchers/P.G Students.

09. SOLAR PHOTOVOLTAIC SYSTEM DESIGN AND INSTALLATION

Objective

This program aims at training people in installation, operation and maintenance of solar PV systems. The program is useful for entrepreneurs and engineers working in the field. The program is useful for engineers in various disciplines: electrical, mechanical, civil, computer and systems.

Program Profile

- **Classroom Topics:**
  - World Energy Scenario and Indian Perspective, Renewable Energy Technologies, Role of Solar PV and policies in India, Basics of Electricity, Introduction to Instruments.
  - Introduction to Solar Radiation, Optimum orientation of Solar PV modules, Solar related measuring devices
  - Solar PV Electricity, Introduction of Solar PV Modules, Interconnections of PV Modules, Impact of environmental parameters on module performance
  - Introduction to Battery technologies, Charge controller, MPPT, Solar PV inverters
  - Types of Solar PV systems, Introduction to Solar PV system design
  - Grid Solar PV system design with DC load, Grid Solar PV system design with water pump, Example of Solar Power packs for homes/industrial applications, Example of Solar Power packs for homes/industrial applications
  - Design of Grid, Connected Solar PV systems
  - Wires and Cable sizing, Junction Boxes, Combiner Boxes, Fuses, etc.
  - Solar PV system Installation, Monitoring and Trouble Shooting, Introduction to Solar lamps, Solar Products available in the market
- **Proposed Laboratory Experiments**
  Solar Radiation Measurement, Measurement of PV module parameters, Series and Parallel connections of modules, Inverter, Rectifier and Transformer, Measurement of Battery, Charge Controller and Inverter parameters, Testing of Standalone PV system.
- **Proposed Field Sessions**
  PV Panel Assembly, PV String Assembly, Grid connected PV Plant Assembly and Testing, PV plant Operation and Maintenance checks, Solar PV Modules/ BoS components manufacturing site visit

Venue	Duration	Date
Faridabad	05 Days	08-10-2018
Durgapur	05 Days	08-10-2018
Guwahati	05 Days	08-10-2018

Who may attend

Newly recruited and working engineers & supervisors in solar PV power station (Mechanical, Electrical, Electrical& Instrumentation).

10. REGULATORY ISSUES IN POWER SECTOR

Objective

The objective of this course is to create awareness and understanding of regulatory issues in power distribution amongst the Middle level management officials in Distribution Utilities and SRECS throughout India.

Program Profile

The course will include topics that directly address regulatory approaches aimed at enhancing the financial health of the Distribution Utilities by:

- Controlling Aggregate Technical and Commercial (AT&C) Losses
- Improving efficiency
- Improving the quality and reliability etc., of customer service
- Economic, legal, and social rationale for electricity regulation
- Role of regulation under the new legislation and economic environment
- Types of regulation and making approaches
- Regulation of quality of electricity supply and services
- The role of the Middle Management executives of the utilities under independent regulatory framework.

Venue	Duration	Date
Faridabad	05 Days	17-09-2018

Who may attend

Executive Engineer, Assistant Engineer, Deputy/Accounts Officer (or) any other equivalent rank mentioned above.

11. DISASTER MANAGEMENT, ELECTRICAL SAFETY PROCEDURES AND ACCIDENT PREVENTION

Objective

The objective of this course is to build the capacity of Top and Middle Level Executives management to adopt electrically safe procedures to prevent accidents and promptly respond and take measures to tackle any disaster situation. The course will focus on the following learning objectives:

- An in-depth understanding of electrical safety procedures, and accident prevention techniques.
- Learning how to manage the situation after an accident has occurred
- Participating learning to fight the fire.
- Learning the first aid techniques to assist and help the victims of an accident.
- Preparedness required for various types of disasters (Flood, Storms, etc.)
- Learning to cope with the situation created by the various disasters.
- Learning about the role and responsibilities of utility officials in the accident prevention.

Program Profile

- Disaster and Impacts Warning Systems and Response Management and Mitigation.
  - Impact of different types of

disasters, Trigger mechanisms and wiring systems
  - Check lists and preparedness to address disasters
  - Development of an On-Site and Off-site Disaster management Plan.
  - Development of Mock Drill Format's Institutional set up for disaster
- Electrical safety procedures and Manuals
  - Indian Electricity Rules, The Safety systems & Procedures, Accident prevention methods, Safety codes
- Accident prevention techniques and Accident Reporting procedures
  - Recording and Reporting systems, Review and methods to avoid recurrence
  - Accident analysis, Technical prone to accident analysis
  - Ergonomics, Reports filling details
  - Investigation reports, Steps to avoid recurrence
- Standard earthing practices
  - Standard earthing practice, Materials towards earthing, Earthing at substation, lines, service centers, etc.,
- Power Grid Collapses
  - Role of distribution utility, Causes and remedies, Black start procedures, Restoration procedures, Islanding systems, equipment, and procedures
- Firefighting Techniques-Electrical and Oil fires
  - Firefighting norms for sub stations, Firefighting equipment's and systems, Care and operations for combating fire
- First aid practices for different emergencies
  - First aid victims under different cases – fractures, burns, electrical shock, unconsciousness, snake bite, fall from height, cuts and wounds, Artificial respiration systems, Treatment for electrical shocks, Mechanical accidents
- Case Studies based on the above topics
- Incorporation exercise based on the above topics

Venue	Duration	Date
Durgapur	05 Days	27-08-2018

Who may attend

Managing Director, CEOs, Superintending Engineer, Chief Engineer, Executive Engineer, Assistant Engineer and their Equivalent.

12. BEST PRACTICES IN DISTRIBUTION OPERATION & MANAGEMENT

Objective

The objective of this course is to introduce the Junior and Workman Level Employees of the Distribution Utilities to the role and application of equipment like Distribution Transformer, CT/PT, Capacitor, Energy Meters, cables, Surge Arresters, Switchgears and Insulators,

etc., in Distribution Business. Design, selection, specifications of Distribution Equipment's; Testing & Quality control, Erection & Commissioning of Distribution equipment's;Operation & maintenance, Corrective & Preventive Maintenance, failure analysis etc., Learning about pre implementation issues, Implementation issues, and post implementation issues.

Program Profile

- **Distribution Transformer:** Types of Transformers and functions, Specification and Selection of DTs, Design and Performance Characteristics, Testing, Quality Control, Erection and Commissioning, Operation and Maintenance.
- **Instrument Transformers:** Design of CVTs (Capacitor Voltage Transformers), IVTs (Inductive Voltage Transformers), CTs, Insulation design, Quality concepts, Quality checks, Tests, Erection and Commissioning, Failure analysis.
- **Insulators:** Types of Insulators, Components, Testing's (Mechanical, Electrical, Thermal and Other tests), Insulator Selection, Handling Installations and Trouble Shootings
- **Surge Arresters:** Concepts of Metal oxide Arresters, Polymer arresters, Zinc oxide arresters, Application of Surge arresters up to 420kV, Testing aspects, Arresters for transmission line protection, Pollution behavioral aspects of metal oxide arresters.
- **Electrical Cables:** Manufacturing process, Design of Conductors, Insulations, Armouring, Outer Sheeting, Quality, Cable laying and Installation, Electrical Stress, Generalized Installation.
- **Capacitors:** Reactive power control, Reactive power management, Definition and origin of low power factors, Types of power factors, Effect of harmonics. Installation of APFC panel, Testing and Quality control, VAR support and power factor correction.
- **Switch Gears and Control-Gears**
- **Energy Meter:** Metering Applications and Key Features, Installation Audits Requirements Field Testing Requirement, Growing meters technology, Revenue Protection, Regulatory requirements, Remote meter readings, prepayment technology, Load managements
- **Latest trends in Distribution Equipment and International Practices.**
- **Field Visit -** Sub Station Visit.

Venue	Duration	Date
Badarpur	05 Days	09-07-2018
Guwahati	05 Days	09-07-2018
PSTI, Bengaluru	05 Days	09-07-2018
Nagpur	05 Days	09-07-2018

Who may attend

Junior Engineer, Workmen, Technicians.

13. IT GENERAL FOR UTILITY ENGINEERS

Objective

The objective of this course is to build the capacity of the Utility Personnel

to improve their performance by the enhancement and communication of knowledge concerning the development of IT-based services, the management of IT resources, and the use, impact, and economics of IT with managerial, organizational, and society implications.

Program Profile

- Introduction to Computer, Internet, networking, Email, Hardware Etc,
- Elements of Word, Excel, PowerPoint or similar packages
- Customer Care Services
- Management Information System
- E-Governance including advantages/Applicability of IT to present distribution system including Success Stories / Case Studies, Security / Access Rights
- Data Center Operation and Maintenance

Venue	Duration	Date
Faridabad	01 Day	17-08-2018

Who may attend

Chairman/MD, Director, Chief Engineer, Chief Accounts Officer, Superintendent Engineer, Executive Engineer, Assistant Engineer, Deputy/Accounts Officer (or) any other equivalent rank mentioned above.

14. SMART GRIDS AND RENEWABLE ENERGY INTEGRATION

Objective

The Objective of the workshop is to enhance the knowledge of the participants in the area of the "Smart Grid and Renewable Energy Integration", developing practical strategies that energy generators, project developers and grid operators can implement to overcome obstacles posed by local planning schemes and regulations, in an intelligent, cost-efficient and timely way.

Program Profile

- Importance of emerging role of Smart Grids for future Power Systems
- Differences between Traditional Grids and Smart Grids
- Grid Integration and Renewable energy storage, integration and prediction.
- Grid integration challenges and prospective solutions
- The role of Smart Grid in Integrating Renewable Energy
- Comprehensive overview of Smart Grid Pilot Projects

Venue	Duration	Date
Faridabad	01 Day	25-10-2018

Who may attend

Engineers/ Managers / Researchers from power industry including R&D Labs, Student or Faculty interested in the area of RE integration in Smart grids.

15. CYBER SECURITY IN POWER SECTOR

Objective

The aim of this workshop is providing critical inputs to generation companies, transmission companies, distribution companies and system operators to protect their infrastructure from cyber-

attacks, evaluate the risks and proactively initiate actions for safeguarding from damages.

Program Profile

- Evolution of cyber threats
- Cyber security key challenges covering: Appreciation of threat itself, Challenges in the discovery of the threat, identifying the perpetrator or the source of the threat, determining the appropriate response, Lack of international legal framework.
- Cyber security objectives: Confidentiality, Integrity, Availability
- Cyber security requirements : Identification, Authentication, Authorization, Trust, Access Control, Privacy
- Components of cybersecurity strategy: Prevention, Detection, Response, Recovery
- Five step methodology: Selection of use cases with cyber security considerations, Risk assessment methodology, Development of security architecture, High level security requirements, Assessment of smart grid standards
- Privacy and smart grid
- Research and development themes: Device level, Cryptography and key management, Systems level, networking issues

Venue	Duration	Date
Faridabad	01 Day	01-02-2019

Who may attend

Power Sector Professionals involved in Information security of the Power Sector, researchers, professionals from academic and R&D Institutions.

16. RENEWABLE ENERGY GRID INTERFACE TECHNOLOGY & REGULATORY FRAMEWORK

Objective

The objective of the program is to understand the characteristics of Renewable Energy generation including fundamentals, applications, commercial aspects, Grid Interface challenges and regulatory provisions of different Renewable Energy Technologies i.e. Wind, Solar, Small Hydro and Bio-Energy, including the Regulatory Framework.

Program Profile

- Basics of RE Technologies, Manufacturing Capacity and R & D status
- Government Initiatives & support for RE Generation Installations
- Key Challenges for Implementation of RE with Case Studies
- RE Grid Integration challenges & possible measures
- Grid Integration system & Power Grid Analysis and studies
- Technological aspects of power electronic system connected to Grid
- Active Network devices, control and FACTS technology related to RE Grid Interface
- Regulatory Infrastructure for RE generation in India
- Challenges in RE Regulatory

provisions with Conventional Generation

Venue	Duration	Date
Faridabad	02 Days	27-09-2018

Who may attend

Power Sector Professionals from Industry, Institutions, R&D Centers, Manufacturing firms, Consultants, Developers and all Engineering& Science graduates.

17. ADVANCED OPERATIONAL PRACTICE OF SUPERCRITICAL THERMAL POWER PLANT

Objective

The objective of this course is to familiarize the Plant operation and dynamic control at elevated pressure requires lots of attention and monitoring control. To develop the concept flexible operation of boiler at higher pressure. Operational dynamics during the critical points creates challenges in operation, requires lots of expertise and training for smooth operation. Executives handling and operating power plant requires lots of training to avoid tripping of plant.

Program Profile

- Flexible condition and operation practices
- Pre-checks of plants equipment's
- Plant Operation and unit stabilization
- Critical parameter monitoring
- Data Analogy and unit equipment health monitoring
- Emergencies and critical operation conditions in plant.

Venue	Duration	Date
Faridabad	02 Day	15-11-2018
Nevyeli	02 Day	15-11-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

18. ENVIRONMENT IMPACT ASSESSMENT AND ENVIRONMENT MANAGEMENT PLAN

Objective

Green energy concept mitigates various environment norms and condition for power plant. For development of new power plant requires study of Environment impact assessment of the project and presenting for getting Environment clearance for power plant. Basic ground study of various elements of Environment impact assessment and Environment management plan leads to develop the projects at faster rate.

Program Profile

- Detailing of Environment Impact Assessment
- Detailing of Rehabilitation and Resettlement as per project need
- Development of Environment Management Plan
- Detailing of Project for Environment Clearance.

- Project case studies

Venue	Duration	Date
Faridabad	02 Days	11-02-2019

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers, Science Graduates.

19. WASTE TO ENERGY: GREEN ENERGY DEVELOPMENT

Objective

Due to fast urbanization at a faster rate various small town converted in to big town and population is increasing day by day. By increase of population per capita waste generation is increasing day by day and requires lots of attention for managing the waste. Energy generation from waste is an option for managing solid waste in cities. By generating energy from waste is not only reducing waste volume but also development clean environment.

Program Profile

- Waste characteristics analysis
- Waste generation analysis
- Waste to energy : Technology selection
- Environment norms for plant
- Commercial aspect and tariff structure of waste to energy
- Case studies of waste to energy plant.

Venue	Duration	Date
Faridabad	02 Days	21-10-2018
Guwahati	02 Days	21-10-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

20. FLEXIBLE OPERATION OF THERMAL POWER PLANTS IN INDIA

Objective

Operation of thermal power plant is always a challenge and its requires lot of expertise for developing hand on training for developing expertise in the same. As long as unit sizes are change it's require lot of attention for understanding the need of flexible operation of thermal power plant.

Program Profile

- Operational dynamics of thermal power plants
- Design & Operational challenges in thermal power plants
- Fuel characteristics viability for flexible operation in India
- Plant load variability for sustainability of flexible operation
- Recent advancement for flexible operation in supercritical and ultra-supercritical plants.

Venue	Duration	Date
Badarpur	03 Days	16-10-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

21. DEVELOPMENT OF FLOATING SOLAR PV SYSTEM (FSPV) IN INDIA

Objective

Solar power installations primarily ground mounted and solar roof mounted are increasing in number in India. This includes ground mounted/ roof mounted solar primarily. floating Solar PV plants also offer a huge opportunity, due to huge availability of water.

Program Profile

- Concept note and design documentation for FSPV
- Constraints and challenges in FSPV system
- Layout and materials integration plan
- Challenges in erection and commissioning, Testing
- Integration and water saving potential of FSPV System

Venue	Duration	Date
Faridabad	01 Day	21-12-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

22. HYBRID RENEWABLE ENERGY SYSTEM (HRES)

Objective

With the advent of Renewable Energy in a big way Hybrid systemsare required for reliable and economical energy.

Program Profile

- Integral components of Hybrid renewable energy system and its configuration
- Optimization modeling of hybrid renewable energy system
- Sustainability and reliability of HRES
- Economic energy storage solution of HRES
- Cost economics of HRES
- Constructional and operation challenges of HRES system

Venue	Duration	Date
Faridabad	02 Days	12-05-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

23. POWER QUALITY MEASUREMENT

Objective

Power quality and reliability with respect to modern grid a big challenge and its requires lot of engineering challenge as well as research. Integration of different energy resources with the new

grid is required power quality monitoring and measurement. Some of the highlights are given below.

Program Profile

- Importance of Power Quality
- Index parameter of power quality measurements
- Gaps and technological development in Power Quality
- Potential step and sustainable solution for Power Quality Measurement
- Challenges and advancement in Power Quality measurement solutions.

Venue	Duration	Date
PSTI, Bengaluru	03 Days	13-06-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

24. RENEWABLE ENERGY INTEGRATION AND GRID OPERATION

Objective

More of the renewable energy integrated with the system requires lots of engineering challenge and thus requires lots of training for power professional to manage the project at the site. For improving the grid reliability and smooth operation grid integration concept has to evolve and develop.

Program Profile

- Reliability analysis of Indian power system for renewable energy integration in 2022.
- Potential analysis of Power Quality Monitoring and assessment
- Challenges in RES and Grid Operation.
- Optimization and energy harvesting for modern grid.
- Optimal generation for grid operation and management.

Venue	Duration	Date
Nangal	03 Days	11-07-2018
Durgapur	03 Days	11-07-2018
Nagpur	03 Days	11-07-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

25. DEVELOPMENT OF MICROGRID (MG) AND MACROGRID(MCG) IN INDIA

Objective

Small architecture of electrical network developing in India and taking the shape of Macrogrid and Microgrid. Development of Microgrid requires lots of attention for equipment selection, integration, system studies and smart control & monitoring system.

Program Profile

- Concept note and detailing of Microgrid and Macrogrid in India
- Architecture and modeling of Microgrid and Macrogrid

- Uncertainty and modeling challenges in MG,MCG
- Optimal solution and recent development of MG,MCG
- Challenges in implementation of MG and MCG
- MG, MCG development for Rural India and Potential

Venue	Duration	Date
HLTC, Bengaluru	03 Days	22-08-2018
Nagpur	03 Days	22-08-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

26. SYNCHRONIZATION AND AUTOMATIC POWER CONTROL

Objective

Grid synchronization and unit stabilization is always a change during the power plant operation. Person operating power system should have adequate hand on Training for managing the power plant and requiring lots of expertise to avoid unnecessary tripping of power plants.

Program Profile

- Automatic synchronizer circuits
- Putting into operation and parameterization of the automation unit
- Synchronization in test mode
- Synchronization to the real power grid
- Response of the automation unit to faulty programming
- Automatic power factor control
- Parameterization of the automatic cos-phi controller
- Cos-phi control of the synchronous generator
- Cos-phi control of the power grid
- Response of power controller to change in control variable and disturbance variable
- Power controller sensitivity and direction of action

Venue	Duration	Date
PSTI, Bengaluru	02 Days	13-09-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

27. DYNAMIC OPERATION OF TRANSFORMER AND CONTROL

Objective

Transformer loading pattern is changing day by day and its requires lots of care of transformer during the operation. Dynamic operation of transformer leads to big challenges for utility and requires lots of attention on the same. Some of the major outlines of the same are given below.

Program Profile

- Detection and disconnection of transformer for internal faults

- Detection of peak inrush currents (RUSH) without disconnection
- Faulty tripping due to incorrectly sized transformers
- Selection of tripping characteristics with differential currents
- Setting the parameters of a time over current relay taking the
- Detection of operating values for symmetrical and asymmetrical faults
- False tripping of the protective device during the transformer's switch-on response Transformer switch-on response in terms of protection

Venue	Duration	Date
PSTI, Bengaluru	02 Days	25-10-2018
Nagpur	02 Days	25-10-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

28. HIGH-VOLTAGE DIRECT CURRENT TRANSMISSION SYSTEM

Objective

HVDC is a highly efficient alternative for transmitting large amounts of electricity over long distances and for special purpose applications. As a key enabler in the future energy system based on renewable, **HVDC** is truly shaping the grid of the future some of the outlines of course are given below.

Program Profile

- Sustainable energy transmission for efficiency and reliability
- Provision of reactive power and flow of active power (STATCOM).
- Manual and automatic synchronization with the electric power grid.
- Control of HVDC reactive power with modification to the flow power.
- Individual control of reactive power for both converter stations.

Venue	Duration	Date
PSTI, Bengaluru	02 Days	14-01-2019

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment manufacturers, Researchers, Engineering, Managers.

29. EFFICIENT ENERGY MANAGEMENT

Objective

This program analysis of the power supply grid and connected consumers (loads) is necessary for effective use of the involved measurement techniques.

Program Profile

- Three-phase consumers with star and delta connections (R, L, C, RL, RC and RLC loads)
- Measurement with active and reactive energy meters: for symmetric and asymmetric RL loads in the event of a phase failure.
- In the event of over-compensation (RC load) for active loads in the

event of energy-flow reversal

- Determination of the first and second power maxima.
- Determination of the power maximum in the event of an asymmetric load.

Venue	Duration	Date
Faridabad	01 Day	09-11-2018

Who may attend

Professionals from Power Sector, Engineers, Academicians, Equipment Manufacturers, Researchers, Engineering, Managers.

30. ADOPTION OF BIG DATA AND ANALTYICS - TOWARDS UTIITIES TRANSFORMATION

A large amount of structured and unstructured data is being generated every day from smart meters and the automated metering infrastructure, load dispatch centres, maintenance practices in power plants, transmission and distribution infrastructure. This real-time data if handled properly could give us actionable insights and lead us to transformation of utilities by optimising the expenses and giving reliable and quality power at affordable cost. There are a plethora of benefits offered by Big data analytics but at the same time there are anumber of apprehensions in the mind of the organizations who want to start the Big datajourney.

This workshop would be centered on the capabilities of the Micro modular servers that are anideal solution for creating cluster with hundreds or thousands of data/compute nodes. Theworkshop will focus on demonstrating how a combination of micro modular server andHadoop (Big data platform) can offer a solution for utilities right from generation toconsumption and how Big data analytics can help in transforming the utilities to Utility 2.0 andbeyond.

Focused Areas

- Current Challenges for Utilities
- BIG Data for Utilities transformation
- Demo on the platform – show case of business issue demonstration
- Leverage power of open source for utilities
- Role of NPTI Centre of Excellence

Venue	Duration	Date
Faridabad	03 Days	11-02-2019

Who may attend

Senior Management Utilities Professionals / DISCOMs - MD, Director –IT, RAPDRP Head, LoadDispatch Centre (SLDC/RLDC/NLDC), Finance, Data Centre / Disaster Recovery program Headfrom Utilities. Power sector Professionals managing the IT setup of Utilities, Process Owners,Researchers and Professionals from academic and R&D institutions.

Participants Residential Solar PV Installer Suryamitra Program at NPTI, Durgapur

Participants of Program for Green Energy For Clean Environment held at NPTI CO, Faridabad

(D). MEDIUM-TERM COURSES (5 WEEKS TO 16 WEEKS) FOR ENGINEERS/ SUPERVISORS/ OPERATORS

01. LIVE LINE MAINTENANCE TECHNIQUES (LLMT), USING HOT STICK METHOD (HSM)

Learning the Hot Stick Method of training is a basic necessity to execute works Live on Transmission Lines & Switchyard. The course covers the overall features of Hot Line Techniques including awareness about Hot Line Washing, Insulator testing, Switchyard Maintenance, etc. It is intended to enhance the competence level of the participants to handle the maintenance both on transmission lines and Switchyard using Hot Stick Methods. The training programme offers direct benefit to the organizations involved in maintenance of transmission lines/ Switchyards by reducing the number and duration of shutdowns as well.

Objective

- To Provide in-depth approach and technical know-how in live line maintenance
- To highlight the importance of maintenance of HV and EHV Power Transmission lines using Hot Stick Method.
- To give an introduction to Bare Hand Method of Live Line Maintenance

Program Profile

- General Principles of LLMT.
- Introduction to maintenance of Power lines using Hot Stick Method.
- Practical oriented Operation covering various tower configurations.
- Sefety aspects and Regulatory requirements.
- Study Tours to Certain Important substations and transmission line locations.
- Hands on training on commercial lines of various configurations up to 220 kv.
- Field testing of insulators - use of analogue and digital methods, demo on the use of Punctured Insulators - use of analogue and digital methods, demo on the use of Punctured Insulator Detector (PID) test kit.
- Introduction to maintenance using Bare Hand Method of Live Line Maintenance and switchyard maintenance using LLMT.

Venue	Duration	Date of Course
HLTC, Bengaluru	11 Weeks	09-04-2018 30-07-2018 03-12-2018

Who may attend

Foreman, Lineman, Asst. Linemen, Supervisors, Junior Engineers, Asst. Engineers, etc. actively involved in Line Maintenance activities having physical fitness. It is preferred that one of the nominees from Executive cadre.

02. LIVE LINE MAINTENANCE TECHNIQUES (LLMT) USING BARE HAND METHOD (BHM) ON 400KV LINES

The fast growing HT/EHT/UHT Transmission lines and the rapid addition of 400 KV lines in the country, has made it imperative to upgrade the Live Line Maintenance Technology. The training program offers direct benefit to the organizations involved in maintenance of transmission lines by reducing the number and duration of shutdown. learning the Bare Hand Techniques in essential in order to exploit the fill potential of LLMT and it can increase the scope of Maintenance activities.

Objective

- To provide in-depth approach and technical know-how in Live Line Maintenance Techniques.
- To highlight the importance of Operation and Maintenance of HV and EHV Power Transmission Lines using Bare Hand Techniques

Program Profile

- Brief revision on LLMT using HSM
- Introduction to maintenance of Power Lines using Bare Hand Techniques
- Additional Safety aspects and requirements
- Practical Oriented Operation Covering various tower configurations
- Hands-on training on 400 kv commercial lines of various configurations.
- Field training on testing of Insulators
- Introduction to switchyard maintenance using LLMT
- Study Tours to certain important substations and transmission line locations, if time permits. Major time will be devoted to impart training in the field on 400kv transmission lines as well as on commercial lines of POWERGRID Corporation of India dealing with practical aspects.

Venue	Duration	Date
HLTC Bengaluru	5 weeks	29-10-2018

Who may attend:

Foreman, Linemen, Asst. Linemen, Supervisors Junior Engineers, Asst Engineers etc. actively involved in Line Maintenance activities having physical fitness. It is prefered that one of the nominee be in the rank of Executive cadre. The candidates should have already been trained in Live Line Maintenance Techniques using Hot Stick Method.

03. POST GRADUATE CERTIFICATE COURSE IN POWER PLANT ENGINEERING

Objective

Post Graduate Certificate Course in Thermal Power Plant Engineering for the candidate willing to make a career in the Power Industry. This course is designed for fresh and practicing Graduate Engineers.

Program Profile

- General Introduction: - Concept of Modern Thermal Power Plant, Location /Site Selection, Plant layout & Power Plant Safety.
- Constructional details and basic principles of large pulverized fuel Boiler and auxiliaries.
- Construction and working principles of Turbine and auxiliaries.
- Various types of Valves and Pumps.
- Construction and working principles of Alternators and Excitation Systems, Transformers, Motors, Switchgears, Power Supply System and Switchyard.
- Tariff Calculation.
- Tariff Based Bidding , Concept of UMPPs
- Fuel Handling Plant, Ash Handling System and Cooling Water System.
- Water Sources and treatment.
- Operation, control and supervision of Boiler, Turbine and Alternator.
- Instrumentation & Control (including DAS & DDC) and Protection system.
- Power Plant Maintenance practices.
- Scheme Tracing/ Plant Visits.
- Simulator Training

Venue	Duration	Date
Faridabad	12 Weeks	To be announced

Who may attend

B.Tech., B.E. (Mech.), Electrical, Electronics, Control & Instrumentation and Power Engineering.

16 weeks Costomized Institutional Training Program for MPPGCL ETs at NPTI (WR), Nagpur

04. CERTIFICATE COURSE FOR HYDRO POWER PLANT ENGINEERS AND SUPERVISORS

Objective

To prepare Engineers and supervisors to work in Operation and Maintenance of Hydro Power Stations.

Program Profile

- Safety &First aid, General Introduction of Hydro Power Plant
- Power plant familiarization of Hydro Power Plant Engineering
- Construction details of Hydro Power Plant components: Generators, Turbine, Valves, Excitation system, Governing System etc.
- Switchgears, protection in HE station
- Power Plant Operation and function of Load dispatch centre
- Maintenance of Hydro Power Plant Equipment
- Hydro Power Plant Simulator Training
- Plant Operational Training at Hydro Power Plant(On-job)
- Plant maintenance Training at Hydro Power Plant (On-job)
- Final assessment & Evaluation

Venue	Duration	Date
Nangal	12 weeks	23-04-2018

Who may attend

Newly recruited Engineers and supervisors those posted in hydro power stations (Mechanical, Electrical & Instrumentation)

05. SPECIALIZED TRAINING FOR HYDRO POWER PLANT WORKING ENGINEERS AND SUPERVISORS

Objective

To enhance knowledge & skill of working Engineers & Supervisors in O&M of Hydro Power Station

Program Profile

- Concept of modern hydro power station, site selection, Components, layout
- Hydraulic system, reservoir, storage capacity, dams and Barrages, intake, surge tank, power tunnels/ channel, fore Bay and penstocks, pressure shaft, surge shaft, tail race and tail race tunnel/channel, protection against water hammer And negative pressure in penstocks and suction head, Dewating of water conductor systems
- O&M of Hydro Power Plant components; Generator, Turbine, Valve, Excitation system, Governing systems etc.
- Hydro Power Plant Simulator Training
- Plant visits at Hydro Power Plant sites

Venue	Duration	Date
Nangal	6 weeks	04-06-2018

Who may attend

Working Engineers and Supervisors in hydro power station (Mechanical, Electrical & Instrumentation.

(E). SHORT-TERM COURSES FOR ENGINEERS / SUPERVISORS / OPERATORS (1 DAY TO 4 WEEKS)

01. SPECIALIZED TRAINING PROGRAMME ON HYDRO POWER PLANT ENGINEERINNG

Objective

To prepared Engineers to become Power Station Managers in Operation and Maintenance of Hydro Power Stations.

Program Profile

- Class room session
- Concept of modern hydro power plant
- Site selection, components and layout
- Description of Hydro Power plant components & Operational aspects.
- Plant visits at Hydro Power Plant sites
- Hydro Power Plant Simulator

Venue	Duration	Date
Nangal	3 weeks	28-05-2018

Who may attend

Newly recruited and working engineers & supervisors in hydro power station (Mechanical, Electrical & Instrumentation).

02. SMART TRANSMISSION & DISTRIBUTION SYSTEM FOR GRADUATE ENGINEERS

Objectives

To familiarize power engineers in the area of Smart Grid & its application.

Programe Profile

It consist of various parameters of smart

A Classroom Training Session is in Progress

grid implementation such as economy, design technology options, reliability,qulity & pay-back period.It includes various policies for advanced metering infrastructure (AMI) and AMI projects in India.

Outline

- Requirements for AMI infrastructures
- Working of Advanced Metering Infrastructure (AMI)
- Metering Demand
- Meter Data Management Systems (MDMS)
- Virtual and Aggregated Net Metering
- Response (DR), including virtual power plants (VPPs)
- Monitoring (WAMS) using PMU/PDCs

Venue	Duration	Date
Nagpur	1 week	16-04-2018
PSTI Bengaluru	1 week	

Who may attend

Engineers, Technicians & personal working in Transmission & distribution utilities.

03. POWER SYSTEM COMMUNICATION SCADA & EMS

Objectives

To familiarise power engineers with the architecture, functions and advantages of SCADA & EMS

Outline

- Data Acquisition System
- Supervisory Control
- Communication- VSAT, Microwave, Optical Fibre
- Communication networks & protocols
- SCADA in Transmission and Distribution
- EMS Hardware: Control Centre
- EMS Software: SCADA & Database
- EMS Software: Generation applications
- EMS Software: Networking applications
- Field Visits

Venue	Duration	Date
PSTI Bengaluru	1 week	09-04-2018 17-12-2018

Who may attend

Engineers from State Electricity Boards, Power Utilities/ Corporations, R & D organizations and Academic institutions.

04. SUBSTATION PLANNING & ENGINEERING

Objective

To familiarize participants with the planning layout, design & engineering of Substation and selection of Substation equipment.

Outline

- Planning of substation & Preparation of Project Report
- Layout of Substation, Choice of Switching Schemes and Bus Bar/ Bay Design
- Selection of Substation Main Equipment

- Design Cosideration of Substation Equipment and Earthing
- Electrical Clearances and pre-commissioning Inspection
- Over Voltages & Selection of Surge Arrestors
- Engineering of Protection System for Substation
- Cost estimates of Sub-Station and Case Study
- Measurement of Soil Resistivity
- RPC System
- Metering in Sub-Station
- Sub-station Automation
- Case Study
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	02-04-2018 07-01-2019

Who may attend

Engineers from State Electricity Boards, Power Utilities/ Corporations, R & D organizations, Academic institutions

05. ENERGY EFFICIENCY MANAGEMENT IN POWER SYSTEM

Objective

To acquaint with the existing and emerging technologies in the area of energy efficiency and energy management

Program Profile

- Salient features of power generation, transmission and distribution system equipments and their functioning and monitoring.
- Measurement of performance parameters and energy efficiency calculations.
- Energy efficient technologies.
- Demand side management.
- Investment decisions for enhancement of energy efficiency.

Venue	Duration	Date
Durgapur	3 days	05-11-2018

Who may attend

Engineers working in the area generation, transmission and distribution.

06. AWARENESS PROGRAMME FOR EXECUTIVE IN HOT LINE ACTIVITIES

Objective

The course is meant for spreading awareness about the live Line Maintenance Techniques (LLMT) amongst executives involved in EHV Line Maintenance in general and intended to highlight the scope of LLMT and Its potential extension to EHV switchyards in particular.

Program Profile

- Introduction to Hot Line Tools, Activities & Maintenance
- Live participation in maintenance operation on 66KV, 220 KV Commercial lines.
- Live insulator Testing methods
- Video and Film shows on Hot Stick Method and Bare Hand Technique
- Introduction to Hot Line Washing (Wet & Dry)
- Extension of LLMT activities to switchyard

Venue	Duration	Date
HLTC Bengaluru	1 week	04-06-2018 24-09-2018 28-01-2019

Who may attend

Executives in the rank of Junior Engineer and above who are not trained in Hot line Activities.

07. VALVE AND PUMP MAINTENANCE

Objective

To acquaint the trainees with correct and modern methods of operation and maintenance of valves and pumps so that at the end of the course the trainees will be able to undertake maintenance of valves and pumps in dependently with confidence

Program Profile

- Description of different types of valves, their construction, operation and applications
- Correct use to tools, Dismantling
- Identifying the types of valves
- Replacement of worn out or damaged parts
- Description of different types of pumps, their construction, operation and applications.
- Single stage and multi stage centrifugal pump
- Maintenance of BFP & CEP
- Trouble Shooting

Venue	Duration	Date
Badarpur	1 week	26-11-2018
Durgapur	1 week	18-06-2018

Who may attend

Engineers from SEBs/Power Utilities/ corporations with 2-3 years of experience in relevant field of power station

08. GAS TURBINE & CCPP REFRESHER COURSE

Objective

To familiarise the Engineers with Gas Turbine and Combined Cycle Power Plants and their role in the Indian Power Scenario, fuel options, efficient operation.

Program Profile

- Philosophy of Gas Turbine and Combined Cycle power Plant
- Fuel Options
- Waste Heat Recovery Boiler
- Steam Turbine and associated auxilaries
- Operational aspects and efficiency
- Visit to modern Combined Cycle Power Plant.
- Case Studies

Venue	Duration	Date
Badarpur	1 week	16-04-2018
Neyveli	1 week	04-02-2019

Who may attend

Engineers working in Gas Turbine & Combined Cycle Power Plants in the field of design, erection, commissioning and operation & maintenance.

09. PUMPS OPERATION, MAINTENANCE AND PERFORMANCE MONITORING

Objective

To acquaint the participants with the various aspects of pumps and the associated problems in their operation and maintenance

Program Profile

- Different types of pumps, their application & selection criteria for Power Station.
- Theory & working principles of different type of Pumps.
- Design & selection aspects and construction of boiler feed pump.
- CW Pumps (Centrifugal & Propeller)
- Special aspects of positive displacement Pumps.
- Components material selection for pumps installation & commissioning.
- Operation & trouble shooting.
- Maintenance Aspects
- Pump Characteristics on series/ parallel operation.
- Performance assessments techniques & Monitoring Case Studies

Venue	Duration	Date
Badarpur	1 week	03-12-2018
Neyveli	1 week	02-04-2018
Nagpur	3 days	27-11-2018

Who may attend

Engineers of Power Plant & Industry.

10. VALVE ACTUATORS MAINTENANCE

Objective

To train the participants on Actuators and associated gears and maintenance aspects.

Program Profile

- Different types of actuators and their selection.
- Description and working of: Electric, Pneumatic and Hydraulic Actuators.
- Maintenance of seals.
- Gears and Levers
- Setting and checking of actuators.
- Limit switches and torque switches.
- Actuator control equipment including position control.
- Feed back circuits and thyristors.

Venue	Duration	Date
Neyveli	3 days	02-05-2018

Who may attend

Power station technicians working in electrical and C&I maintenance sections.

11. THERMAL POWER STATION OPERATION

Objective

To provide the participants the in-depth knowledge of various operational aspects of thermal power station so that correct, efficient and safe operation is ensured.

Program Profile

- Power Station Schemes
- Boiler and Turbine controls.
- Excitation systems and AVR
- Cold, Warm and hot start-ups.
- Steam Turbine governing and protection systems, trouble

shooting.
- Boiler, Turbine, Generator and Integrated unit operation under normal and emergency conditions.
- Unit shut down procedures and safety.
- Performance monitoring.
- Duties and responsibilities of operation engineers.

Venue	Duration	Date
Badarpur	1 week	07-05-2018
Neyveli	1 week	14-05-2018
Durgapur	1 week	04-06-2018
Nagpur	4 days	04-09-2018

Who may attend

Engineers having 1-2 years experience in Thermal Power Stations.

12. POWER PLANT AUTO CONTROL

Objective

To enable participants to line up, test, commission and maintain all control loops along with their hardware components.

Program Profile

- Auto Control Action Theory (PID) and their relevance to process reaction rate and dead time.
- Auto loops in Power Station with their built up action Hardware and Software.
- Selection and application of final control elements such as control valves, dampers, etc.
- Feed forward and feed back signal selections.
- Actuators: electric, Pneumatic and Hydraulic; their relative merits and applications.
- Thyristor drives and thyristor controlled drives.
- Limit switches and Torque switches
- Coordinated control concept and applications.
- Microprocessor based programmable logic controllers (PLC's) Distributed Digital Control System concepts.
- Periodical tuning Techniques and tuning requirements.
- Commissioning of Automatic control loops with individual action, tuning techniques on Automatic Control Simulators.

Venue	Duration	Date
Neyveli	1 week	08-10-2018

Who may attend

Engineers with 2-3 years experience in the relevant field.

13. VALVE MAINTENANCE

Objective

To acquaint the trainees with correct and modern methods of operation & maintenance of valves so that at the end of the course the trainees will be able to undertake maintenance of valves independently with confidence.

Program Profile

- Description of different types of valves, their construction, operation and applications.
- Correct use of tools, Dismantling.
- Identifying the types of valves.
- Replacement of worn-out or damaged parts.
- Use of correct lapping discs.
- Overhaul and maintenance of cover joints and bonnet joints.

- Correct method of cutting & jointing.
- Overhauling of valves.
- Hydraulic testing of valves.

Venue	Duration	Date
Neyveli	1 week	18-06-2018
Nagpur	3 days	To be announced

Who may attend

The course is for technicians with 2-3 years experience in relevant field of Power Station.

14. FANS & AIR HEATERS

Objective

To acquaint the participants with the various types of fans and airheaters used in thermal power stations and their selection and design engineering aspects.

Program Profile

- Fans: Different types of fans and their applications, engineering, design and selection criteria.
- Construction details and components description for different types of fans.
- Fan operation techniques in series/ parallel conditions.
- Fan characteristics and performance monitoring.
- Condition Monitoring: Vibration measurement, rubbing sound measurement and other diagnostic studies.
- Fan maintenance procedures and practices.
- Air Heater: Different types, their design construction and selection aspects etc.
- Alignment & Adjustment Techniques of seals
- Lubrication
- Problems-Case studies and analysis.

Venue	Duration	Date
Neyveli	3 days	28-05-2018

Who may attend

Engineers with 1-2 years of experience in O&M of Boilers/ auxilliaries in a Thermal Power Station/Industry.

15. SWITCHGEAR & TRANS-FORMER MAINTENANCE

Objective

To enable the participants to carry out maintenance of different types of circuit breakers and transformers by using correct procedures and tools. After completion of the course the participants will be able to take up the repairs and routine maintenance of switchgears and transformers independently.

Program Profile

- Introduction to circuit breakers, Arc formation, Arc quenching etc.
- Constructional details of different types and makes of circuit breakers like air circuit breakers, minimum oil circuit breakers, air blast circuit breakers, vacuum circuit breakers, SF6 breakers etc.
- Insulating oil, identification, sampling and testing procedures.
- Oil Testing details for Crackle Testing, Break down testing, Oil filtration.
- Reading of schemes, control and wiring diagrams.
- Transformer construction details.
- Transformer maintenance procedures.

Venue	Duration	Date
Durgapur	1 week	23-04-2018
PSTI, Bengaluru	1 week	04-03-2019

Who may attend

This course is meant for maintenance technicians with 2-3 years experience in Switchgear and Transformer maintenance.

16. SWITCHYARD MAINTENANCE TECHNIQUES USING LLMT

The fast growing EHT/UHT Transmission lines and the rapid addition of 400 KV lines in the country, has made it imperative to upgrade the Live Line Maintenance Technology. The training program offers direct benefit to the organizations involved in maintenance of sub-stations by reducing the number and duration of shutdown. Learning these Techniques is essential in order to exploit the full potential of LLMT and it can increase the scope of Maintenance activities.

Objective

- Appreciation on maintenance of switchyard equipments.
- To highlight the importance of Live Line maintenance Technology in EHV switchyard.
- Give an introduction to Live Line washing techniques of EHV Substation Insulators.

Program Profile

- Electrical Safety & Safe Clearances.
- General practice of switchyard maintenance
- Practice on climbing towers and switchyard structure, precaution at different working positions
- Use of different hardware used in the maintenance works (Ropes, earthing equipment, load handing equipments, etc.)
- Hands on demo/training on live switchyard location using Hot Stick Method (HSM) and using Bare Hand Methods (BHM).
- Use of thermo vision Camera for detection of Hot Spots in Maintenance Works.
- Introduction to live line washing of insulators, video films on LLMT

Venue	Duration	Date
HLTC, Bengaluru	4 weeks	25-02-2019

Who may attend

Foremen, Linemen, Asstt Linemen, Supervisors, Junior Engineers, asst. Engineers etc. actively involved in EHV Substation Maintenance activities having physical fitness. It is preferred that one of the nominee be from Executive cadre.

17. ELECTRICAL SAFETY AND INSPECTION OF ELECTRICAL INSTALLATIONS UNDER IE RULES

Objective

To familiarize about the mandatory procedures before energizing any electrical equipment form LV to EHV level by consumers/suppliers and the role of electrical inspectors in enforcing IE Rules 1956.

Outline

- Overview & Safety Requirements of IE Rules
- Design of Electrical installations
- Earthing System Design
- Circuit Breakers and Protective Relays
- Basic Protection Schemes of Power Equipments
- Inspection procedures for statutory inspection by Electrical inspectors
- Check Point of Electrical inspection
- Pre-commissioning tests of Transformers, Switchgears and Power Cables
- First Aid and Fire Fighting Practices in Industrial Installations/ Substations
- Field Visit

Venue	Duration	Date
PSTI	1 week	07-05-2018
Bengaluru	3 days	26-11-2018
Guwahati	1 week	20-08-2018
	3 days	10-12-2018

Who may attend

Industrial/other consumers of electricity, electrical inspectors/ assisting officers, utility representatives, manufacturers/ dealers of electrical equip-ment/power cables/LT/HT switchgear.

18. REACTIVE POWER MANAGEMENT

Objectives

To familiarize the engineers with the design and performance aspects of power system elements so as to have an understanding of reactive power management and control

Outline

- Reactive Power Control Equipment
- Performance of Reactive Power Equipment under different Operating Conditions
- Comparative Study of AVRs, OLTCs, Power Capacitors, Shunt Reactors, SVCs, TCRs
- Automatic Power Factor Controllers
- Harmonics – cause, measurement and mitigation
- Thyristor Based and Voltage Source Convertor Based FACTS Controllers

Venue	Duration	Date
PSTI Bengaluru	1 week	25-03-2019

Who may attend

Transmission and Distribution Operating Personnel, Engineers involved in Planning, Design and Testing of Power Control Equipment and Engineers in charge of electrical maintenance.

19. DISTRIBUTION METERING

Objective

To Provide comprehensive view of Distribution metering, rules & regulations and rationalization required.

Outline

- Energy meters: Types & Construction
- Testing, setting and calibration
- Failure analysis
- IE Rules
- Theft/Tampering and Inspection of consumer premises
- Distribution meter reading
- Rationalization and computerization
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	
Guwahati	1 week	14-05-2018

Who may attend

Engineers from state Electricity Boards/ Power utilities/ Distribution System, R & D organizations, Academic institutions, manufacturers, contractors, consultants etc.

20. OPERATION & MAINTENANCE (O&M) OF TRANSFORMERS AND CIRCUIT BREAKERS

Objective

To give insight into various aspects on operation, maintenance, testing and condition monitoring of Transformers and Circuit breakers

Outline

- Transformers-Construction, connections,
- Tap Changing Mechanism & Parallel Operation
- Selection and sizing of Transformer, Transformer Neutral Earthing and Substation
- Earthing Practices
- Testing of Transformers
- Condition Monitoring of Transformers
- Protection of Transformers
- Maintenance of Transformers
- Application and Design of Air and Gas Insulated Circuit Breakers
- Selection, Sizing, Performance Analysis of Circuit Breakers
- O&M of Circuit Breakers,
- Testing and Condition Monitoring of Circuit Breakers,
- Testing of Circuit Breakers
- Field visits

Venue	Duration	Date
Badarpur	1 week	08-10-2018
PSTI Bengaluru	1 week	23-04-2018

Who may attend

Engineers from state Electricity Boards, Power Utilities/ Corporations, R & D organizations, Academic institutions.

21. POWER QUALITY AND HARMONICS MITIGATION AND REACTIVE POWER MANAGEMENT

Objective

To familiarise the power engineer regarding the power quality and causes, consequences and cures to harmonics in electrical systems/ industry.

Program Profile

- Introduction to power quality
- Power Quality – impacts, manifestations
- Consequences of power quality
- Power quality measurement
- Harmonics – sources, measurements and mitigation
- Filters – Active and passive filters, selection of filters
- Statcoms, custom power devices, Static Var Compensators
- Reactive Power Control Equipment
- Performance of Reactive Power Equipment under different Operating Conditions

- Comparative Study of AVRs, OLTCs, Power Capacitors, Shunt Reactors, SVCs, TCRs, Statcoms etc, in reactive power management.
- Automatic Power factor controllers
- Harmonics – causes, measurement and mitigation
- Thyristor based and voltage source converter based FACTS Controllers
- Case Studies
- Technical Visits

Venue	Duration	Date
PSTI	1 week	21-05-2018
Bengaluru		21-01-2019

Who may attend

Practicing Engineers/ supervisors of industry, Utilities and faculty of educational institutions involved in maintenance of power quality and mitigation of harmonics.

22. BOILER OPERATION/ BOILER & ITS AUXILIARIES OPERATION

Objective

To acquaint the participants with the safe and efficient operation of boiler and its auxiliaries.

Program Profile

- Working principle, function and classification of Boilers
- Description of Boiler components
- Function and working principle of Boilers Auxiliaries-Mills & Feeders, fan, Air pre heaters, soot blowers, etc.

Venue	Duration	Date
Badarpur	1 week	29-10-2018
Neyveli	1 week	23-07-2018
		24-09-2018
Durgapur	1 week	26-11-2018
Nagpur	4 days	08-05-2018

Who may attend

Chemists with minimum five years experience in TPS Laboratory.

23. OPERATION & MAINTENANCE (O&M) HT/LT SWITCHGEAR

Objective

The main objective of the course is to update the Knowledge of plant engineers in the field of switch gear and its erection testing/ commissioning, operation and maintenance.

Program Profile

- Types of Switchgears.
- Selection Criteria for Switchgears.
- Design & Construction Data.
- Erection/Commissioning.
- Check-list and precautions.
- Fault finding.
- Testing procedures & Equipments.
- Case Studies.

Venue	Duration	Date
NPTI-NER Guwahati	1 week	03-09-2018

Who may attend

Engineers with 2-3 years experience in switchgear electrical installation of industry.

24. CONTROL & INSTRUMENTATION (C&I) IN POWER STATION (FOR OPERATION ENGINEERS)

Objective

To acquaint the engineers working in Non- C&I areas with working principles of various instruments, the process parameters and with the relative process/ plant behavior.

Program Profile

- General description of Power Station Instrumentation and control and their layout details.
- Basic Principles and working principles of instruments.
- Temperature Measurement.
- Flow Measurement
- Introduction to On-Line Analytical Instrument
- Introduction to Turbovisory Instruments & Vibration Analysis
- Discussion on Protection & Interlocks.
- Introduction to Automatic Control Loops.

Venue	Duration	Date
Badarpur	1 week	24-09-2018
Nagpur	3 days	19-06-2018
Neyveli	1 week	18-02-2019

Who may attend

Engineers with 2-3 years experience in the relevant field.

Valedictory Ceremony of Sudan Batch at NPTI CO, Faridabad

25. POWER SYSTEM STUDIES

Objective

To familiarize the power system engineers with modeling of power system components and the power system studies software for power flow studies, short circuit studies, stability studies and relay coordination

Outline

- Load flow: Modeling and case studies
- Short circuit studies; Z bus matrix and symmetrical components
- Balanced and unbalanced faults and case studies
- Over current relay coordination-case studies
- Stability studies-modeling case studies
- Laboratory: use of MiPower software
- Field visits

Venue	Duration	Date
PSTI Bengaluru	3 days	26-09-2018

Who may attend

Transmission and distribution engineers involved in system design, planning, protection and control, engineers from R & D organizations and Academic institution

26. POWER SYSTEM OPERATION

Objective

To familiarize the load dispatch engineers to sector set up, system control, market operations, logistics and new technologies. To develop the system operators for secure operation of power system in India in the scenario of continuous load growth, system expansion and multiplying number of organizations.

Outline

Power Sector Overview, Policy, Legal framework

- Power sector overview in India, Hydro station layout, startup, shutdown and emergency response, Electricity Act 2003, Legal Framework, policies & regulations and organizational set up in India, EHV AC Substations: Layout, Equipment & Bus arrangements, Gas Insulated Sub-Station, Ring Fencing of System Operation & Independent functioning of Load Despatch Centres, Thermal station Layout, startup, shut down and emergency response. New technologies, Smart Grid Operation Prevailing practices and future roadmap, CEA Grid connectivity standards, Grid Standards Regulations Metering Standards.

Power System Operation and Control

- Frequency control-Primary, Secondary and Tertiary Control and RGMO; Reactive power management, Indian Electricity Grid Code, Protection of Generators and transformers, Protection of Bus Bars and Distribution Systems, Impedance protection fault loops, impedance relay characteristics, reactance, impedance, admittance (MHO), quadrilateral, special characteristics, faults affecting impedance relay performance, Fault resistance, load encroachment,

remove in feed, mutual induction; System protection schemes, Protection for abnormal frequency and voltages.

Power Market Operation

- Power system reliability, TTC/ATC Computations and Ancillary Services in Indian Electricity Market, POC Tariff Philosophy and Transmission Losses, Open Access Regulations and Long Term & Medium Term Access and connectivity with Regional and States Perspectives, Metering and settlement principles, Power Exchange Operations, Regional energy, UI and reactive energy account, Terms and condition of Tariff Regulations, Renewable energy in Power Sector, Integration of Renewable, REC Mechanism & RRF.

Power System Logistics-SCADA, Communications & It, Energy Management System

- State estimation techniques, Energy Management Systems: Load Forecasting and Network Study, UI and Congestion Charge Regulations, SCADA/EMS-Overview, Architecture, Main Components; Communication Systems overview, VSAT, Microwave, Optical Fiber etc., Hardware Protocols, Configuration, Communication network, System software-Displays, Database; Disturbance data collection modules/HDR retrieval & playback, HIM, Trends, Alarms, Health check, trouble shooting.

Venue	Duration	Date
PSTI Bengaluru	2 weeks	14-05-2018 03-09-2018 11-03-2019

Who may attend

System operation Engineers from State Electricity utilities/ Distribution Systems, R&D organizations, Academic institutions etc.

Methodology

Lectures, demo sessions, field visits

27. POWER SYSTEM PROTECTION

Objective

To familiarize the power engineers with protection in power systems

Outline

- Fault analysis
- Relay input sources
- Protection of Generators & motors
- Protection of bus bars
- Protection of Transformers
- Protection of EHV lines
- Protection of Distribution systems
- Protection against over voltages
- Insulation Co-ordination
- Testing of Surge Arrestors
- Testing & commissioning of relays
- Present trends in protection
- Case studies
- Laboratory Sessios
- Tutorials
- Field visits

Venue	Duration	Date
PSTI Bengaluru	2 week	04-06-2018 11-02-2019

Who may attend

Engineers from state Electricity Boards, Power Utilities/ Corporations, R & D organizations, Academic institutions

28. ADVANCED POWER SYSTEM PROTECTION

Objective

To familiarize the power engineers on the advanced aspects of protection in power systems

Outline

- Overview of System Protection
- Numerical Relays
- Protection of Transformers, Transmission lines, Bus bars, Feeders
- Integrated Protection, Control & Monitoring
- Intelligent electronic Devices in system protection
- Software architecture and performance characteristics of numerical relays
- Wide Area Protection
- Video Sessions
- Field Visits

Venue	Duration	Date
PSTI	1 week	11-06-2018
Bengaluru		18-02-2019

Who may attend

Engineers from State Electricity Boards, Power Utilities/ Corporations, R & D organizations, Academic institutions

29. STEAM TURBINE & ITS AUX. OPERATION

Objective

To familiarize the participants with operational procedure of turbine and its associated auxiliaries under various conditions of operation.

Program Profile

- Constructional features of turbine, turbine auxiliaries like condenser, pumps, feed heaters etc.
- Operational procedure of associated systems such as condensate, feed, lube oil, CW etc. On line cleaning system , Operation of boiler feed pump and condensate extraction pump.
- Interlock protection of turbine and its auxiliaries.
- Starting and shutting down of turbine.
- Operation of turbine under normal and emergency conditions.
- Emergencies & case studies.

Venue	Duration	Date
Badarpur	1 week	14-01-2019
Neyveli	1 week	04-06-2018
Durgapur	1 week	07-01-2019
Nagpur	4 days	05-03-2019

Who may attend

Engineers with 3-4 years experience in Thermal Power Station.

30. ELECTROSTATIC PRECIPITATOR

Objective

To impart knowledge on installation, maintenance and operation of ESPs and their control circuits.

Program Profile

- General discussion on pollution.
- Types of ESP & selection aspects.
- Principles of construction & functioning of ESP.
- Corona and Ionization.
- Description of Dust precipitator.

- Installation, Operation and Maintenance of ESP.
- Mechanical Parts Maintenance.
- Electrical control circuit maintenance and checking. Efficiency and performance of ESPs and Factors affecting the performance.

Venue	Duration	Date
Neyveli	3 days	20-06-2018

Who may attend

Engineers engaged in operation and maintenance of power station & process industry with 2-3 years experience.

31. BOILER FIRING SYSTEM & EQUIPMENTS

Objective

To acquaint the participants with the various types of Boiler firing systems, problems faced, rectification and trouble shooting.

Program Profile

- Combustion of Fuels.
- Different firing systems – tangential firing, wall firing and down shot firing- their requirements and applications Igniters
- Oil atomizers
- Coal Burners
- Burner Management system
- Direct Ignition of Pulverized Coal
- Operation Procedure, Maintenance
- Trouble Shooting in firing system components.

Venue	Duration	Date
Neyveli	1 week	09-07-2018

Who may attend

Operation & Maintenance engineers of Thermal Power Station with 4-5 years experience.

'Urja Sarathi' Linemen Program of BSES at New Delhi from 27 Nov. to 1 Dec. 2017

32. ELECTRICAL PROTECTION SYSTEM

Objective

To enhance the knowledge of in-service engineers involved in commissioning & maintenance of protective relays both in Generation and Transmission wings.

Program Profile

- Requirement of protective system (criteria for selection & choice of protection scheme).
- Instrument transformers, system grounding, fault parameters, fault analysis, sequential recorder & disturbance recorders.
- Generator protection (This topic will be covered in derail with special reference to 210 MW & 500 MW generators).
- Transformers and Bus-bar protection schemes, Transmission line protection (principles of relaying and commissioning).

Venue	Duration	Date
Badarpur	1 week	07-01-2019
Neyveli	4 days	18-07-2018
Durgapur	1 week	21-05-2018
Nagpur	4 days	28-01-2019

Who may attend

In-service Power Station Engineers having 2-3 years experience in the relevant field.

33. DISTRIBUTION ENGINEERING

Objective

To familiarize the participants with various aspects of electricity distribution engineering

Programe Profile

Growth, Development, Equipment, Standards specification, construction Practice and guidelines, design aspects-testing and installation of Distribution equipment-Layout of Sub-Station.

Venue	Duration	Date
NPTI-NER Guwahati	1 week	04-03-2019

Who may attend

Engineers engaged in distribution of electricity with 2-3 years experience.

34. OPERATION & MAINTENANCE (O&M) OF DISTRIBUTION SYSTEM

Objective

To familiarize power engineers & technicians in the area of power distribution Systems.

Programe Profile

Performance improvement of power distribution systems depends on various factors like voltage rating, area location, method of power distribution, loading, design and technology of various hardwares. It also depends on methods of monitoring, metering and maintenance technique used.

Description

- Various issues & challenges in Distributions management systems
- Types of poles, various hardwares & fittings
- Methods of Monitoring.
- Metering
- Maintenance of distribution line

- Advanced Distribution Operations
- Integration with R-APDRP systems
- Advanced Metering Infrastructure (AMI)
- Better coordination between transmission and distribution (Grid Discipline)
- Types of faults & causes
- Maintenance of distribution lines
- Methods of reduction of AT & C losses

Venue	Duration	Date
Nagpur	1 week	08-10-2018

Who may attend

Engineers, Technicians & personal working in Transmission & distribution utilities.

35. RELIABILITY CENTERED MAINTENANCE OF ROTARY EQUIPMENTS

Objective

The objective of the course is to give a thorough knowledge to the Engineers working in the Maintenance Section, regarding the recent maintenance techniques and systems of the rotary equipments. This special and modern development of maintenance system will also enhance the conventional maintenance skill of the engineers.

Program Profile

- Introduction to Reliability Centered Maintenance (RCM); steps and benefits of RCM.
- First approach to RCM-Functions, failure and significant of Rotary equipments, consequences of failure as per RCM.
- Reliability centered maintenance tasks for Rotary equipments.
- Condition monitoring of rotary equipments-as an important role for RCM.
- Description of condition monitoring equipments.
- Description of vibration and signature analysis.
- RCM recording systems and documentation system.
- Preventive maintenance techniques of pumps, fans, turbine and other rotary equipments.
- Overhauling job schedule for the above mentioned equipments.
- Trouble shooting and failure diagnosis of rotary equipments.
- Bearings, Lubrication and tribology.
- Balancing and Alignment of rotary equipments.

Venue	Duration	Date
Badarpur	1 week	23-07-2018
Durgapur	3 days	03-12-2018

Who may attend

Experienced Engineers working in Power Plants, Utility Industries and other Industries.

36. OPERATION & MAINTENANCE (O&M) OF COAL MILLS & FEEDERS

Objective

To acquaint the participants with the latest Milling system, their operation and maintenance techniques so as to reduce the outage in the Thermal Power Stations.

Program Profile

- Description of different types of Mills & Milling system components such as Raw Coal Feeders, Classifiers and variators etc. their design, construction and selection aspects.
- Description of Coal grinding Principles and grinding elements.
- Frequently eroding parts and eroding characteristics analysis.
- Proper maintenance techniques and replacement procedures of eroding parts.
- Driving Mechanisms and their maintenance procedures.
- Lubrication and sealing system.
- Maintenance planning for Milling system.
- Routine Maintenance and Breakdown Maintenance of Milling Plant.
- Overhauling of Milling Plant.
- Preventive measures for stopping erosion of Pulverized Coal lines bends and their proper alignment.

Venue	Duration	Date
Neyveli	3 days	28-11-2018

Who may attend

Engineers with 2-3 years experience in Operation and Maintenance in a Power Station.

37. EMERGING TECHNOLOGIES IN REDUCING AT&C LOSSES

Objective

To assist participants to modify their approach and to treat their feeders as profit centers.

Program Profile

- IE rules
- Source of technical Losses and methods of reducing them
- Application of new Technologies (HVDS&ABC) in distribution System
- Source of commercial Losses
- Setting and checking of actuators and methods of reducing them.
- Legal empowerment to control the menace of power theft
- AT&C Losses
- Role of consumer associationand franchises to control commercial losses.

Venue	Duration	Date
Durgapur	3 days	14-05-2018

Who may attend

Engineers from SEBs/ Power Utilities/ corporations with 2-3 years of experience

38. FLEXIBLE AC TRANSMISSION SYSTEM (FACTS)

Objective

To familiarize power engineers about the Flexible AC Transmission devices and their applications in power systems with respect to active/reactive power control.

Outline

- Introduction
- Thyristor Controlled FACTS devices - Static Var Compensator (SVC), Thyristor Controlled Series Capacitor (TCSC), Thyristor Controlled Reactor (TCR)
- Phase Shifting Transformer
- Voltage Source Converter based FACTS controllers- STATCOM, Static

Synchronous Series Compensator (SSSC), Unified Power Flow Controller (UPFC)
- HVDC
- Applications of FACTS
- Tutorials
- Technical Visits

Venue	Duration	Date
Badarpur	1 week	26-11-2018
PSTI Bengaluru	1 week	18-06-2018

Who may attend

Practicing engineers involved in planning, design and implementation of FACTS devices.

39. POWER SYSTEM RELIABILITY

Objective

Ensuring reliable and secure power system is the primary responsibility of every system operators. Recent gird incidents of July 2012 have underlined the importance of grid security. As the grid grows in size and complexity, gird security has to be enhanced because the consequences of failure of a large grid are severe.

Therefore capacity building in reliability is essential for all personnel in the power sector. This is recognized as the next step forward in the continued capability enhancement of system operators and an area of specific specialization. Hence, a specialist learning and development programmed and certification exam has been planned on "Power System Reliability". This is a specialist level system operator course on "Power System Reliability" for basic level certified system operators having a minimum of 10 years experience in power sector.

Outline

- **Module 1:** Basics of Power System
  - Basic Concepts
  - EHV AC Transmission and HDVC Transmission
  - Power System Planning
- **Module 2:** Power System Operation and Control
  - System Operation Concepts
  - Load Frequency Control
  - Voltage Control
  - Power System Restoration
- **Module 3:** Power System Analysis
  - Steady State Power Flow Analysis
  - Fault Analysis
  - Power System Stability
  - Power System Protection

Venue	Duration	Date
PSTI Bengaluru	1 week	02-07-2018

Who may attend

Middle level engineers from State Electricity Boards, Power Utilities/ Corporations, R&D Organisations, Academic Institutions etc.

40. LOW VOLTAGE POWER DISTRIBUTION SYSTEM DESIGN

Objective

To familiarise the participants from the low voltage power distribution system design including selection and sizing of cables, switchgear, control panels and safety requirements

Outline

- General Rules of Electrical Installation and Design,
- Protection against Electric Shocks
- L V Distribution and Earthing

schemes,
- Cables, Bus ways & Switchboards,
- L V Swithgear: functions & selection, Understanding the wiring system and Cable sizing,
- Understanding MV/LV installation design by ID Spec Large software & Understanding the LV installation calculation by My Ecodial L Software, Earthing, Electrical safety and acciedent
- LV Distribution Systems Protection & Technical Visits
- Distribution Systems Earthing Electrical Safety and Accident Prevention Techniques

Venue	Duration	Date
PSTI Bengaluru	3 days	07-08-2018

Who may attend

The medium voltage and low voltage distribution engineers working in utilities and industries and responsible for design installation and maintenance of distribution system.

41. GENERATOR & AUXILLIARIES INCLUDING EXCITATION SYSTEM

Objective

To develop proper understanding of the generator and auxiliaries along with the various excitation systems and their characteristics.

Program Profile

- Generator construction and design aspects.
- Generator characteristics, synchronization & parallel operation
- Generator protection.
- Excitation & AVR-various types and their selection aspects
- Problems faced.
- Case studies

Venue	Duration	Date
Badarpur	1 week	10-12-2018
Neyveli	1 week	03-12-2018
Durgapur	1 week	06-08-2018
Nagpur	3 days	10-07-2018

Who may attend

Engineers with 2-3 years experience in erection, commissioning operation and maintenance of generator system

42. POWER CABLES AND JOINTING TECHNIQUES

Objective

To familiarize power engineers on the mechanical considerations in the design of cables, application current carrying capacity, insulation strength electrical properties of cables.

Outline

- Design & construction of Power Cables
- Testing of cables
- Testing of cable accessories
- Demo of Cable Jointing
- Failure of cables and case studies
- Condition monitoring of power cables
- Field Visits

Venue	Duration	Date
PSTI Bengaluru	3 days	28-05-2018
PSTI Bengaluru	4 days	26-11-2018

Who may attend

Engineers from State Electricity Boards Power Utilities/ Corporations, R & D organizations, Academic institutions, Power consumers, consultants/ contractors etc.

43. HIGH VOLTAGE TESTING OF POWER SYSTEM EQUIPMENT

Objective

To give insight into all the facets of High Voltage Testing of Power system equipment

Outline

- High voltage technology
- Solid insulating media, liquid insulation media
- Gas & Vacuum Insulation
- Generation of high voltage for testing
- High voltage measurements
- High voltage testing of transformers
- Testing of Circuit Breakers
- Testing of Surge arrestors
- Testing of Insulators, Cables, Capacitors
- High Power Testing of switchgear
- Partial Discharges
- Field visits

Venue	Duration	Date
PSTI Bengaluru	3 days	11-07-2018

Who may attend

Engineers involved in procurement, installation and testing of power system equipments.

44. VIBRATIONAL ANALYSIS

Objectives

To impart expertise and to give latest information regarding differentmethods of vibration measurement, their analysis, diagnosis and recommended remedial actions

Programe Profile

- Defination and description of vibration
- Terms and Units in vibration measurement
- Characteristics of vibration
- Basic vibration modes of measurement
- Vibration cransaucers different types and selection criteria
- Selection criteria of vibration mode for measurement
- Vibration diagnostics and fault analysis
- Dynamic Balancing using portable Vibration Analysers
- Scheduling of condition monitoring and condition based maintenance

Venue	Duration	Date
Durgapur	3 days	11-06-2018

Who may attend

Engineers with atleast 5 years experience in operation and maintenance of Power Station Industry.

45. REGULATORY FRAMEWORK IN POWER SECTOR

Objective

To familiarise the participants from the low voltage power distribution system

design including selection and sizing of cables, switchgear, control panels and safety requirements

Programe Profile

- CEA Regulations-connectivity, metering, construction of electrical plant and electrical lines, Implementation of case I & case II bid route projects for generation capacity addition, drafting petitions and case studies
- Electricity Act 2003
- Legal framework, electricity policy and tariff policy
- Indian Electricity Grid Code Regulations & Grid Standards Regulations – 2010
- Energy conservation act – 2001
- Sharing of Inter State Transmission Charges and Losses Regulations – 2010 (Technical & Commercial Aspects)
- Grant of Regulatory Approval for execution of Inter State Transmission Scheme to Central Transmission Utility Regulations 2010
- Procedure, Terms and Conditions for grant of Transmission License and other related matters
- Deviation settlement mechanism – Regulations 2014
- Measures to relieve congestion in real time operation – Regulations 2014
- Regulations of power supply
- Terms and conditions of tariff regulations for 2014-19
- Connectivity, LTA & MTOA – Regulations
- Short term open access – Regulations
- Terms and conditions for recognition and issuance of REC for Renewable Energy Generation Regulations – 2015
- Renewable energy scheduling, despatch & deviation settlement – Regulations 2015

Venue	Duration	Date
PSTI Bengaluru	1 week	02-07-2018

Who may attend

System Operators and from SEBs, power utilities/corporations, PSUs, R&D Organisations, Academic Institutions.

46. POWER SYSTEM LOGISTICS

Objective

To familiarize the young engineers with the nuances of the electrical industry and the contracts involved

Outline

- Communication – VSAT, Microwave,
- Net work communication protocols,
- Data Acquisition systems,
- Supervisory controls in power systems
- Sub – station Automation
- Distribution SCADA
- DISTRIBUTION AUTOMATION
- Automation in distribution management
- Control centre hard ware
- SCADA/ EMS- software
- Control centre data base management
- EMS Software – Generation applications,
- Visit to LDC/ Subsation
- EMS Software – Net working applications
- Test

Venue	Duration	Date
PSTI Bengaluru	1 week	29-10-2018

Who may attend

Electrical graduates fresh as well as practising who require exposure regarding electrical industry and contracts, in particular in distribution system

47. NON DESTRUCTIVE TESTING & WELDING DEFECTS

Objective

Objective of the course is to create technically trained manpower and to make working Engineers aware of the various NDT procedures being adopted for inspection of welding joints & other materials.

Program Profile

- Introduction to Non Destructive Testing Procedures
- Welding defects and associated Non Destructive Testing Methods.
- Types of material defects
- Various NDT Techniques and their Applications
- Dye Penetrant Test
- Magnetic Participle Test
- Ultrasonic NDT Methods
- Ultrasonic Flaw Detectors
- Eddy Currents Non Destructive Testing
- Radiography & Test Applications
- Applicable ASTM Standards
- Various Types of weldings Defects & Preparation of Welding Procedures in various positions as per AWS

Venue	Duration	Date
Badarpur	1 Week	27-08-2018

Who may attend

Engineers/Supervisors with one or two years relevant experience may attend

Observation of Vigilance Awareness Week - 2017 address by
Sh. K. V. Chowdary, Central Vigilance Commissioner and Prof. R. K. Pandey, DG NPTI

48. THERMAL PP EFFICIENCY & PERFORMANCE MONITORING

Objective

To acquaint the trainees with the latest techniques of monitoring and testing of unit performance, analysing data and suggesting ways and means for performance improvement.

Program Profile

- Steam cycle theory and optimization.
- To identify and record the factors and data needed for monitoring efficiency and performance.
- Analysis of the performance of different systems and equipments like station heatbalance, mill performance, condenser performance, feed heaters performance, boiler efficiency, turbine efficiency etc.
- Corelation among different systems and their effect on performance.
- Application of computer for performance calculation and analysis.
- Improvement of plant availability through efficiency and performance monitoring.
- Plant on-job/practicals.

Venue	Duration	Date
Neyveli	1 week	06-08-2018
Durgapur	1 week	30-07-2018
Nagpur	3 days	05-02-2019

Who may attend

Power Station Engineers having 2-3 years experience in operation and maintenance.

49. OPERATION & MAINTENANCE (O&M) OF TRANSMISSION LINES & SUB-STATION

Objective

To update knowledge of the participants in various operational & Maintenance aspects of Transmission line & Sub-Station.

Program Profile

- Transmission and Distribution - a business mission.
- Operation Procedures and practices of Transmission line and Sub-Station.
- Equipment inspection and Selection aspects.
- Equipment Failure analysis and its maintenance.
- Maintenance of Sub-Station equipments.
- Hot line Maintenance and ERS of Transmission line.
- Routine, Preventive and breakdown Maintenance.
- Protection System and its equipment.
- Safety aspects and fire protection devices.

Venue	Duration	Date
Durgapur	1 week	25-06-2018
PSTI Bengaluru	1 week	24-12-2018

Who may attend

Engineers with minimum 2-3 years experience in O&M of Transmission and Distribution or Power Station.

50. RELAY MAINTENANCE

Objective

To make the technicians understand and identify various types of relays, their applications, maintenance and calibration requirements.

Program Profile

- Basic protection requirements.
- Basic relay terminology.
- Different types of relays.
- Fault discrimination methods.
- Relay characteristics and setting, testing etc.

Venue	Duration	Date
Neyveli	3 days	29-08-2018

Who may attend

Technicians having 2-3 years experience in the relevant field.

51. POWER PLANT CHEMISTRY FOR OPERATION ENGINEERS

Objective

To provide understanding and knowledge to the Operation Engineers on various techniques of chemical controls and their effect on-plant performance and failure. The program will help the Operation Engineers in day-to-day for decision making and also in emergencies.

Program Profile

- Corrosion/depositions in Boiler, Steam Turbine condensers and their prevention techniques.
- Acid cleaning of boiler/condensers etc.
- Unit preservation during idle time.
- Characterization of coal for the power plant.
- Optimization of combustion.

Venue	Duration	Date
Badarpur	1 week	10-09-2018
Durgapur	1 week	23-07-2018
Nagpur	4 days	22-10-2018

Who may attend

Operation Engineers with experience as Shift In-charge Engineers/ Operation Engineer.

52. BOILER TUBE FAILURE AND CASE STUDIES

Objective

To appraise the participants regarding the causes of boiler tube failure and to impart the knowledge of tube failure analysis, locating tube failure, job involvement after tube failure etc. to the Power Plant Engineers.

Program Profile

- Types of Boiler Tube Failure and their classification.
- Causes of different types of tube fails and their analysis.
- Understanding and locating tube failure by operational parameters at running condition.
- Job involvement for physically locating the tube failure at shut down condition.
- Tube failure rectification.
- Control of boiler tube failures.
- Different case studies.

Venue	Duration	Date
Durgapur	1 week	09-07-2018
Neyveli	02 days	07-06-2018

Who may attend

Engineers working in Thermal Power

Plant & other industries who deal with boiler (either operation or maintenance or both).

53. TRAINING PROGRAM ON COLD LINES

Objective

The course is meant exclusively for the personnel working on cold lines from different power utilities; spreading awareness about general line maintenance techniques on uncharged lines amongst supervisors and technicians involved in Line Maintenance. The training program has been organized with the objective of giving appreciation about EHV Lines, highlight importance of maintenance and give a brief introduction to live line maintenance techniques.

Program Profile

- Electrical Safety, First Aid and Fire fighting
- Safety precaution at different working positions
- Tower climbing practices
- Use of different hardware used in maintenance works (Ropes, earthing equipment, load handling equipment etc)
- General Practice of Maintenance work on Transmission Line.
- Introduction to Live Line Maintenance Techniques

Venue	Duration	Date
HLTC Bengaluru	4 weeks	02-07-2018

Who may attend

Supervisors in the rank of Junior Engineer and ITI qualified Technicians who had undergone their basic/Induction level course after recruitment.

54. MANAGEMENT OF ELECTRICAL CONTRACTS

Objective

To familiarize the young engineers with the nuances of the electrical industry and the contact involved.

Program Profile

- Types of Contracts.
- General & Special Conditions of Contracts
- Erection Conditions of Contracts.
- Project Managements & Execution.
- Measurement of works completion, Invoicing & Billing
- Market survey of electrical systems.
- Estimation & bidding for electrical works
- Electricity: Generation, transmission & distribution.
- Principle of operation of electrical equipment.
- Codes & practices in electrical systems.
- Indian Electricity Act, IEEE codes & ISO standards.
- Design of electrical lay outs.
- Installation of electrical equipments.
- Procedure for availing electrical supply from Electric Supply Company.
- Statuary requirements from Electrical Inspectorate to carryout Business.
- Labour act, workmen compensation acts, Insurance & Provident Fund.
- Fire Fighting & Requirement of Fire Extingusishers.
- First aid & Artificial Respiration.

Venue	Duration	Date
PSTI Bengaluru	3 days	20-08-2018

Who may attend

Electrical graduates fresh as well as practicing who require exposure regarding electrical industry and contracts, in particular in distribution system.

55. POWER SYSTEM ENERGY LOSSES

Objective

To acquaint the participants with the sources of power system losses in transmission and distribution network and possible remedies.

Program Profile

- Growth of power system in India.
- Transmission Losses.
- Distribution losses/transformer losses.
- HT metering.
- Remedial measures to minimize various system losses.
- Energy management system, Flattening of load demand, Energy auditing and reporting techniques.
- Power System Planning, economic operation, maintenance to minimize losses.
- Computer application in power system.

Venue	Duration	Date
Neyveli	1 week	03-09-2018

Who may attend

Assistant Engineers/ Executive Engineers/Superintending Engineers working in transmission & distribution.

56. ENERGY EFFICIENCY IN ELECTRICAL UTILITIES

Objective

To familiarize the engineers with the energy efficiency opportunities available in the various electrical equipments and to help them to prepare better for the BEE certified Energy Manager Exam.

Outline

- General Introduction- Electrical Systems
- Electric motor
- Compresses Air System
- HVAC & Refrigeration System
- Power quality, Harmonics, manifestation measurement, migration
- Fans & Blowers
- Pumps & Pumping System
- Cooling tower, Lighting system, Diesel Generating System
- Energy efficient technologies in Electrical Systems
- Compressed Air Systems
- Tutorials, Case Studies,Labs and Technical Visits- This complies with the syllabus of BEE's Energy manager - paper- III

Venue	Duration	Date
PSTI Bengaluru	3 days	17-09-2018

Who may attend

Engineers form State Electricity Boards, Power Utilities/ Corporations, PSUs, R & D organizations, Academic institutions, entrepreneurs and consultants/ contractors involved in energy audit and energy conservation projects.

57. ISSUES RELATED TO SUPERCRITICAL TECHNOLOGY

Objective

To familiarize the participants with super critical boilers and related issues

Program Profile

- Introduction to supercritical technology, advantages-World scenario in super critical technology.
- Arrangement of super critical boilers.
- Comparison between spiral water wall circulating and vertical tubing.
- Special alloys for super critical boilers and welding techniques.

Venue	Duration	Date
Neyveli	2 days	21-01-2019

Who may attend

Engineers working in Power Stations.

58. BURNER MANAGEMENT SYSTEM/FSSS

Objective

To build up skills and knowledge required to maintain the Burner Management System of modern boilers with solid state relay logic control components.

Program Profile

- Flame sensors; their types, selection, application and installation techniques.
- Flame scanning intelligence.
- logics and logic circuit built around solid stat relay devices for working out permissive.
- Fuel sequencing, fuel cut off and boiler trip protections.
- Logics and logic circuits for sequential start up and shut off procedures.

Venue	Duration	Date
Neyveli	3 days	12-12-2018

Who may attend

Fresh Engineers engaged in Control and Instrumentation.

59. POWER SYSTEM STUDIES & LOAD DESPATCH

Objective

To acquaint the participants with the various aspect of Pumps and the associated problems in their O&M.

Program Profile

- Growth of power system in India.
- Representation of power system components.
- Characteristics & performance of power transmission lines.
- Load flow studies and problems.
- Different types of faults and their analysis by computer methods.
- Power system protection devices.
- Power system stability
- Load Despatch and its computerization

Venue	Duration	Date
Neyveli	1 week	21-05-2018

Who may attend

Engineers of Power Sector engaged in power system and load dispatch centres.

60. BATTERY MAINTENANCE

Objective

To make the participants understand different types o storage batteries, their applications, maintenance procedures and requirements. They will also acquire the knowledge of battery testing and test equipment etc.

Program Profile

- Introduction and constructional details of batteries,
- D.C. supply system.
- Charging and discharging of batteries.
- Preparation of electrolytes.
- Battery plate assembly and dismantling practices.
- Care & maintenance of batteries.

Venue	Duration	Date
Neyveli	3 days	03-10-2018

Who may attend

Technicians working in Power Stations with 2-3 years experience

61. LARGE CAPACITY CFBC BOILERS

Objective

To familiarize the advantages of large capacity CFBC boilers

Program Profile

- Introduction to CFBC Technology Advantages, Scope, Fuel flexibity, etc.
- Description of various components of CFBC Boiler
- Environmental benefits
- Limitations, major concerns in the O&M of CFBC Boilers.
- Visit to CFBC Boilers.

Venue	Duration	Date
Neyveli	3 days	14-11-2018

Who may attend

Engineers working in Power Stations.

A Board Room Meeting with the delegation of Professionals and Industries & Academics to the First R &D Meeting of Power Sector at NPTI CO, Faridabad

62. ELECTRICAL MOTOR FOR POWER PLANT & ITS MAINTENANCE

Objective

To acquaint the trainees with the correct and modern methods of maintenance of electrical motors. At the end of the course the trainees will be able to undertake maintenance of motors with confidence.

Program Profile

- Theory of different types of motors.
- Constructional details o different types of motors.
- Terminal connections and terminal box.
- Mounting/Enclosures, insulation material used in motors.
- Stripping down 7 inspections of motors.
- Cleaning and inspection.
- Bearings used in motors.
- Assembling, testing and commissioning.
- Problems of motor-case studies.

Venue	Duration	Date
Neyveli	3 days	26-11-2018

Who may attend

Maintenance technicians with 2-3 years experience with basic knowledge of electricity upto ITI Standard.

63. ENERGY CONSERVATION AND ENERGY AUDIT (FOR GENERATION SECTOR)

Objective

To infuse the energy saving consciousness of the participants highlighting the energy losses in the power industry that are usually unnoticed in the various areas of operations and acquainting them with the energy saving methods and the benefits achieved.

Program Profile

- Potential areas in the Power Industries for energy saving.
- Energy Saving methods with typical examples and exercises for power stations.
- Ways to minimise losses in power transmission & distribution system.
- Better use of electrical energy.
- Proper storage and use of fuel.
- Waste Heat areas and their utilization.
- Co-generation techniques for energy boosting.
- Energy Management System, energy Auditing and their implementation techniques for power industries.

Venue	Duration	Date
Neyveli	1 week	04-03-2019
Guwahati	3 days	16-07-2018
Nagpur	3 days	13-11-2018
PSTI Bengaluru	1 week	04-11-2018

Who may attend

Engineers with 3-4 years experience in Thermal Power Stations.

64. OPERATION & MAINTENENCE (O&M) OF TRANSFORMER

Objective

To update the knowledge of Plant technicians in the field of Transformers and its erection, testing/Commissioning, operation and maintenance.

Program Profile

- Standaristaion and Specification of Transformers used in the Power station
- Commissioning of Transformers
- Types and Causes of Transformer failure
- Testing of Solid dielectric
- Transformer Oil-Its analysis, sampling and testing procedure
- Transformer Maintenance Practices
- Dissolved gas Analysis Techniques
- Case Studies

Venue	Duration	Date
Guwahati	1 week	04-02-2019

Who may attend

This course is meant for operation and Maintenance Technicians with 2-3 years experience in relevant field.

65. HVDC TRANSMISSION SYSTEMS

Objective

To familiarize the engineers with the HVDC technology and its importance in system operation

Program Profile

- Introduction to HVDC.
- Principles of HVDC Conversion.
- HVDC Lines.
- HVDC Sub Stations.
- Reactive Power Management in HVDC Stations.
- AC & DC harmonics and filtering.
- HVDC System operation, Insulation Coordination, Emergencies and case studies.
- HVDC System operation Control and maintenance
- Field Visits.

Venue	Duration	Date
PSTI Bengaluru	1 week	08-10-2018

Who may attend

Practicing engineers from generation, transmission, distributed systems, industrial and other consumers of electricity, electrical inspectors and electrical consultants.

66. OPERATION & MAINTENENCE (O&M) HVDC TRANSMISSION SYSTEMS

Objective

To familiarize power engineers & technicians in the area of HVAC transmission systems.

Program Profile

Performance improvement of HVAC Transmission Systems depends on various factors like voltage rating, area location, type of tower, loading, design and technology of various hardwares.It also depends on methods of monitoring and maintenance technique used.

Description

- Various issues & challenges in Transmission systems

- Types of Tower, various hardwares & fittings
- Methods of Monitoring.
- Types of faults & causes
- Thermo-scanning, etc
- Improved Transmission Monitoring (WAMS) using PMU/PDCs
- Better coordination between transmission and distribution (Grid Discipline)
- Maintenance of transmission line
- Live/hot line insulator cleaning and replacement
- FACTS devices
- Methods of reduction of AT & C losses

Venue	Duration	Date
Nagpur	1 week	24-09-2018

Who may attend

Engineers, Technicians & personal working in Transmission & distribution utilities.

67. WELDING PRACTICES

Objective

To improve the skill of the personnel engaged in the field of welding both in construction and maintenance areas.

Program Profile

- Different types of welding and their processes.
- Gas welding – techniques, equipments used, choice of flames, flux & filler metals, gas welding joints.
- Oxy-fuel Gas Cutting-Process, techniques and equipments used.
- Shielded (Coated) Metal Arc Welding (SMAW) techniques machines & equipments used, joints design, classification and proper selection of electrodes.
- High Pressure Welding-TIG welding and its techniques, power sources & equipments used.
- MIG/MAG Welding—Techniques, equipments, accessories, shielding gases, filler rods.
- Welding Techniques for ferrous and nonferrous metals.
- Welding Defects, NDT, Heat Treatments

Venue	Duration	Date
Durgapur	1 week	10-09-2018

Who may attend

Operator working in Thermal Power Station with 3-4 years experience.

68. TROUBLE SHOOTING OF STEAM TURBINE

Objective

To impart latest information about the techniques of trouble shooting of turbine and its remedial action

Program Profile

- Details of Steam Turbine, bearing and its Lubrication
- Turbine dynamics and vibration theory
- Causes of Vibration in Turbine and Case Studies
- Measurement and interpretation of vibration signatures
- Condition Monitoring and Performance Monitoring.
- Types of turbine Failure and its remedy

Venue	Duration	Date
Durgapur	3 days	10-09-2018 14-01-2019

Who may attend

Engineers from SEBs/Power Utilities/ corporations with 2-3 years of experience

69. SMALL, MINI AND MICRO HYDRO POWER GENERATION

Objective

To provide in-depth approach and technical know-how for different Hydro Power Generations

Program Profile

- General Principles & Theory
- Introduction of small, mini and hydro power generations
- Hydrology and estimation of water potential
- Basic features of hydro Turbines
- Plant visit

Venue	Duration	Date
Nangal	3 Days	03-12-2018
Durgapur	3 Days	04-12-2018

Who may attend

Engineers working in Hydro Power Plants

70. FAN & AIR HEATERS MAINTENANCE

Objective

To expose the technicians to various maintenance requirements and procedures, develop necessary skill to carry out the maintenance and the safe use of special tools and tackles.

Program Profile

- Classification of Fans and Air heaters and their applications in thermal power stations.
- Constructional details, operation and maintenance techniques of different Fans & Air Heaters.
- Causes of erosion, corrosion, vibration and their remedies. Load regulating system of Fans.
- Problems of Fan & Air heaters – Case Studies.

Venue	Duration	Date
Badarpur	1 week	04-06-2018

Who may attend

Technicians working in power station with 2-3 years experience.

71. FIRE PREVENTION, PROTECTION & SAFETY

Objective

To make the trainees aware of the causes of fire hazards in Power Station industry and the prevention/protection system necessary to be installed.

Program Profile

- Different types of fire hazards in Power Plant and Industry.
- Plant design & layout with respect to fire hazards and prevention.
- Classification of fire and various methods to combat fire.
- Fire fighting arrangement in different areas of Power Plant and Industry.
- Safety connected with fire hazards in Electrical Installations.
- Application of different safety rules in Industry.
- Management of fire fighting & First Aids.

Venue	Duration	Date
Nagpur	3 days	04-12-2018

Who may attend

Engineers and Senior Supervisor of Thermal Power Station and process industries.

72. BEARING MAINTENANCE AND SHAFT ALIGNMENT

Objective

To enable the participants to carry out maintenance of bearings and shaft alignment with modern techniques using tools and procedures correctly. After completion of course, trainees will be in a position to carry out their maintenance jobs independently.

Program Profile

- Classification of Bearings.
- Inspection of Bearings.
- Bearing materials.
- Friction and its effect on bearing performance.
- Top side gaps adjustments of sleeve/ bearings/ journal grooving on plain bearings, scrapping of journal bearings selection of bearing lubrications and their purification.
- Handling and Storage of bearings.
- Care and maintenance of plain bearings, Anti friction bearings.
- Types of coupling and their uses.

Venue	Duration	Date
Badarpur	1 week	14-05-2018
Neyveli	1 week	11-03-2019
Nagpur	4 days	11-12-2018

Who may attend

Maintenance technicians with 2-3 years experience in the relevant field

73. SWITCHGEAR MAINTENANCE

Objective

To update knowledge of plant technicians in the field of switchgear and its erection, testing/commissioning, operation and maintenance.

Program profile

- Introduction to circuit breakers, Arc formation, Arc quenching etc. Constructional details of different types and makes of circuit breakers like air circuit breakers, minimum oil circuit breakers, air blast circuit breakers, vacuum circuit breakers, SF6 breakers etc.
- Selection Criteria for switchgear.
- Design & Construction Data.
- Erection/Commissioning
- Check-list and precautions.
- Maintenance & Testing procedures & Equipments.
- Case studies.

Venue	Duration	Date
Neyveli	2 days	26-04-2018

Who may attend

This course is meant for maintenance technicians with 2-3 years experience in Switchgear maintenance

74. TRANSFORMER MAINTENANCE

Objective

To update knowledge of plant technicians in the field of Transformers and its erection, testing/commissioning, operation and maintenance

Program Profile

- Standardization & specifications of transformers used in Power Station
- Selection of transformer, erection/ commissioning
- Testing & causes Transformers failures
- Testing of solid dielectric
- Insulating oil, indentification, sampling and testing procedures.
- Transformers maintenance procedures.
- Dissolved gas analysis techniques
- Case studies.
- Drying of Transformer

Venue	Duration	Date
Neyveli	3 days	19-12-2018

Who may attend

This course is meant for maintenance technicians with 2-3 years experience in Transformer maintenance.

75. TRANSFORMERS

Objective

To acquaint the participants with various problems faced in transformer failures, prediction failure analysis with case studies.

Program Profile

- Standardization & Specifications of transformers used in Power station.
- Selection of transformer, protection & schemes of protection and testing.
- Types & causes of Transformer failures
- Testing of solid dielectric
- Testing of liquid dielectric, standards
- Predictive maintenance of failures
- Dissolved gas analysis techniques.
- Case studies on transformer breakdown
- Drying of Transformers.

Venue	Duration	Date
Neyveli	1 week	07-01-2019

Who may attend

Engineers with 3-4 years experience in the relevant field.

76. PUMP MAINTENANCE

Objective

To acquaint the trainees with correct and modern methods of operations & maintenance of pumps so that at the end of course the trainees will be able to undertake maintenance of pumps independently.

Program Profile

- Description of different types of pumps, their construction, operation and applications.
- Single stage horizontal.
- Double stage vertical, Multi stage horizontal.
- Gear pump: Description of associated parts (fixed and movable)
- To acquaint the trainees with essential maintenance procedures like: Gland packing.
- Bearing removal and inspection, coupling design.

- Clearance and renovation of wear-rings impellers.
- Correct use of tools.
- Inspection of parts for wear and tear.
- Inspection of parts for wear and tear.
- Use of measuring instruments.
- Producing a joint for replacement.

Venue	Duration	Date
Neyveli	1 week	11-02-2019
Nagpur	3 days	16-01-2019

Who may attend

Maintenance Technicians with 2-3 years experience in the relevant field.

77. OPERATION & MAINTENANCE (O&M) OF POWER & DISTRIBUTION TRANSFORMERS

Objectives

To discuss maintenance aspects of power and distribution transformers

Outline

- State of the art of Transformers
- Tests to check the adequacy of Transformers
- Insulation co-ordination of Transformers
- Earthing, Loading, Maintenance & protection of Transformers
- Failure, Failure analysis & condition monitoring of Transformers
- Condition Monitoring of Transformer Oil
- Diagnostic Monitoring by DGA with case histories
- RLA of Paper Insulation by Furan analysis
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	18-03-2019

Who may attend

Engineers involved in the Operation, Maintenance and Testing of Transformer from state Electricity Boards, Power Utilities, R & D organizations, Academic Institutions, Transformer manufactures transformer Oil processors and servicing organizations etc.

78. DATA ACQUISITION & DISTRIBUTED DIGITAL CONTROL SYSTEM IN THERMAL POWER STATION

Objective

To familiarize the power station personnel on the new technology of plant control, monitoring and management which will soon replace the old conventional system and will apply in new units.

Program Profile

- Introduction to Data Acquisition system Hardware & Software configuration.
- Introduction to Distributed Digital Control.
- Hardware & Software Configuration.
- Advantages of Distributed Control System.
- Configuration of single loop and multi loop Controller.

Venue	Duration	Date
Nagpur	3 days	02-01-2019

Who may attend

Engineers working in Power station with 3-7 years experience.

79. RENEWABLE ENERGY TECHNOLOGIES

Objectives

Renewable Energy Technologies are now fundamental to growing global effort to combat the effect of climate change. The objective of the course is to understand the domain of Renewable Energy in a relevant manner.

Outline

- Introduction to JNNSM
- Solar PV
- Solar Thermal
- Wind Power
- Bio-Mass Power
- Waste to energy

Venue	Duration	Date
Durgapur	3 Days	04-03-2019

Who may attend

Engineers with 2-3 years experience.

80. CONDITION BASED MAINTENANCE

Objective

To appraise the participants about the predictive means of maintenance for optimum and reliable equipment performance.

Program Profile

- Requirement of CBM
- Statistical techniques of trouble shooting
- Concepts of predictive and reliability based equipment monitoring.
- Condition monitoring equipments and application

Venue	Duration	Date
Durgapur	1 week	10-12-2018

Who may attend

Engineers with 2-3 years experience.

Launching of NPTI's new website by DG NPTI on 21st Feburary 2018

81. ENERGY AUDIT & DEMAND SIDE MANAGEMENT IN POWER UTILITIES

Objective

To acquaint the participants with techniques and methodologies of energy audit & Demand Side Management in Power Utilities.

Program Profile

- Energy Scenario in the country and scope of energy conservation.
- Energy Losses—An Integrated optimal strategy for reduction of T&D Losses.
- Demand forecasting techniques
- EMS & LMS and Role of Energy Managers
- DSM Techniques
- DSM Methodologies
- DSM through Loss Reduction in Primary and Secondary Distribution System.
- Need for Energy Audit and Audit Procedures.
- Energy Audit – Macro Level & Micro Level
- HT - Metering & Metering Technique.

Venue	Duration	Date
Neyveli	1 week	22-10-2018

Who may attend

Engineers with 3-4 years experience in Thermal Power Station.

82. ENVIRONMENTAL POLLUTION & POLLUTION CONTROL RELATED WITH POWER PLANTS ENGINEERING

Objective

To give concise ideas about various Pollutants in power stations and measurement & control of pollution.

Program Profile

- General description of different types of Industrial Pollution.
- Introduction to air, Water and Noise Pollution.
- Nature of Air Pollutants.
- Water quality and health.
- Role of air and Noise Pollution control in modern society.
- Pollution control theory.
- Noise & Air Pollution Measurement & Equipment, the role of waste water treatment and the removal of Toxic Pollutants.
- Sewage and sludge treatment.
- Effects of pollutants in the Acquatic environment.
- Evaluation Pollution Effects on Plant Productivity.
- Legislation and the control of Air, Noise and Water Pollution.

Venue	Duration	Date
Badarpur	1 week	09-07-2018
Nagpur	3 days	12-02-2019

Who may attend

Engineers/Chemists working in process Industry/Power Stations.

हिंदी पखवाड़ा का आयोजन

83. POWER PLANT INSTRUMENTATION

Objective

To acquaint the Power Plant Professionals with theory and working principles of different types of instruments used in the power plant and their applications.

Program Profile

- General Description of Power Plant Instrumentation and control and their layout details
- Working principles of Instruments
- Temperature/Flow/Level and Pressure measurement
- Control valves and actuators.
- Programmable Logic Controllers (PLC), their applications
- Introduction to Distributed digital control system Hardware and Software configuration

Venue	Duration	Date
Durgapur	1 week	17-12-2018
Nagpur	4 days	07-01-2019

Who may attend

Engineers from SEBs/Power Utilities/ corporations with 2-3 years of experience

84. MANAGEMENT DEVELOPMENT PROGRAM

Objective

To provide basic know-how of management

Program profile

- Introduction of Management Skills
- Effective Communication
- Motivation
- Quality Leadership
- Team Building
- Case Studies

Venue	Duration	Date
Nangal	1 week	16-07-2018

Who may attend

Officers/Engineers working in Power Sectors and allied industries with 2-3 years of experience

85. RENEWABLE ENERGY SOURCES & GRID INTEGRATION

Objective

To investigate the impact of Renewable Sourse & their integration with the grid.

Program Profile

- Overview of power scenario and important of renewable energy
- Solar energy
- Wind energy
- Bio-Mass Energy
- Renewable purchase of obligations
- Tarriff regulations related to Renewable Energy
- Renewable Energy power evacuation issues
- Net Metering and grid connectivity for renewables
- Role of Smart Grid in integration of renewable energy and DSM

Inauguration of BSES URJA SAARTHI program organized by NPTI Corporate Office, Faridabad

- Renewable Energy Certificates
- Grid Operation and balancing of renewable energy power
- Inter Connection standards of distribution generation.
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	17-12-2018 08-01-2019

Who may attend

Engineers from State Electricity Boards/ Power Utilities/ Distribution Systems, R&D organizations, involved in implementation of renewable source and their integration.

86. SAFETY IN HYDRO POWER STATION

Objectives

To acquint the participants with the safety aspects of Hydro Power Station

Program Profile

Safety: General safety precaution, treatment of electrical or acid/alkali burns, permit to work, first aid, protective gear/clothing, safety in movement and storage of materials, safety aspects of switchyard. Fire safety procedure. Fire protection of generator. Firefighting and emulsifier type protection.

Venue	Duration	Date
Nangal	3 days	18-05-2018

Who may attend

Engineers/Shift Engineers/Operators working in Hydro Power Plant

87. HYDRO POWER PLANT OPERATION

Objective

To Provide in-depth knowledge in Hydro Power Plant Operation

Program Profile

General principals of Hydro machine start and stop procedure and sequence. Operation of modern Hydro power station & features of pumps storage plant. Generator-Synchronizing, loading, parallel operation, active and reactive

Pongal Celebration at NPTI Southern Region, Neyveli

power sharing and frequency control, operation during emergency conditions. Declared capacity, scheduling & ABT based system UI, CI etc.

Venue	Duration	Date
Nangal	1 week	18-06-2018

Who may attend

Engineers/Shift Engineers/Operators working in Hydro Power Plant

88. VALVES & PUMPS IN POWER PLANTS ENGINEERING

Objective

To acquaint in trainees with modern methods of operation and maintenance of Pumps and Valves at Thermal Power Plant, so that at the end the course the trainees will be able to understand the importance of Pumps ant Valves.

Programme Profile

Description of different types of Pumps and their construction, Selection & Operational aspect.

Venue	Duration	Date
Nangal	3 days	23-04-2018

Who may attend

Operators/Technicians working in Thermal Power Plant

89. HYDRO GENERATOR & ITS EXCITATION SYSTEMS

Objective

To provide the in-depth knowledge of Hydro Generator & its Excitation systems.

Programe Profile

Constructional details and working principles of Generator and excitation systems. Types of Excitation systems and their components main and iplot exciters, Thyristor, FCB & AVR

Venue	Duration	Date
Nangal	1 week	03-09-2018

Who may attend

Engineers/Sr. Engineers working in Hydro Power Plant.

90. VALVES & PUMPS IN HYDRO POWER PLANTS

Objective

To give acquaint the trainees in-depth knowledge of operation and maintenance of Pumps and Valves at Hydro Power Plant.

Programme Profile

Hydro plant valves: Constructional details and features of valves and their types (Butterfly, Spherical, Needle etc).

Hydro plant Pumps: Constructional details and working principals of various types of pumps used in H.E. stations and their operation & control system.

Venue	Duration	Date
Nangal	3 days	06-08-2018

Who may attend

Working professionals from hydro power station.

91. AUXILIARIES IN HYDRO POWER PLANTS

Objective

To acquaint the trainees with the hydro power station auxiliaries & equipments.

Program Profile

Electrical auxillaies: station lighting and automatic changeover. Station batteries and charging methods. Station emergency lighting arrangements, Elevator/lifts, Ventilation system, EOT cranes and hoists, Compressed air system, Dewatering and drainage system, Communication systems etc.

Mechanical auxillaries: Oil pressure units, Lubrication principles and their characteristics, HP lubrication system, Braking and jacking system, Central release lubrication system, Carbon dust collection system for slip rings, exciters and brake pads, Cooling water system etc.

Venue	Duration	Date
Nangal	3 days	17-09-2018

Who may attend

Engineers/Shift Engineers/Operators working in hydro power plant.

92. HYDRO TURBINES, GOVERNING & ITS PROTECTION SYSTEMS.

Objective

To provide in-depth technical know-how for governing system and its protections for safe ladling & operation of HE plant.

Program Profile

General Principles and description of different type of governing systems

Speed control devices and wicket gate operation

Venue	Duration	Date
Nangal	1week	12-11-2018

Who may attend

Engineers working in Hydro Power plants.

93. ROLE OF SMART GRIDS IN THE INDIAN POWER SECTOR : CURRENT DEVELOPMENTS, CHALLENGES AND WAY FORWARD

Objective

To acquaint the participants with the current development in the field of smart grid and the challenges in the field.

Program Profile

- India's energy realities and emerging needs
- Smart Grids - Concept and application areas
- Global developments
- Developments in India
- One model of mini grid
- Integration of mini grid to smart grid
- How to make mini grid to smart grid
- Challenges to accelerated deployment
- Case study
- Way forward

Venue	Duration	Date
Badarpur	02 days	04-02-2019
PSTI Bengaluru	04 days	01-05-2018 28-01-2019

Who may attend

Engineers working in Transmission & Distribution sector.

94. TRANSMISSION LINE MAINTENANCE AND INTRODUCTION TO LIVE LINE MAINTENANCE TECHNIQUES.

Program Profile

- Substation maintenance philosophy and guidelines
- Work permits, line clear procedure, maintenance of log books, records etc.
- Maintenance schedules : Routine, prerventive, predictive, breakdown and emergency maintenance schedules.
- Transformer, switchgear and reactor maintenance
- Transformer oil testing and dissolved gas analysis
- Introduction Live line maintenance techniques
- Type of tools used in live line maintenance
- Live insulator testing methods & introduction to hotline washing (wet & dry)
- Case study
- Audio visual shows on hot stick-methods and bare hand techniques

Venue	Duration	Date
Badarpur	01 week	25-02-2019

Who may attend

Executives in the rank of Jr. Engineers and above working in transmission line maintenance.

95. OPERATION AND MAINTENANCE (O&M) OF SUB-STATION.

Objective

To impart knowledge to the trainees about installation, commisssinoning, operation and maintenance of subatations.

Program Profile

- Introduction to Substation.
- Types of Substation, Layout etc.
- Selection of Equipments and inspection Procedures.
- Civil foundation for main equipments,tower, grounds work etc.
- Earthing, cable trench and cable tray.
- Transformers, isolators specification & their characteristics.
- Safety aspects of Substations & Equipment Protection.
- Swtchyard compressors, lightning arrester DC supply system
- General practices of EHV/HV/LV substation operation & maintenance.

Venue	Duration	Date
Guwahati	01 week	04-06-2018
		19-11-2018

Who may attend

Engineers with 2-3 years of experience in operation and maintenance of subatations.

96. OPERATION AND MAINTENANCE (O&M) OF SUB-STATION

Objective

To familiarize power engineers & technicians in power Substation Systems.

Programme Profile

Performance improvement of power Transmission & distribution depends on healthiness of substation & various equipments in substation. Performance of substation depends on various equipments like Transformer, C.B, relays, C.T. & P.T. Lightning Arrestors, Neutral earthling. Substation equipments condition monitoring techniques & testing decides the maintenance to be scheduled.

Description

- Switchyard Operating Procedures
- Equipments in Switchyard & their functions.
- Methods of Monitoring /Thermo-scanning, etc
- Types of faults in substation.
- Methods of Inspection. Testing & Monitoring of various Switchyard equipments & its schedule
- Procedures of substation & line maintenance
- Methods of substation Maintenance
- GIS, Substation.
- Substation Automation

Venue	Duration	Date
Nagpur	1 week	18-02-2019

Who May Attend

Engineers, Technicians & personal working in Transmission & distribution utilities

97. LIVE LINE PUNCTURED INSULATOR DETECTION (PID) ON EHV LINES

Objective

The course is meant for training on Testing of Insulator String of Suspension, Tension and 'V' String configuration on Live Condition of EHV Transmission Lines.

Program Profile

- Testing of Live Insulator string using software based Positron PID kit
- Downloading of stored result from Memory of kit to PC.
- Analysis of results (Graphical & Analytical Method).
- Preparing Test Report.

Venue	Duration	Date
HLTC-Bengaluru	1 week	25-06-2018 22-10-2018 18-02-2019

Who may attend

Supervisors in the rank of Jr. Engineers and ITI qualified technicians who had undergone their basic/induction level course after recruitment.

98. POWER SYSTEM & LOAD DESPATCH

Objective

To make participants understand the function and responsibilities of load dispatch centre

Program Profile

- Growth of power system in India

- Objectives & functions of LD Centre
- Organization of LD centre
- Reactive power management
- Power quality
- Computerization of load dispatch

Venue	Duration	Date
Nagpur	3 days	17-09-2018

Who may attend

Engineers engaged in power sector and local load dispatch centre

99. TRAINING FOR TRAINERS

Objective

To enable the trainers in Power Sector to increase their knowledge and skill to impart training in operation and maintenance of power station.

Program Profile

- Fundamentals of learning process
- Group communication
- Motivation and transactional analysis
- Identification of training program
- Design of training program
- Training resource development
- Training programs co-ordination technique
- Instructional techniques
- New techniques
- On-job, On-site methodologies
- Evaluation, validation and record keeping
- Feed-back technique

Venue	Duration	Date
Badarpur	1 week	02-07-2018

Who may attend

Engineers as well as non technical managers involved in human resource development

100. MANAGEMENT OF RENEWABLE ENERGY (SOLAR ENERGY IN PARTICULAR); FINANCE AND ECONOMICS OF RENEWABLE ENERGY

Objective

(a) Understanding Management of Renewable Energy Integration with Grid, Solar Energy in Particular, and Techniques for Grid Balancing,

(b) Understanding Policies and Finances i.r.o. Renewable Energy

Programme Profile

- Introduction to various forms of Renewable Energy Generation, Solar Energy in Particular.
- Managing Integrity of Renewable Energy to the Grid, Balancing of Grid, Concept of Smart Grid.
- Design aspects of installation of mini/micro Grid Solar Power Plant, Technical & Administrative Issues.
- Introduction to Renewable Energy Finance.
- Tariff Support Schemes.
- Project Finance Calculations.
- Basic Technical Calculations.
- Government Policy and Support Schemes.
- Project Finance Examples with Case Studies.

Venue	Duration	Date
Guwahati	2 week	03-09-2018

Who May Attend

Individuals considering a consultancy job and/or those who have to evaluate the benefits of adopting renewable energy technology. Industrialists/ Entrepreneurs intending to invest in the Renewable Energy Sector. Working Technical Executives from various Power Sector Stake-Holders and Load Dispatch Centres.

101. POWER MARKET SPECIALIST

Objective

The introducton of open access in the transmissionsystem and gradually in the distribution systems is creating opportunity as well as challenges for the system operator to optimally utilize the resources and despatch the system efficiently.

Added to these things the propotion of renewable sources in the system isincreasing by the day thereby making the system operation more complex. In this back drop the system operator has specialize in market operations with due regard to the reliable and optimal operation of the system. A specialist level course of " Power Market Specialist" is being introducted to achieve this objective of efficient market operations with due regard to the regulations and optimal operations

Programme Profile

- Fundamentals of Electricity Markets
- Demand Forcasting, Day-ahead scheduling and Despatch
- Wholesale market design; Bilateral contracts, market abuse and Congestion Charge regulations
- PoC charges and Transmission loss regulations
- Metering Regulations, Energy accounts and Settlement of bills
- DSM Regulations
- Balancing of Capacity & Energy Market
- Power Exchange Operations
- Grid Connectivty standards
- Long term,Medium term and Short term open access Regulations
- Ancillary Services for frequency regulation
- Ancillary Services for voltage regulation

Venue	Duration	Date
PSTI Bengaluru	1 week	25-02-2019

Who May Attend

System operation, Engineers from State electricty utilities/ Dietribution Systems, R&D organisatioins, Academic institutions etc.

102. DESIGN AND OPERATION AND MAINTENANCE(O&M) OF LED LIGHTING

Objective

To familiarize the power engineers with Design and O&M of LED Lighting

Programme Profile

- Fundamentals of Electricity Markets
- Introduction to LED Street lights
- Energy Efficiency Aspects of LED Lights
- Advantages over Conventional Street Lights
- Modules o LED Street Light
- Installation of LED Street Light and electrical safety

- Hands on Practice
- Overview of CCMS
- O& M aspects of LED Street Light
- Hands on Practice

Venue	Duration	Date
PSTI Bengaluru	3 days	01-08-2018

Who May Attend

Engineers from State Electricity Boards, Power Utilities /Corporations, R & D organizations, Academic institutions.

103. RLA & LE OF SUBSTATION EQUIPMENT

Objective

To familiarize the power engineers with RLA & LE of Substation Equipment

Outline

- RLA –Objective and Methods
- Testing procedures and Methodologies
- RLA of Oil filled transformers
- RLA of Instrument Transformers
- RLA of circuit breakers
- RLA of other sub station switchgear
- RLA of power cables
- Testing and calibration of substation meters
- Field Visits

Venue	Duration	Date
PSTI Bengaluru	3 days	01-08-2018

Who may attend

Engineers from State Electricity Boards, Power Utilities /Corporations, R & D organizations, Academic institutions.

104. DISTRIBUTION METERING, SMART METERS AND DEMAND SIDE MANAGEMENT

Objective

To Provide comprehensive view of Distribution metering

Outline

- National and International specifications on smart meters and energy meters
- Smart meters issues & concerns· Standardization of smart meters, interoperability, testing methods and special purpose energy metering.
- Reliability analysis of smart electronic meters
- New technology platform- Zig bee in smart metering
- Advanced metering infrastructure· Role of smart meters in the power sector-development ,Technology challenges and Way forward
- Role of new generation energy meters technology in arresting Theft/Tampering
- Smart meters in Demand side management
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	25-06-2018

Who may attend

Engineers from State Electricity Boards/ Power utilities/Distribution Systems, R & D organisations, Academic institutions, manufacturers, contractors, consultants etc.

105. DISTRIBUTION AUTOMATION

Objective

To familiarise the participants from the low voltage power distribution system design including selection and sizing of cables, switchgear, control panels and safety requirements

Outline

- Design of LT Distribution System· LT Distribution System - Feeder Reconfiguration and Transformer Load balancing
- Customer Site Automation functions: Load Control, Remote Meter Reading, time-of-use rates
- DTS Lab: Voltage / Var Control using Capacitors, Regulators, LTC
- Equipment for Feeder Automation and Customer Automation
- Digital Protection of Substation and feeders
- Remote connect/ disconnect, System Level Functions: Fault location, isolation and service restoration

Venue	Duration	Date
PSTI Bengaluru	3 days	25-07-2018

Who may attend

The medium voltage and low voltage distribution engineers working in utilities and industries and responsible for design installation testing and maintenance of distribution systems.

106. PROTECTION OF INDUSTRIAL POWER SYSTEMS

Objective

To familiarise the power engineers with protection in power systems

Outline

- Fault analysis
- Relay input sources
- Protection of Generators & motors
- Protection of bus bars
- Protection of Transformers
- Protection of EHV lines
- Protection of Distribution systems
- Protection against over voltages
- Insulation co-ordination
- Testing of Surge Arrestors
- Testing & commissioning of relays
- Integrated Protection, Control & Monitoring
- Intelligent Electronic Devices in system protection
- Software Architecture and performance characteristics of numerical relays
- Wide Area Protection
- Present trends in protection
- Case studies
- Laboratory sessions
- Tutorials
- Field visits

Venue	Duration	Date
PSTI Bengaluru	3 days	29-08-2018

Who may attend

Engineers from State Electricity Boards, Power Utilities/Corporations, R & D organisations, Academic institutions

107. PROJECT MANAGEMENT OF EHV LINES & TOWERS INCLUDING SUB STATION.

Objective

To make participants aware about the planing, estimating & execution of a Transmission Line. Project work and to impart the knowledge about the best practices.

Program Profile

- Project management Techniques for Transmission Line Projects
- Software methods for Project preparation and control etc.
- Financial Implicztions of Project Management
- Site Survery, detaioled survey, Foundation work etc.
- Estimation of EHV Lines work, sub-Station etc.
- Construction of EHV Lines and Tower and Sub-Station
- Commissioning ofLines and Sub-Station etc.
- Sub-Station visit.

Venue	Duration	Date
Nagpur	1 week	17-12-2018

Who may attend

AE, Dy.EE, EE of Transmission Utility & Project Personnel from Contractor Company.

108. EMERGING TRENDS IN EXCITATION SYSTEM & AVR

Objective

To develop proper understanding of the various excitation systems and their Characteristics including Automatic Voltage Regulator

Program Profile

Excitation System- Introduction, Types, Selection and Salient Features Static Excitation System – Construction, operational Features and Case Studies Brushless Excitation System – Description, operational Features and Case StudiesDevelopments in AVR and Limiters

Venue	Duration	Date
Durgapur	02 Days	07-05-2018 10-09-2018

Who may attend

Engineers with 2-3 years experience in erection, commissioning operation and maintenance of generator system

109. ELECTRICAL PROTECTION SYSTEM – NUMERICAL RELAY

Objective

To familiarize the power engineers on the advanced aspects of protection in power systems

Program Profile

- **Protection Systems**- Basic Concepts, Fundamental Requirements, Types, Selection and Settings

- Generator Protection
- Transformer Protection
- Bus Bar & LBB
- Transmission Line Protection

Venue	Duration	Date
Durgapur	02 Days	18-06-2018 06-12-2018

Who may attend

Engineers from State Electricity Boards, Power Utilities/ Corporations, R & D organizations, Academic institutions

110. SMART GRID FOR UTILITY ENGINEERS

Objective

To familiarize the Power Utility Engineers with the optimal operation of the Utility Systems through the application of Smart Grid

Program Profile

- Smart Grid Basics/ Overview and Evaluation of Micro Grid
- Developing a Smart Grid Roadmap in India
- On-going Smart Grid Activities in India
- Smart Grid for Distribution Network and Initiates
- RE based Distributed Generation and Smart Grid of the future
- Grid Integration of Solar in to Power System

Venue	Duration	Date
Durgapur	02 Days	12-11-2018

Who may attend

Engineers involved in the operation and control of Distribution system and Academician with 2 – 3 years experience in the relevant field.

111. CONDITION BASED MAINTENANCE ASPECT OF ELECTRICAL EQUIPMENTS

Objective

To appraise the participants about the predictive means of maintenance for optimum and reliable equipment performance

Program Profile

- Maintenance – Introduction, Types, Scheduling, Testing and Requirement of CBM
- Online monitoring system of Rotating Machines including Partial Discharge Monitoring for Stator Windings and Rotor Flux Monitoring System for Turn Shorts and Case studies
- On Line Vibration Monitoring System and Case Studies – Turbo Generator & HT Motors

Venue	Duration	Date
Durgapur	03 Days	10-12-2018

Who may attend

Engineers with 2-3 years experience.

112. ENVIRONMENTAL ISSUES IN THERMAL POWER STATIONS AND PGD TECHNOLOGY

Objective

To inculcate awareness and necessity of sustainable development through better operational and environmental practices employing new clean technologies.

Program Profile

- Introduction to air and noise pollution
- Noise and air pollution control legislation.
- Nature of air and noise pollution and its effect including pollution control methodology.
- FGD Technology for flue gas treatment.
- Noise and air pollution measurements & Control mechanisms including few case studies like Bhopal and green tribunals.
- Introduction to water pollution monitoring and analysis.
- Effect of water pollution, pollution control legislation
- Removal of pollutants from waste water – sewage and sludge treatment.
- Zero discharge conceptsCase studies of water pollution control implementation.
- Method of Environment Impact

Venue	Duration	Date
Durgapur	02 Days	05-11-2018 28-01-2019

Who may attend

Junior / Senior Engineers of any process and power plant, Operational personnelPolicy makers with 2-3 years experience.

113. FINANCE FOR NON FINANCE EXECUTIVE

Objective

To impart fundamental about financial practices amongst non-financial personnel.

Program Profile

- Financial Statements - To study Profit & Loss Account and Balance Sheet as well as Cash Flow Analysis and to understand every term of these statements
- Financial Statement Analysis - To study Ratio Analysis and to assess the financial health of an organization Cost, Selected Cost Terms and Cost Estimation through Overhead Allocation Cost Analysis and Decision Making Financing and the Estimation of the Cost of Capital Investing and the Estimation of Risk Associated
- Working Capital Management Capital Expenditure Decisions

Venue	Duration	Date
Durgapur	02 Days	09-08-2018

Who may attend

All technical and administrative personnel with 2-3 years experience.

114. PROTECTION PHILOSOPHY, INTERLOCK OR RELAYS GRADATION.

Objective

To brief the participants about basics of protection and interlocks of protection.

Program Profile

- Protection Requirement and relays basics
- Circuit Breakers
- Various Types of Relays
- Switchgear
- Protection, Transmission line protection etc.
- Protection Interlocks and its procedure
- Feedback Session.

Venue	Duration	Date
Durgapur	02 Days	14-05-2018

Who may attend

Experienced and fresh Diploma and Graduate Engineers.

115. OPERATIONAL SAFETY

Objective

To acquaint the participants with safety aspects in work place.

Program Profile

- Permit to work Practice/procedure
- Fire Fighting basics and process
- Fire extinguisher types and selection
- Fire Fighting Demonstration
- Precautions and process while handling equipments and Safety Equipments

Venue	Duration	Date
Durgapur	02 Days	04-10-2018

Who may attend

Operators, ITI Holders, Diploma & Engineers (Fresher & Experienced)

116. PROTECTION AND MAINTENANCE OF TRANSFORMERS

Objective

To familiarize the trainees with aspects of Transformer protection and maintenance.

Program Profile

- Transformers basics, operation, types etc
- Circuit breakers: its operation, types and function
- Transformers Maintenance practices
- Transformer Protections
- Transformers Tests, DGA, etc

Venue	Duration	Date
Durgapur	02 Days	30-08-2018

Who may attend

Switchyard operators, Diploma Holders, Graduate Engineers.

117. INTELLIGENT LOAD MANAGEMENT SYSTEM

Objective

To acquaint and upgrade the participants with ILMS

Program Profile

- Intelligent load management System , SCADA

- Use of SCADA in GRID Operation
- Visit To SCADA control Room

Venue	Duration	Date
Durgapur	02 Days	21-01-2019

Who may attend

Experienced Diploma and Graduate Engineers DISCOMS & GENCOS.

118. CONTRACT MANAGEMENT

Objective

To develop the Engineers / Finance Professionals / Executives regarding procurement procedure and up-to-date information.

Program Profile

- Purchase & Contract Management.
- Key Issues.
- On generation of Indent to Placement of Orders and Closing of Contract.
- e-Procurement and guidelines.
- Benefits of e-procurement over
- Off-line system of procurement
- E-tendering
- Some case studies and analysis.
- Quality Assurance Philosophy.
- Integrated Management System.
- ISO 9001 & ISO 18001 regarding OHSAS, ISO-14000 regarding EMS.

Venue	Duration	Date
Durgapur	02 Days	04-06-2018 26-11-2018

Who may attend

Finance Executives, Engineers, Management Level Executives with 2-3 years experience.

119. REGULATORY FRAMEWORK IN POWER SECTOR

Objective

To familiarize the participants from Power Transmission and Distribution System regarding safety requirements, regulation of power station.

Program Profile

- Electricity Act 2003- legal framework, national electricity policy and tariff policy.
- Energy Conservation ActIndian Electricity Grid Code, Regulations and Grid standards-Regulations 2010
- CEA Regulations, connectivity, metering, construction of electrical lines, AT & C losses.
- Procedures, grant of approval for interstate transmission of power.
- Terms and conditions for Short term open access.
- Renewable energy generation regulations.
- Renewable energy scheduling, dispatch, and deviation settlement-Regulations 2015.

Venue	Duration	Date
Durgapur	02 Days	13-09-2018 07-02-2019

Who may attend

System Operators from SEBs, Power Utilities / Corporation, PSU, R&D Organization, Academic Institution.

120. SOLAR POWER GENERATION TECHNOLOGY - ON GRID & OFF GRID

Objective

To understand the significance of Renewable Energy particularly Solar Power Generation and Technology.

Program Profile

- Overview of renewable energy in India – Feasibility studies.
- Introduction to PV TechnologyBasic of Solar Cell & PV modules – Engineering Process Technology.
- Solar Charge Controller – Types, Basic of Solar Inverter.
- Introduction to SPV Design: Types of SPV system & their components.
- Basic Understanding of SPV System Integration
- On grid / hybrid / grid-interactive SPV System.
- SPV Project implementation, basic criteria, requirements, standards & Procedures.
- Manufacturing Technology of Solar PV Modules

Venue	Duration	Date
Durgapur	02 Days	06-08-2018

Who may attend

Engineers and Jr. Engineers with 1-2 years of experience.

121. BEHAVIORAL SCIENCE

Objective

To develop personality, skills, team building, value and ethics in work life.

Program Profile

- Freuds theory of personality
- Ice Breaker and warm up activities
- Personnel Effectiveness and Behavioral skills
- Personality development – Case Study
- Evaluation and Human Behavior
- Models of Human Behavior
- Activity of Personnel effectiveness and leadership.

Venue	Duration	Date
Durgapur	02 Days	19-07-2018 21-02-2019

Who may attend

Jr. Level, Middle Level, Supervisor Level & Executives (Technical & Non Technical)

122. WATER CONSERVATION THROUGH 3 R

Objective

To infuse the water conservation / saving method through reducing, reuse & recycle to the participants, acquitting them with the water saving methods and the benefit achieved.

Program Profile

- Present scenario and fresh water availability
- Principles of water recycling, water reuse and need for water conservation 3RS
- Illegal discharge illegal sanitary sewage discharge
- Water use efficiency and shortage management policy on conservation of water, setting of stranded of water consumption, new techniques for recyling water.

Venue	Duration	Date
Durgapur	02 Days	29-11-2018

Who may attend

Engineers and Supervisors with 1-2 years experience in Thermal Power Stations and other allied industries.

123. VIBRATION DIAGNOSTICS AND FAULT ANALYSIS

Objective

To impart expertise and to give latest information regarding different methods of vibration measurement, fault diagnosis, analysis & remedial actions.

Program Profile

- Principles of Vibration
- Basic motion, period, frequency, natural frequency, reasons, critical speeds.
- Data Acquisition Instrumentation, Transducer operation – selection, Signal processing, FFT application.
- Fault AnalysisSpectrum analysis, mass unbalance, misalignment, mechanical looseness, bearing defects, central fault recognition.
- InstrumentationTransducer operation, Transducer selection Sensor mounting issues, mounted natural frequency
- Signal processing, FFT application Linear versus logarithmic, Trending Workshop

Venue	Duration	Date
Durgapur	02 Days	26-04-2018 06-12-2018

Who may attend

Engineer and supervisors with at least 2 years experiences in O & M of Power Station and other industries.

124. BOILER EFFICIENCY

Objective

To provide updated technical know-how on boiler efficiency measurement and analysis procedure pertaining to fired steam generators used in fossil fired system.

Program Profile

- Different aspects of Efficiency measurements and measurement procedures.
- Boiler tuning for load ramping and condition of boiler Efficiency at various loading
- ASME PTC 4.0 sailent features of boiler performance checks.
- Case studies to improve boiler performance parameters.

Venue	Duration	Date
Durgapur	02 Days	28-06-2018

Who may attend

Efficiency & Operation Engineers, system performance Managers, who are having prior knowledge of various tools and technical measurement system for boiler performance / operation / commissioning. This is an executive (Technical) program aimed for professional power engineers.

125. CONDITION BASED MAINTENANCE FOR ROTARY EQUIPMENTS

Objective

To appraise the participants about the predictive means of Mechanical Maintenance for optimum and reliable rotary equipment performance.

Program Profile

- Aims and objectives of CBM.
- Various methods adopted for CBM.
- Vibration analysis of rotary equipments.
- Procedure of balancing of rotary equipments.
- Alignment of rotary equipments.
- Case study on balancing and alignment

Venue	Duration	Date
Durgapur	03 Days	03-12-2018

Who may attend

Maintenance / Performance Monitoring Engineers with 3-4 years experiences.

126. STEAM TURBINE GOVERNING

Objective

To render a special expertise to working Engineers of Thermal Power Stations.

Program Profile

- Introduction to Governing System, Concept of Nozzle Control and Throttle Control.
- Hydrodynamic Governing of LMW Turbine, Speed Governor and Follow Up Piston.
- Governing Oil System, Load cum Speed Governor.
- Summation Pilot Valve, Intermediate Pilot Valve and Servomotor of Nozzle.
- Control Valves, Protection of LMW Governing System
- EHG and MHG of KWU Governing System.
- Concept of Minimum Gate Principle and Electro-Hydraulic Converter and Hydro-Hydraulic Converter.
- Application of Different Governing Oils of KWU System.
- Follow Up Piston and Development of Secondary Sensitive Oil and its Application.
- Protection System of KWU Governing System and its Application on Different Modes of Start Up.
- Application of Governing System in Accordance with HP/LP Bypass System.
- Concept of Digital Electro-Hydraulic (DEH) Governing System of Chinese Units.
- Application of High Pressure Governing Oil in DEH System.

Venue	Duration	Date
Durgapur	03 Days	18-07-2018

Who may attend

Working Engineers of Thermal Power Stations

127. AN OVERVIEW OF SUPERCRITICAL TECHNOLOGY

Objective

To appraise the working engineers of Sub-Critical Thermal Power Stations about the Supercritical Technology.

Program Profile

- **General Aspects of Supercritical Technology:** History of the Supercritical Technology.
- Difference between Current Trends and Supercritical Technology, Parameters and Design Variations, Efficiency and Environmental Aspects.
- **Process Know-How:** Constructional Features and Pressure Part
- Arrangements, Steam and Water Flow Circuit.
- Boiler Circulation System, Boiler Tube Material and Boiler Water Chemistry and its Treatment.
- **Operational Aspects:** Protection, Interlocks and Control, Safe Light Up and Shut Down, Part Load Operations

Venue	Duration	Date
Durgapur	03 Days	10-10-2018

Who may attend

Working Engineers of Thermal Power Stations with 2-3 years experience.

Hot-Line Training in HLTC Bengaluru

(E.) SIMULATOR TRAINING PROGRAMS

01. 210 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING

Objective

To train fresh engineers on a full scope replica simulator in all aspects of operation as well as for developing suitable response to malfunctions and emergency situations by Hands-on-Practice in all the phase of operation from start-up to shut-down.

Program Profile

- Cold start, up to 100% load.
- Partial load to full load and back to partial load.
- Manoeuvering of different auxiliaries.
- Hot start/warm start to full load.
- Planned shut down.
- Over-rides and alarms during different exercises.
- A few malfunctions.

Venue

Nagpur

Duration

2 weeks

Date of Commencement

02-04-2018 16-04-2018 30-04-2018
14-05-2018 28-05-2018 18-06-2018
09-07-2018 23-07-2018 06-08-2018
20-08-2018 03-09-2018 17-09-2018
01-10-2018 12-10-2018 20-11-2018
10-12-2018 24-12-2018 07-01-2019
21-01-2019 04-02-2019 04-03-2019
18-03-2019

Who may attend

Shift Charge Engineers/ Operation Engineers/Desk Controllers engaged in operation of Thermal Power Station and also fresh graduate engineers who had undergone training in O&M of power station/ posted in Thermal Power Stations.

One Day National Seminar on '**Grid Interface Technology Upcoming large Renewable Energy Era**' at NPTI (NR), Badarpur, New Delhi

On-Site Plant Training of Sudan Batch at CLP Power Plant, JHAJJAR, HARYANA

02. 500 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING

Objective

To train engineers on full scope replica simulator of 500 MW thermal power station, in all aspects of operation and helping them to make better judgement calls/responses to malfunctions and emergent situations by imparting them hands on practice in:

a) Full Scope/Conventional Panel Operation Mode

b) CRT –Keyboard Based Operation Mode

Program profile

- Cold start and up to 100% load
- Partial to full load and back
- Hot start / Warm start to full load
- Planned Shutdown
- Maneuvering of different auxiliaries
- Operation under emergency conditions

Venue	Duration
Faridabad	2 weeks

Date of Commencement

02-04-2018 16-04-2018 30-04-2018
14-05-2018 28-05-2018 11-06-2018
25-06-2018 09-07-2018 23-07-2018
06-08-2018 20-08-2018 03-09-2018
17-09-2018 01-10-2018 15-10-2018
29-10-2018 19-11-2018 03-12-2018
07-01-2019 21-01-2019 04-02-2019
18-02-2019 04-03-2019 18-03-2019

Who may attend

Shift charge Engineers/ Operation Engineers/ Desk controllers working in Thermal Power Station and also fresh Engineers posted in Thermal power stations.

03. COMBINED CYCLE GAS TURBINE POWER PLANT SIMULATOR TRAINING

Objective

To train engineers on full scope replica simulator of 2x143+1x44 MW CCGT power station, in all aspects of operation and helping them to make better judgement calls/ responses to malfunctions and emergent situations by imparting them hands on practice.

Program Profile

- Cold start and up to 100% load
- Partial to full load and back
- Hot start / Warm start to full load
- Planned Shutdown
- Manoeuvring of different auxiliaries
- Stand aline Operation of Gas Turbine
- Operation under emergency conditions
- Operation of Gas turbine in open Cycle mode

Venue	Duration
Faridabad	2 weeks

Date of Commencement

02-04-2018 16-04-2018 30-04-2018
14-05-2018 28-05-2018 11-06-2018
25-06-2018 09-07-2018 23-07-2018
06-08-2018 20-08-2018 03-09-2018
17-09-2018 01-10-2018 15-10-2018
29-10-2018 19-11-2018 03-12-2018
07-01-2019 21-01-2019 04-02-2019
18-02-2019 04-03-2019 18-03-2019

Who may attend

Shift charge Engineers/ Operation Engineers/Desk controllers working in Combined Cycle Gas Turbine Power Station and also fresh Engineers posted in Combined Cycle Gas Turbine Power Station.

04. 250 MW HYDRO SIMULATOR TRAINING

Objective

To train the engineers on a full scope replica simulator in all aspects of operation as well as for developing suitable response to malfunctions and emergency situations by Hands-on – Practice in all the phase of operation from start-up to shut-down.

Program Profile

- Start-up of M/c &load up to 100%.
- Partial load to full load and back to partial load.
- Maneuvering of different auxiliaries.
- Planned shutdown.
- Operation under emergency
- Over-rides and alarms during different exercises.
- Few malfunctions & its trends.

Venue	Duration
HPTC,Nangal	1 week

Date of Commencement

02-04-2018 23-04-2018 07-05-2018
21-05-2018 11-06-2018 09-07-2018
13-08-2018 27-08-2018 10-09-2018
24-09-2018 08-10-2018 05-11-2018
17-12-2018 07-01-2019 21-01-2019
11-02-2019 04-03-2019

Who may attend

Shift charge Engineers/Operation Engineers/Desk controllers engaged in operation of Hydro power station & also fresh graduates engineers who had undergone training in O&M of Hydro power station / posted in Hydro power stations

05. DISPATCHER TRAINING SIMULATOR

Objective

To practice the Normal and emergency Operation of Power System, Active and Reactive Power Control and Advanced Applications using Dispatcher Training Simulator (DTS)

Program Profile

- Dispatcher training Simulator Overview
- Active and Reactive Power Control
- Indian National Network including HVDC Lines
- Prime mover Dynamics (Hydro, Thermal, Gas and Pumped Storage units)
- Load Shedding schemes
- Islanding schemes
- SCADA Operation
- Automatic Generation Control
- Islanding and Integrated Operation
- System Occurrence and Restoration
- System Stability
- Voltage Control and Voltage Collapse simulation
- Prevention of Grid Disturbance

Venue	Duration
PSTI, Bengaluru	2 Weeks

Dates of Commencement

16-07-2018 10-12-2018

Who May Attend

Persons involved in System Operation and Control i.e. Generating Station, Transmission, Load Dispatch Centre, Sub-Station and Distribution Personnel

06. 800 MW SUPER CRITICAL THERMAL POWER PLANT TRAINING SIMULATOR

Objective

To train engineers on full scope replica simulator of 800 MW, Super critrical coal fired power station in all aspects of operation and helping them to make better judgement calls/responses to malfunctions and emergent situations by imparting them hands on practice.

Program Profile

- Cold start up to 100% loadHot start/ warm start up to full load
- Planned shut down
- Auto/manual control of parameters
- Operation under emergency conditions.

Venue	Duration
Faridabad	2 weeks

Date of Commencement

21-05-2018 04-06-2018 18-06-2018
09-07-2018 06-08-2018 27-08-2018
10-09-2018 24-09-2018 08-10-2018
22-10-2018 12-11-2018 26-11-2018
10-12-2018 07-01-2019 04-02-2019
11-03-2019

Methodology

Lectures, Video session, Hands on and Demo Session on Simulator and Case Studies

Following program can be conducted/offered to National as well as International organi-zation on request /demand basis on applicable terms and conditions at different NPTI Institutes.

(F.) MEDIUM TERM COURSES FOR ENGINEERS (5 WEEKS TO 16 WEEKS)

01. DISTRIBUTION ENGINEERING

Objective

To familiarize the participants with various aspects of electricity distribution engineering.

Program Profile

- Distribution engineering—Growth, Developments, Equipment, Standards specification, construction Practice and guidelines, design aspects—testing and installation of Distribution equipment— Lay out of Sub-Station.
- Safety, Protection, DSM and energy Audit/Metering— Safety Aspects, I.E. Rules and Regulation, Compliance, First Aid, Fire Safety.
- Energy Audit and DSM application in Distribution /Engineering—Energy Audit— need, Objective and Methodology, types, application & techniques, DSM— Methodology and Techniques, Loss reduction—Voltage control, Var control, Reactive Power Compensation.
- Metering— Metering techniques, various types—LT meters and its application, Installation Testing and Commissioning of LT meters, defects and remedies—HT metering techniques.
- Billing, Power System Study, Distribution Planning Trends and

Shri R. K. Verma, Chairperson & Senior Officials of Central Electricity Authority being welcomed at NPTI, Faridabad

Development— Billing system, Computer application in billing system, Distribution planning, Optimization of capacity and location of Distribution Transformers— Power System study flow, fault analysis, relay co-ordination, Reactive Power compensation—Load Forecast techniques, recent trends & developments in Distribution Automation, Automatic Meter Reading.

Who may attend

Engineers engaged in distribution of electricity with 2-3 years experience. The course can be conducted at New Delhi, Nagpur, Durgapur, Neyveli or Bengaluru Institute

Duration **6 weeks**

02. CONTROL & INSTRUMENTATION FOR SUPERVISORS/ TECHNICIANS

Objective

To impart knowledge of theory and working principles of instruments and improve the skill of Instrumentation Supervisors Technicians in the field of Instrument Maintenance.

Program Profile

- Concept of instrumentation in Thermal Power Station
- Instrumentation layout
- Basic Science, Basic electricity and Basic Electronics
- Pressure, Level, Low and Temperature measurement
- Air supplies, pneumatic Instruments and drives
- Telemetry
- Introduction to Automatic Control System
- DAS/DDC
- Turbovisory instruments and Analytical Instruments
- Practicals/Demonstrations.

Duration **6 weeks**

Who may attend

Instrumentation Supervisors/Technicians working in Thermal Power Station/ process Industry.

03. TRAINING PROGRAME FOR SUPERVISOR/ MANAGERIAL PERSON DEPLOYED IN POWER INDUSTRY

Objective

To impart Supervisory/Managerial skills to Middle level persons who are working in Power supply Industry

Program Profile

- Personality Development – Skills, Attitudinal Development, Leadership, Team Building, Value & Ethics.
- Business Communication skills, Negotiation
- Man Power Planning (MPP)
- Quality of work Life (QWL)
- Career Planning & Quality Circles
- Financial Management & Overview
- Performance Appraisal
- Man Power Audit
- Human Resource Development
- Case Studies

Venue **Duration**

Faridabad 6 weeks

Who may attend

Staff deployed in power station/Industry with experience of 5 to 10 years.

04. NEW AND RENEWABLE SOURCES AND GRID INTEGRATION IN INDIA

Objective

To renewable energy program gives the participant a solid foundation in the theory, sign, installation and grid interfacing techniques required to work with new and renewable energy systems and technologies.

Program Profile

- Energy Sector Reforms, Regulations Environment and RE.
- Wind Energy Systems
- Solar thermal power systems
- Direct energy Conversation – Solar Photovoltaic, Fuel Cells.
- Waste to Energy.
- Solar passive Architecture.
- Biomass Energy Systems.
- Bio-Fuels
- RE and Grids Integration
- Economic Viabilty
- Case studies

Duration **6 weeks**

Who may attend

Graduate engineers having 3-4 years experience in Thermal Power Stations.

05. EXECUTIVE DEVELOPMENT PROGRAM FOR THE SUPERVISORY STAFF WORKING IN FINANCE & ACCOUNTS DEPARTMENT

Objective

To impart knowledge of Supervisory Finance personnel working in Power Supply Industry.

Program Profile

- Status & Responsibilities of Financial Executives: Development of Managerial Skills
- Personality Development, Business Communication Skills, Negotiation Skills, Leadership, Team Building, Values & Ethics etc.
- Financial Management & Planning
- Computer Awareness for finance personnel
- Capital Budgeting, Costing & decisions
- Operating & Financial Leverage Analysis
- Dividend issues, policy & Decisions
- Budgeting & Accounting
- Foreign Exchange, Taxation Rules & Regulations
- Financial Performance Evaluation & Risk Management
- Cash Flow Management

Venue **Duration**

Faridabad 6 weeks

Who may attend

Supervisory staff working in Power Stations/Industry with to 10 year of experience.

(H.) SHORT-TERM COURSE FOR ENGINEERS (1 DAY TO 4 WEEKS)

06. MAINTENANCE PLANNING & COST CONTROL

Objective

To enable the participants to understand and apply the modern planning and cost control techniques in maintenance programs.

Program Profile

- Aims and objective of maintenance efficient, service, high plant availability, maintenance and planning engineer's duties.
- Integration of maintenance with operational requirements, plant reliability, plant outages and daily work programs.
- Preventive maintenance of running units.
- Planning of major plant overhauls during shut downs.
- Planning techniques-critical path analysis, charting systems etc.
- Purchasing and stores control-standards, cost codes, control of stores and store records.
- Cost control, Direct costs, indirect costs, outage costs, budgeting and costing works, budgetory control.
- Contract procedures, Conditions of contract, project evaluation, interest and depreciation charges.
- use of computers in maintenance planning.

Duration **1 week**

Who may attend:

Engineers/Officers working in Power Stations/ Industries with 5-10 years experience.

07. TRAINING OF TRAINERS

Objective

To enable the trainers in Power Sector to increase their knowledge and skill to impart training in operation and maintenance of power station.

Program Profile

- Fundamentals of learning process.
- Group communication.
- Motivation and transactional analysis.
- Identification of training program.
- Design of Training Program.
- Training Resource Development.
- Training Programs co-ordination technique
- Instructional techniques.
- New techniques.
- On-job, On-site methodologies.
- Evaluation, validation and record keeping.
- Feed-back techniques.

Duration **1 week**

Who may attend

Engineers as well as nontechnical managers involved in human resource development

08. OPERATION & MAINTENANCE OF EHV SUB-STATION

Objective

To impart knowledge to the trainees about the installation, commissioning, operation and maintenance of Sub-Station.

Program Profile

- Introduction to sub-station
- Types of layout etc.
- Soil testing and site selection.
- Equipment inspection & selection aspects.
- Civil foundation for main equipments, tower, ground work.
- Structure and tower erection and fabrication alignment.
- Earthing, cable trench, cable tray.
- Protection system & its equipment.
- Design and erection.
- Switchyard HV equipments erection.
- Switchyard, compressor, lightening arrestors.
- Different safety aspects, fire protection devices, erection and commissioning

Duration **2 weeks**

Who may attend

Engineers with 2-3 years experience in electrical operation and maintenance of Power Station and transmission & Distribution.

09. MICRO PROCESSORS

Objective

To acquaint the participants with microprocessors and their applications in Thermal Power Station.

Program Profile

- Microprocessor structure and organization
- Information Representation
- Microprocessor Instruction set
- Assembly Language Programming
- Peripherals input/output units
- Microprocessor interfacing with other devices
- Application programs and case studies.

Duration **1week/2 weeks**

Who may attend

Graduate Engineers having sufficient knowledge in Control system of Thermal Power Stations.

10. VIBRATION ANALYSIS

Objective

To impart expertise and to give latest information regarding different methods of vibration measurement, their analysis, diagnosis and recommended remedial actions.

Program Profile

- Definition and description of vibration.
- Terms and Units in vibration measurement.
- Characteristics of vibration.
- Basic vibration modes of measurement.
- Vibration transducers-different types and selection criteria.
- Selection criteria of vibration mode for measurement.
- Vibration diagnostics and fault analysis.
- Dynamic Balancing using portable Vibration Analysers.
- Scheduling of condition monitoring and condition based maintenance.

Venue	**Duration**
Durgapur	3 days

Who may attend

Engineers with at least 5 years experience in operation and maintenance of Power Station Industry.

11. RENOVATION & MODERNIZATION OF THERMAL POWER PLANT/STATION

Objective

To familiarize and spread awareness amongst the Working Managers Engineers of Thermal Power Stations to enable them to take timely action for renovation & Modernization of their Thermal Power Station for further life extension.

Program Profile

- Norms for renovation & Thermal Power Station & Funds allocation.
- Scope of renovation & area of renovation.
- Renewal life Assessment Techniques for Turbine, Boilers and generator.
- Life extension studies and techniques for Thermal Power Station auxilliary.
- Stress Analysis and data interpretation
- Case Studies

Duration **1 week**

Who may attend

Middle Level Managers/ Working Engineers with 2 to 3 years experience.

12. REGENERATIVE FEED HEATING SYSTEM

Objective

To familiarize and impart knowledge regarding operational procedure system with confidence and safety.

Program Profile

- Different types of heater – H.P. & L.P.
- Theory of heating, construction of HP & LP heaters
- System of steam extraction.
- layout of system – various considerations.
- Operation of the individual components.
- Cutting in and cutting out procedures of heaters.
- Performance monitoring of heaters and identification in the system.
- Various interlocks and protections and Automatic systems.

Duration **1 week**

Who may attend

Operators working in Thermal Power Station with 3-4 years experience.

13. TRANSMISSION DISTRIBUTION EQUIPMENT MAINTENANCE

Objective

To improve the skill of personnel engaged in the field of Transmission & Distribution equipment maintenance.

Program Profile

- Transmission and distribution system familiarisation.
- Maintenance involved during erection and commissioning of T&D equipment
- Transmission and distribution system and equipment maintenance procedure.
- Preventive and predictive maintenance program & schedule.

Venue	Duration
Badarpur	1 week

Who may attend

Maintenance technicians with 2-3 years experience in the field.

14. BALANCING AND ALIGNMENT TECHNIQUES

Objective

Trainees will learn about practical procedure of balancing and alignment techniques of heavy duty rotary machines, relevant toThermal Power Plants.

Program Profile

- Causes of vibrations and types of balancing requirements.
- Static and dynamic balancing techniques.
- Identification technique of misalignment
- Hot alignment and tolerance in alignment for various applications.

Duration **3 days**

15. ELECTRICITY ACT AND REGULATION

Objective

To appraise of the participants about the conceptual reorientation in IEA-2003 related to generation, transmission, distribution along commercial implication.

Program Profile

- Over view of IEA-2003
- Electricity Grid code
- Status of deregulation and power tariff
- Open access and ABT

Duration **3 days**

16. BASIC ELECTRONICS

Objective

To impart knowledge of basic concept of semiconductors, their properties and application in various fields.

Program Profile

- Basic theoretical knowledge of semi conductor materials diodes, transistors, rectifiers, transformers, amplifiers, oscillators, introduction to IC's.
- Digital Electronics - logic gates, Flip Flops & their applications.
- Practical session:
- Making circuits and their testing, Fault finding techniques of electronics circuits.

Duration **1week**

Who may attend

Power station technicians working in electricals and C&I maintenance sections.

17. TRAINING FOR ASSISTANT LEVEL PERSONS/ PERSONNEL STAFF

Objective

To impart skills to personnel staff working in Power Supply Industry

Program Profile

- General Administration Rules & Regulations
- Office Procedure, Etiquettes, Management of official records, Noting & Drafting
- Practice of stenography and test

at qualifying speed of 80 WPM
- Basic of computers, typing on computers with a qualifying speed of 40 WPM
- Hands-on practice on computers with Word, Excel and other basics
- Communication and Communication skills
- Time Management and Stress Management

Venue	Duration
Faridabad	1 weeks

Who may attend the program

Personnel staff working in Power Stations/Industry with 2 to 6 years of experience.

18. HUMAN RESOURCE DEVELOPMENT PROGRAM FOR FINANCE OFFICER/ MANAGER

Objective

To develop Human resources deployed in finance wing who are working in Power supply Industry

Program Profile

- Personality Development – Skills,
- Attitudinal Development, Leadership, Team Building, Value & Ethics
- Business Communication skills, Negotiation
- Man Power Planning (MPP)
- Beyond the Present Role: Potential Systems
- Quality of work Life (QWL)

Venue	Duration
Faridabad	1 week

Who may attend the program

Finance persons working in Power Stations/Industry with 5 to 10 years of experience.

19. DEVELOPMENT OF FINANCE MANAGERS

Objective

To impart in-depth knowledge to Finance Officers in Budgeting & Financial Statement Analysis Industry working in Power Supply Industry

Program Profile

- Status & Responsibilities of Finance Executives – Development of Managerial Skills.
- Capital Investment decisions; strategic Considerations.
- Budgeting & Accounting (Accounting Statements and records).
- Financial Statement Analysis.
- Taxation – Rules & Regulations.

Venue	Duration
Faridabad	1 week

Who may attend the program

Finance Officer working in Power Stations/Industry with 5 to 10 years of experience.

20. LIVE LINE INSULATOR WASHING TECHNIQUES ON EHV SWITCHYARD/ LINES AT ONSIDE

Objective

The course in meant for Training on Insulator Maintenance Techniques on cold/charged systems amongst Supervisors and Technicians involved

in EHV Line/Switchyard Maintenance. The Training Program covers appreciation about Pollution on insulators of EHV systems, equipment etc. and to highlight the importance of care & maintenance on various types of insulators.

Program Profile

- Types and effect of Pollution of performance, its prevention and solutions.
- Safety aspects in Line/Hot Line Washing.
- Hot Line Washing Equipment set up and it's operating procedures.
- Safety aspects in Hot Line Washing of line and substation insulators.
- Carek and methods of Washing on sub station equipment line Circuit Breakers,
  Current Transformers and Potential Transformers etc.
- Practice of Hot Line Washing on Live Lines at Tension Point, Susspension Point Post Insulators etc.
- Introduction on Dry Washing and Hot Spray Systems.

Venue	Duration
HLTC, Bengaluru	4 days

Who may attend the program

It is preferred that only those who had worked in the relevant field and associated with some of the EHV line mainten ance activities quite some time, say, 2 to 3 years, after completing their entyr level (Induction level) training course on cold lines may only be sponsored so that many of the techniques need knot have to be repeated. It is preferred that the participants of the course should have been exposed to some of the Live Line Maintenance jobs at least a couple of years before they are sponsored for this training this will enable the trainer to ease his efforts by simply recalling those techniques and cpmcemtrate more on the techniques relevant to actual line line situation that are needed.

Supervisors in the rank of Junior Engineers and ITI qualified Technicians may be considered for this course.

21. DESIGN AND VERIFICATION OF ELECTRICAL INSTALLATIONS

Objective

To develop the essential, up-to-date knowledge and techniques needed to professionally design and install or inspect and test electrical systems. The ability to design is required before new installations are constructed and also when additions or alterations to existing installations are required. This may be ideal for qualified electricians wishing to expand or update their professional knowledge and skills and who are working with minimal or no supervision. It can be intended for personnel in electrical contracting companies who have responsibility for the quality of the design, specification, installation and testing process.

Programme Profile

Theory and Practical sessions and examples of how electrical installations should be designed are to be incorporated to this proposed Course. The course should consist of design exercises for the candidates to carry out, which evaluate and explore the process of design in terms

of general characteristics, protection for safety, selection, erection and testing.

Awareness on Electrical Safety and Related Statutory Provisions with exposure through State/Central Inspectorate of Electricity.

Overview on "The Central Electricity Authority (Measures Relating to Safety & Electric Supply) Regulations, 2010".

Venue	Duration	Date
Guwahati	1 Week	To be announced

Who May Attend

This may be ideal for qualified Electricians wishing to expand or update their professional knowledge and skills and who are working with minimal or no supervision. It can be intended for Personnel in electrical contracting companies who have responsibility for the quality of the design, specification, installation and testing processes.

22. TRAINING MIND FOR EXCELLENCY

23. EXECUTIVE/ MANAGEMENT DEVELOPMENT PROGRAMS FOR EXECUTIVES & SUPERVISORS

24. EXECUTIVE DEVELOPMENT PROGRAM FOR LAW STREAM

25. SUPERVISORY DEVELOPMENT PROGRAMS

26. HR FOR NON-HR EXECUTIVES

27. EXECUTIVE DEVELOPMENT FOR SUPERVISORY STAFF WORKING IN FINANCE AND ACCOUNTS

28. ENVIRONMENTAL MANAGEMENT

29. BUSINESS COMMUNICATIONS & PRESENTATIONS SKILLS

30. GENERAL INTRODUCTION TO HYDRO POWER PLANT

31. HYDRO POWER PLANT SCHEMES & SYSTEMS DISCUSSIONS

32. HYDRO POWER PLANT OPERATION & PUMP STORAGE OPTIONS TO GOVERNING

33. HYDROPOWER PLANT PROTECTIONS
34. MAINTENANCE (ON-JOB) IN HYDEL PLANT
35. PLANNING AND COST CONTROL OF HYDRO ELECTRIC POWER STATION
36. CONTROL & INSTRUMENTATION OF HYDRO ELECTRIC POWER STATION
37. SITE SELECTIONS OF HYDRO ELECTRIC PLANTS, GEOLOGY, HYDROLOGY
38. TUNNELS & CHANNELS, PENSTOCKS, SURGE SHAFT, SPILLWAYS
39. VALVES IN HYDRO POWER PLANTS
40. CONSTRUCTION EQUIPMENT OF HYDRO ELECTRIC PLANTS
41. ENVIRONMENTAL IMPACT ASSESSMENTS
42. MATERIAL HANDLING AND TRANSPORTATION
43. SAFETY IN HYDRO POWER PLANTS
44. PUMPS IN HYDRO POWER PLANTS
45. TRANSFORMERS & ELECTRICAL EQUIPMENT IN HYDROPOWER PLANTS
46. CONSTRUCTIONAL DETAILS OF HYDRO TURBINES &GENERATORS
47. ELECTRICAL AUXILIARIES OF HYDRO POWER PLANTS
48. ERECTIONS OF HYDRO TURBINES, GENERATORS AND AUXILIARIES
49. TYPES OF DAMS & THEIR CONSTRUCTIONAL DETAILS
50. LEAD AUDITORS PROGRAM ON ISO-14001
51. HR ISSUES IN POWER SECTOR

52. TIME MANAGEMENT
53. STRESS MANAGEMENT
54. LEAD AUDITORS PROGRAM ON ISO 9000
55. LEADERSHIP SKILLS
56. PROJECT MANAGEMENT
57. CUSTOMER RELATIONSHIP MANAGEMENT
58. FINANCE FOR NON-FINANCE EXECUTIVES
59. ABT, POWER TRADING
60. ELECTRICITY ACT 2003 & CERC, SERC
61. FINANCIAL MANAGEMENT IN POWER SECTOR
62. CURRENT HR PROBLEMS IN POWER SECTOR
63. FIRST – AID FOR TECHNICAL PERSONS
64. TOTAL PRODUCTIVE MAINTENANCE
65. RETIREMENT MANAGEMENT
66. CHANGE IN ATTITUDE
67. CUSTOMER ORIENTATION
68. CONTRACT MANAGEMENT
69. COMPUTER APPRECIATION PROGRAM
70. O & M OF MOTORS
71. POWER SYSTEM STUDIES & LOAD DISPATCH
72. VALVE MAINTENANCE
73. MAINTENANCE OF PUMPS
74. IT APPLICATION IN POWER SYSTEM
75. PUMP STORAGE HYDRO POWER STATION
76. MANAGEMENT DEVELOPMENT PROGRAM

77. PERFORMANCE IN TESTING OF HYDRO POWER SYSTEM
78. GIS/GPS FOR POWER UTILITIES
79. MANAGING CARBON CREDIT OF TPS THROUGH CDM ROUTE
80. ENERGY EFFICIENCY IN THERMAL UTILITIES
81. IT APPLICATION IN POWER UTILITIES
82. ENERGY EFFICIENCY IN ELECTRICAL UTILITIES
83. POWER DISTRIBUTION MANAGEMENT
84. STEAM TURBINE ITS AUXILIARIES OPERATION
85. ADVANCE MECHANICAL MAINTENANCE PRACTICES
86. O & M OF GENERATORS & EXCITATION SYSTEM FOR SUPERVISORS
87. FUEL (COAL & OIL) HANDLING SYSTEM OPERATION
88. MATERIAL MANAGEMENT
89. FLUIDISED BED COMBUSTION BOILERS
90. REVIEWABLE ENERGY SOURCE & GRID INTEGRATION
91. SYSTEM OPERATOR TRAINING
92. ADVANCES IN POWER PLANT CHEMISTRY FOR CHEMISTS
93. BOILER & AUXILIARIES
94. ELECTRICAL MOTORS FOR POWER PLANTS
95. SWITCHGEAR FOR POWER PLANT
96. HIGH VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION
97. HYDRO POWER PLANT ENGINEERING

98. INSULATOR WASHING TECHNIQUE (ON-SITE)

99. DISTRIBUTION FRANCHISE

100. GRID MANAGEMENT

101. MAINTENANCE PUMPS AND VALVES

102. POWER EXCHANGE AND POWER TRAINING

103. POWER BUSINESS TARRIF AND REGULATIONS

104. INDIAN ELECTRICITY ACT AND RULES & DE-REGULATION

105. O&M EHV TRANSMISSION LINES

106. GOVERNING SYSTEM & HYDRO POWER GENERATION

107. PROJECT MANAGEMENT FOR POWER SYSTEM ENGINEERS

108. POWER AND TELE-COMMUNICATION (PTCC)

109. ADVANCE POWER GENERATION PROTECTION & CONTROL

110. POWER MARKET REGULATIONS

111. CONTROL & INSTRUMENTATION

112. SMART GRID

113. REGULATORY FRAMEWORK IN POWER SECTOR

114. COAL MILL/ MILLING SYSTEM MAINTENANCE (CASE STUDIES)

115. MAINTAINANCE OF BOILER ROTATARY MACHINE

116. INDUSTRIAL SAFETY

PGDC in Power Plant Engineering, Batch 2017-18

PGDC in Smart Grid Technologies
First Batch 2017-18

FACULTIES BIODATA
NPTI-CORPORATE OFFICE, FARIDABAD

Name/Designation

Prof.(Dr.) Rajendra Kumar Pandey
Director General

Dr. Rajendra Kumar Pandey, Professor, Department of Electrical Engineering, Indian Institute of Technology (BHU), Varanasi has assumed the charge of Director General, National Power Training Institute (NPTI) on 11.07.2016.

Prof. Pandey holds Ph. D. in Electrical Engineering from IIT Kanpur in 1992. He is professionally active Senior Member of IEEE having Membership of Power and Energy Society (PES), Smart Grid Community (SGC), Communication Society. He has a long working experience in the field of High Voltage Direct Current (HVDC) Transmission Technology and Flexible AC Transmission Systems (FACTS) Devices Control, Intelligent Power Control along with the Operation of Power System in Open Access since last 32 years. He visited various countries like USA, UK, China, Canada, Hongkong etc., in connection with different Projects/Conferences/Invited Talks etc.

Presently holding the position of Director General, NPTI, Shri Pandey is also the Chairman of High Power Committee of BHU constituted for executing the Solar Energy Project (Grid Connected mode). He is also Principal Investigator of Smart Grid Project namely "Design and Development of a Smart Energy Grid Architecture with Energy Storage" funded by Department of Science & Technology, Govt. of India.

He has published more than 130 peer reviewed papers in both national, international journals & conferences of repute.

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. J. S. S. Rao** *Principal Director*	B. Tech. (Electrical) JNTU, Kakinada M.E. (Power System) Andhra University Visakhapatnam, 1982	More than 36 years of work experience in various positions in NPTI. Integrated Unit Operations Faculty on 210 MW & 500 MW Thermal Power Plant Control Room Simulators. Active team member of Concept to Commissioning of 500 MW Thermal Power Plant Control Room Operation area Simulator. Program Director for the 2-year full-time MBA program in Power Management for nearly a decade.	1) Simulator instructors course in CEGB-UK in 1985 2) Simulator Modelling GSE Systems INC., USA 3) Simulator Instructor GSE Systems INC., USA

NPTI-CORPORATE OFFICE, FARIDABAD

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. R. K. Mishra** *Director*	B.Sc. Engg.(Elect.) from U.C.E. BURLA Sambalpur University Odisha.(Now VSSUT) in 1985 MBA, PGDIM PGDHRM from IGNOU, New Delhi in 2003.	More than 30 years of experience in the fields of Teaching, Power Industry and Training in REC (Now NIT) Rourkela, Talcher Thermal Power Station and NPTI respectively.	**Specialization:** Operation & Mtce. of Thermal Power Station, Power Plant Automation 24 weeks training on Control& Instrumentation at POWERGEN, U.K 1991.
 **Mrs. Manju Mam** *Director*	B.E. (E & C) from NIT Srinagar, M.S. (Software Systems) from BITS Pilani, MBA (HR) from IGNOU, New Delhi	More than 29 years experience in the field of Teaching and Training in the various positions in NPTI. Program Director for the 2-year MBA in Power Management. **Specialization:** HR, IT, GIS	Member of Institute of Electronics and Telecommunication Engineers.

NPTI (NR), BADARPUR

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. J. S. S. Rao** *Principal Director*	B. Tech. (Electrical) JNTU, Kakinada M.E. (Power System) Andhra University Visakhapatnam, 1982	More than 36 years of work experience in various positions in NPTI. Integrated Unit Operations Faculty on 210 MW & 500 MW Thermal Power Plant Control Room Simulators. Active team member of Concept to Commissioning of 500 MW Thermal Power Plant Control Room Operation area Simulator. Program Director for the 2-year full-time MBA program in Power Management for nearly a decade.	1) Simulator instructors course in CEGB-UK in 1985 2) Simulator Modelling GSE Systems INC., USA 3) Simulator Instructor GSE Systems INC., USA
 **Sh. M. V. Pande** *Director*	B.E. Mechanical Engg. from Shivaji University Koulapur (M.S), Diploma in Bussiness Management, Nagpur University M. Tech Nagpur University. Energy Auditor B.E.E., New Delhi	Total 37 years experience in various position in MSEB & NPTI **Specialization:** Steam Turbine Governing & Protection TPS Operation hands on Training in 210 MW Simulator. Steam Turbine Operation. Power Plant Maintenance (Turbine, Pumps, Bearing, Valves)	Member Associates Training Energy Management at Audit Undergone simulator Instructor Training at S 3 Technologies USA in 1995 Undergone one month Training n Japan in the area Energy Conservation Techniques for India conducted by JICA.
 **Sh. Ravinder Singh** *Director*	B. E. (Electronics & Communications), MBA (IT), M. Phil. (Management), Pursuing Ph. D. (Management)	About 27 years of experience of working in ITI Ltd., and NPTI. **Specialization:** Design & Development of Multimedia Computer Based Training Packages, Procurement & Maintenance of IT hardwares & softwares, EPABX System, Wi-Fi and LAN Networks, Virtual Private Server (VPS), Projection Systems, Website development & updation etc.	Undergone 12 weeks training on development of "Computer Based Training" Packages at United Kingdom under Colombo plan and two weeks training on "Geographical Information System" at ESRI, Washington, USA.

NPTI-HYDRO POWER TRAINING CENTRE, NANGAL

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. S. K. Sinha** *Head of the Institute*	B.E. (Electrical) Bihar Institute of Technology, Sindri in 1980. M. Phill. Computer Science in 1982 JNU New Delhi	More than 32 years Experience in NPTI. **Specialization:** Computer & simulator	

NPTI-ER, DURGAPUR

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. S. K. Srivastava** *Head of the Institute*	B. E. (Electrical Power System) MBA , Pursuing PhD (Management) from NIT, Durgapur	More than 26 years experience in Training & Industry. About 23 years in different position in NPTI and 3 years in Cement & other industry. **Specialization:** Electrical Power System. HVDC Technology. Power Distribution Management. General & Strategic Management	Member of International Smart grid Action Network (ISGAN) Annex-VIII w.e.f June 2017 nominated by Ministry of Power, Govt. of India. 3 weeks study tour to SWEDEN regarding Development & implementation of Transmission & Distribution Simulator under Swedish International Development Agency (SIDA) project in 1998.

NPTI –NER, GUWAHATI

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. Sanjay. V. Malpe** *Director*	B.E. (Mechanical) Visivesvaraya National Instisitute of Technology in 1982, M.E. (Mechanical) from Victoria Jubilee Technical Institute Mumbai in 1985, Certified Energy Auditor.	**Specialization:** More than 34 years experience in various position in private sector and NPTI. About 24 years experience in training and development. Developed CBT Packages on 1. Steam Turbine Construction. 2. Gas Turbine for Power Generation. 3. Coal to Electricity for non technical Executives 4. Cooling towers.	Lead Faculty for Indo German seminars on "Draft Guidelines for Energy Audit of Thermal Power Station" 10 weeks simulator instructor training in CEGB UK in 1991. **Training:** Simulator Instructor course GSE Systems Inc USA in 1995, various training Programs in India in Power industry.
 **Sh. J. Jayasamraj** *Director*	B.E. (Computer Technology & Information) from Government College of Technology,Coimbatore, Tamil Nadu, 1989.	More than 24 years of experience in various positions in ITI, Bangalore and NPTI.	Computer Technology & Control Systems

HOT LINE TRAINING CENTRE, BENGALURU

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. K. S. Venu Babu** *Head of the Institute*	B. Tech. (Mechanical), JNT University, AP, 1982. M. Tech (Prodn. Engg.), IIT, Delhi in 1989. M.B.A. (Marketing), IGNOU, New Delhi in 2000.	More than 33 years experience in Pressteels & Fabrications Pvt. Ltd., Hyderabad, CEA & NPTI. **Specialization:** Contracting, Engineering of Thermal Power Plant equipment, Teaching in Mechanical Maintenance of power plant equipment & Live Line Maintenance techniques up to 400 KV Lines & switch yards.	

NPTI-PSTI BENGALURU

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. Pamu Sreenivasa** *Head of the Institute*	B.E in Mechanical Engineering, MHRM, Pursuing PHD from University of Mysore.	Having working experience of more than 22 years. **Specialization:** Having experience and specialisation: Thermal power plant Engineering, Transmission and Distribution. Having working experience in Live Line Maintenance also.	

NPTI-SR, NEYVELI

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Sh. Giriraj Kishore** *Head of the Institute*	B.E. (Mechanical) from Aligarh Muslim University Diploma in PC, Networking, Director, 3D Max and VJ++	More than 34 years experience in different organization like Panchsheel Brothers, Delhi Administration, Ministry of Defence, Arya Bhatt Polytechnic, Central Electricity Authority and now in NPTI.	

NPTI-WR, NAGPUR

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 **Dr. D. M. Lokhande** *Head of the Institute*	B.E. (Electrical) VRCE (VNIT) Nagpur,1980. MBA (Production & Personnel) Nagpur University 1984. Ph.D in Management from RTM Nagpur University, Nagpur - 2015	Total 35 years of experience in power industry. About 6 years experience in O&M of thermal power plant. About 24 years of experience in training & development including 210 MW simulator project & operation, training etc.	1. 10 weeks senior instructor training in CEGB UK in 1990 2. Simulator Modelling Training of GSE Systems INC USA in 1994 3. Simulator Instructor course GSE Systems INC USA (5 weeks) in 1995 4. Various trg programs in India in power industry areas.
 **Sh. N.C. Moharil** *Director*	B.E. (Mechanical), VRCE (VNIT) Nagpur, 1983 MBA, Department of Business Management, Nagpur University, 1986 Certified Energy Auditor	31 years experience: - 5 years experience in Thermal Power Plant Operation - 23 years at NPTIin Training and Teaching including Simulator Training	Simulator Instructor Course GSE Systems Inc. USA (2 weeks) in 1995 Various Training Programs in Power Sector India.
 **Sh. G. V. Harshe** *Director*	B.E. (Mech.), 1980 Walchand College of Engg. Sangli Shivaji University Kolhapur (M.S)	Total 35 years experience in Power Industry, Eight B.E. (Mech.), 1980 Walchand College of Engg. Sangli Shivaji University Kolhapur (M.S) Total 30 years experience in Power Industry, Eight years experience in O&M of Thermal Power Station. experience in O&M of Thermal Power Station. More than 22 years experience in Training & Development including faculty for B.E. (Power Engg.)	Member of Institute of Engineers India. 10 weeks Sr. Instructor Course in U.K. under B.E.I in the year 1990.

PGDC - RE & GIT Batch 2017-18

PGDC in Power System Operation at PSTI

NPTI PUBLICATIONS

S.No.	Title	Price (₹)	Price (US$)
	A) THERMAL POWER PLANT		
1	Thermal Power Plant Familirisation (Vol.I)	400	20
2	Thermal Power Plant Familirisation (Vol.II)	600	30
3	Thermal Power Plant Familirisation (Vol.III)	425	21
4	Thermal Power Plant Familirisation (Vol.IV)	400	20
5	Thermal Power Plant Operation	600	30
6	Thermal Power Plant Metallurgy	175	9
7	Ash Handling	250	13
8	Fuel Handling System Operation (Hindi)	250	13
9	Schematic Diagram (210 MW Thermal)	350	18
10	Fuel Handling System Operation	250	13
11	Environmental Management in Power Sector	600	30
12	Thermal Power Plant Performance and Efficiency Monitoring	425	21
13	Thermal Power Plant Chemistry	350	18
14	500 MW Fossil Fuel Power Plant Simulator Operating Procedures	550	28
15	Atomspheric F B C Boilers	250	13
16	Boiler Feed Pump Design, Construction & Operation	250	13
17	Circulating F B C Technology	250	13
18	Power Station Safety	350	18
19	Safety in Power Station (Hindi)	200	10
20	210 MW Thermal Schematic Diagrams (Combustion Engineering Boiler & KWU Turbine)	200	10
21	HP - LP Bypass System	350	18
22	Pulverisers and Feeders	200	10
23	Pulverised Fuel Fired Boilers	350	18
24	KWU Steam Turbine Governing and Protection System	425	21
25	210 MW Turbo Generator Operation and Stability	200	10
26	Lubrication Systems for Power Station	300	15
27	210 MW Simulator Training	550	28

28	Steam Turbines for Power Generation	650	33
29	Vibration	200	10
	B) HYDRO POWER PLANT		
30	Hydro Power Plant Familiarisation	400	20
31	Hydro Power 2000: An Indian Perspective	1000	50
32	Silting Problems in Hydro Power Plants & Their Possible Solutions	495	25
33	Up rating and Refurbishment of Hydro Power Plants	495	25
34	Hydro Environment Interface	950	48
35	Small Hydro	595	30
	C) COMBINED CYCLE GAS TURBINE POWER PLANT		
36	Gas Turbine and Combined Cycle Power Plant	400	20
	D) CONTROLS and INSTRUMENTATION		
37	Control & Instrumentation (Vol. I)	600	30
38	Control & Instrumentation (Vol. II)	425	21
39	Control & Instrumentation (Vol. III)	350	18
40	Data Acquisition System & Distributed Digital Control	250	13
41	Condition Monitoring of Power Transformers	250	13
42	Programable Logic Controller & Fuzzy Logic Controller and their Applications in Instrumentation	250	13
43	Control Valves Selection and Sizing	300	15
44	Programable Logic Controls	350	18
	E) REGULATORY ISSUES		
45	Journal on ERC Orders-2nd Edition	595	30
	F) MAINTENANCE MANUALS		
46	Motor Maintenance	200	10
47	Battery Maintenance	250	13
48	Battery Maintenance (Hindi)	250	13
49	Valve Maintenance	350	18
50	Pump Maintenance	400	20
51	Pump Anurakshan (Hindi)	350	18
52	Relay Maintenance	200	10
53	Maintenance Planning & Cost Control	250	13
54	Maintenance of Power Transformers	350	18

	G) POWER PLANT AUXILIARIES		
55	Fans & Heaters	425	21
56	Fan & Heater (Hindi)	425	21
57	Compressor & Compressed Air	200	10
58	Valves	400	20
59	Power Station Pumps	350	18
	H) POWER SYSTEMS MANUALS		
60	Electrical Protection System	350	18
61	Power System Studies and Load Despatch	350	18
62	Modernisation of Power Distribution (Focus on APDRP)	595	30
63	Power Transmission & Distribution	495	25
64	Load Management in Power Sector	400	20
65	Static Excitation System	250	13
66	Energising Your Power Utility	395	20
67	Basics of Electric Power System	200	10
	I) SUB STATION MANUALS		
68	O&M of EHV Sub-Stations Vol. I	250	13
69	O&M of EHV Sub-Stations Vol. II	200	10
	J) RENEWABLE ENERGY SOURCES		
70	Renewable Energy	595	30
71	Non-Conventional Power Plants	350	18
	K) ENERGY AUDIT MANUAL		
72	Manual on Energy Conversation and Management	250	13
73	Energy Audit and DSM in Power Utilities	400	20
	L) OTHER MANUALS		
74	Computer Ka Aadharbhoot Gyan (Hindi)	250	13
75	National Training Policy for the Power Sector	200	10
76	Rashtirya Prashikshan Neeti (Hindi)	200	10
77	Environmental Pollution & Pollution Control	250	13
78	Selected Readings on Finance for Non-Finance Executives	260	13
79	Overview of Indian Power Sector-Organizational Setup	180	9
80	Inventory and Store Management	130	7
81	Selected Readings on General Management	240	12

82	Selected Readings on Communication in Power Sector	270	14
83	Selected Readings on "Power System Communication"	110	6
84	Procurement Procedures & Contracting	500	25
85	Overview of Indian Power Sector - Regulatory Framework	350	18
86	Boiler Tube Failure Analysis and Prevention	160	8
87	Power Distribution Franchisee	360	18
88	CSR and Hydro Sector	230	12
89	Rehabilitation and Resettlement “Challenges in Hydro Sector”	260	13
90	Distribution Franchisee Business : A Case Study of Nagpur	400	20
91	Management of Transmission System	620	32
92	Hydro Power Plant Familiarisation (Chetram Meena)	500	25
93	Fundamentals of O& M of Hydro Power Plant (Vol. I)	190	10
94	Fundamentals of O& M of Hydro Power Plant (Vol.II)	300	15
95	Fundamentals of O& M of Hydro Power Plant (Vol. III)	260	13
96	Fundamentals of O& M of Hydro Power Plant (Vol. IV)	160	8
97	Fundamentals of O& M of Hydro Power Plant (Vol. V)	270	14
98	EHV Power Transformers : Reliability Issues	150	8
99	Energy Audit and Energy Conservation Techniques for Thermal Power Stations	530	27

1. Packing and forwarding charges ₹ 50/- per book payable extra.
2. **Special Offer**: All books carry 10% discount for all and 30% discount for students.
3. The payment may be made through Demand Draft in favour of "***National Power Training Institute***" payable at Faridabad.

Two Day workshop on 'Design & Technology Aspects of Grid Connected Solar PV Systems' at NPTI (ER), Durgapur

MULTIMEDIA COMPUTER BASED TRAINING (CBT) PACKAGES

Sl. No.	Name of the Multimedia CBT Package	Price of 1st copy	Price of 2nd 3rd & 4th	All other copies
	COAL THERMAL			
	A) BOILERS			
1.	Combustion System in Boilers	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
2.	Boiler Drum and Drum Internals	-do-	-do-	-do-
3.	Super Heater, Re-heater and De-Super Heater	-do-	-do-	-do-
4.	Air Heater	-do-	-do-	-do-
5.	Fuel Handling System, Feed Heating System & Exhaust System	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
6.	CFB Boiler	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
	B) TURBINES			
7.	Water/Steam cycle of a Thermal Power Plant	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
8.	Steam Turbine Construction	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
9.	Turbine Governing System (KWU)	-do-	-do-	-do-
10.	Regenerative Feed Heating System	-do-	-do-	-do-
11.	Turbine Vacuum System	-do-	-do-	-do-
12.	HP-LP Bypass System	-do-	-do-	-do-
13.	Turbine Lubricating Oil System	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
14.	P. I. D. Control	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
	C) GENERATORS			
15.	Working Principles of Generator & Electrical Systems in a Thermal Power Station	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
16.	Generator Construction	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
17.	Generator Excitation System	-do-	-do-	-do-
18.	Generator Seal Oil System	-do-	-do-	-do-
19.	Generator Cooling System	-do-	-do-	-do-
	D) AUXILLIARIES			
20.	Power Station Fans	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
21.	Electrical Motors in Power Station	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
22.	Coal Mills & Milling Systems	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-

23.	Electrostatic Precipitators	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
24.	Cooling Water System	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
25.	Compressed Air, Water Treatment & Fire Prevention Systems	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
26.	Lub Oil Handling System	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
27.	Couplings for Power Transmission	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
28.	Pumps used in Power Station	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
29.	Boiler Feed Pump for Power Station	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
30.	Valve Maintenance	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
	CCGT / GAS THERMAL			
31.	Combined Cycle Gas Turbine (CCGT) Plant	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
32.	Gas Turbine	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
33.	Control System of CCGT Plant	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
34.	Water Treatment of CCGT	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
	HYDRO			
35.	Hydro Generator Construction	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
36.	Silting Problems in Hydro Power Plants	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
37.	Hydro Turbine	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
38.	Hydro Environment interface	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
39.	Hydro Generator Protection	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
40.	R & M for Hydro Power Station	₹ 10,000/-	₹ 8,000/-	₹ 6,000/-
	T & D			
41.	Power Transformers	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
42.	Condition Monitoring of Power Transformers	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
43.	Maintenance of Power Transformers	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
44.	Power Station Switchgear	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
45.	Switchgear Maintenance	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
46.	Sub Station Maintenance Management - A System Approach	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
47.	Drying out System of Power Transformers and Reactors	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
48.	Cable and Cable Jointing	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-

49.	Motor & Motor Maintenance	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
50.	Battery and Battery Maintenance	₹ 15,000/-	₹ 10,000/-	₹ 8,000/-
51.	Renewable Energies	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
	MANAGEMENT			
52.	Project Management through the Technology Consciousness	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
	HINDI			
53.	Rajbhasha Hindi Ki Sambhidhanic Sthiti aur Karyalaya Prayog	₹ 6,000/-	₹ 4,000/-	₹ 3,000/-
	MISCELLANEOUS			
54.	Electrical Safety	₹ 10,000/-	₹ 8,000/-	₹ 6,000/-
55.	Coal to Electricity	₹ 10,000/-	₹ 8,000/-	₹ 6,000/-

Note: All CDs are © Copyright NPTI.

The CDs are to be used in the premises for which they have been procured. Reproduction of any of these CDs in any firm is illegal under copyright act.

Incentive Scheme for Organisations		
1.	For a order value ₹ 6,40,000/- or above:	1 Personal Computer with printer free or adjust ₹ 40,000/-
2.	For a order value ₹ 8,40,000/- or above:	1 LCD projector free or adjust ₹ 60,000/-
3.	For a order value ₹ 11,20,000/- or above:	1 Personal Computer with printer + 1 LCD Projector or adjust ₹ 1,00 Lakh

Observation of Vigilance Awareness Week at NPTI Corporate Office, Faridabad

Sh. Abhishek Modi, IPS, Dy. Commissioner of Police,
ADPC inaugurating National Workshop on Cyber Security at NPTI Durgapur

Champaran Satyagrah organised by MBA-Power Management

CLIENTELE FOR TRAINING, PLACEMENT AND CBT

- Aban Power Ltd
- ACC
- Adani Power
- Adhi Parasakthi Engineering College
- AP Heavy Water Plant
- APSEB
- AREVA – T&D
- BALCO
- Bechtel
- BEML Limited
- Bhander Power Ltd., Surat
- BHEL
- Birla Copper
- Bongaigaon Refinery & Petroleum, Assam
- BSEB
- CARE
- Central Power Distribution Corporation of A.P.
- Centuary Apparals
- CESC Limited
- Cethar Vessels
- Chattisgarh State Electricity Board
- Chattisgarh State Power Generation Corporation Ltd
- China Lite Power
- Coastal Energen Pvt. Ltd., Covanta
- CSEB
- DCE
- Delhi GMR
- DTL
- DVC
- Electricity Department, Govt. of Puducherry
- Enercon
- FACT
- Fictner Consulting Engineers (I) Pvt. Ltd., Bengaluru
- G.B.Pant University
- GEB
- Genting LANCO
- GSPCL
- Gujarat Electricity Board – GETRI
- Gujarat Industries Power Corporation Ltd.
- GVK Power & Infrastructure
- HINDALCO
- HPGCL, Haryana
- HSEB
- HWP
- IFFCO
- IIT Powai Campus, Maharashtra
- INDIAN CHARGE CROME
- INFRALINE
- IOCL
- IRCON
- JNT Univ
- JP HYDRO, KSK ENERGY
- JSW Energy Limited
- JSW Steel Ltd., Mecheri, Thiruvannamalai
- Kalasilingam University
- Kamban Engineering College

- Karnataka Power Corporation Ltd., Karnataka
- Kerala Minerals and Metals Ltd., Kerala
- Kerala State Electricity Board
- KHSTPP, Kahalgaon, Bhagalpur
- KLG SYSTEL
- Korba West, Chhattisgarh
- KPCL
- KPMG
- Krishnapatnam Power Corporation Limited
- KVTCH Lignite TPS, Gujarat
- L&T Power
- LANCO Anpara
- LANCO Infratech
- Larsen & Toubro
- MAHAGENCO
- MALCO Power Plant, Mettur Dam
- MEW
- MP Power Generation Company Ltd., Madhya Pradesh
- MPEB
- MSEB
- Mysore Paper Mills Ltd., Bhadravathi
- National Aluminium Company Ltd.
- NDPL
- NEEPCO
- Neyveli Lignite Corporation Ltd
- NHPC
- NIT Durgapur
- NIT Raipur
- NJPC
- NLC
- Noida Power
- NPCIL
- NTPC Ltd.
- Nuclear Power Corporation of India Ltd.
- Panipat Thermal Power Station
- Pondicherry Power Corporation Limited
- Power Grid
- Powergen
- PPN , Thirukadaiyur
- PSEB
- PTC
- PTCUL
- Punjab State Electricity Board
- Punj Lloyd
- PWC
- Reliance Energy
- Reliance Infrastructure Ltd
- RRVUNL
- RSEB
- S&L, Baroda
- SAIL
- Satyam
- Schgneider Electric Conzerv India Pvt. Ltd., Bengaluru
- SGS India Private Ltd.
- Shriram EPC
- SJK Power Gen Spectrum
- Sree Sastha Institute of Engg. & Technology, Chennai
- Sri Chandrasekharendra

- Saraswathy Viswa Mahavidhyala, Kanchipuram
- Sri Venkateswara College of Engineering
- ST-CMS Electric Co. Ltd., Uthangal
- Sterilite Energy
- Suzlon
- Tamil Nadu Electricity Board
- Tamil Nadu Newsprint & Papers Limited
- Tata Power Co Ltd., Jamshedpur
- TCP Ltd.
- THDC
- Thermal Systems
- Thermax
- TNEB
- Torrent Power
- TVNL
- Udupi Power Corporation Ltd.
- UJVNL
- UP Rajya Vidyut Utpadan Nigam Ltd., Parichha
- UREDA
- Vedanta
- Vickram Engineering College
- WBPDCL
- West Bengal State Electricity Company Ltd., Kolkatta
- PHCN Nigeria

FOREIGN CLIENTS

- Afghanistan
- Ceylone Electricity Company, Srilanka
- Oman
- Bhutan Hydro Power Plant, Bhutan
- Cambodia
- Indonesia
- Philippines
- Sudan
- Syria
- Zambia
- ZESA
- Zimbabwe
- Ethiopia
- Iraq
- Kenya
- Malaysia
- Mexico
- Myanmar
- Nepal
- Nigeria

REPUBLIC DAY - 2018 CELEBRATION

TRAINING CALENDAR
2018-2019
AT A GLANCE

एन पी टी आई

NPTI

प्रावीण्यं परोपवृत्तिश्च

सौर ऊर्जा
अक्षय ऊर्जा

बिजली बचाएं
समृद्धि पाएं









एनपीटीआई के साथ पावर सेक्टर का सुनिश्चित सम्पूर्ण विकास

विद्या है धनम्, विद्या है बलम्

Knowledge is Power Supreme

Life @ NPTI





TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
	A. TRAINING COURSES													
1	Post Graduate Diploma Course (PGDC) in Power Plant Engineering	52 weeks	20-Aug-18	20-Aug-18	20-Aug-18			20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18			2,30,000 per annum non sponsored 3,60,000 per annum sponsored
2	Post Graduate Diploma Course (PGDC) in Transmission & Distribution System	26 weeks		16-Jul-18 07-Jan-19		19-Mar-18 18-Oct-18				08-Oct-18	04-Jun-18 03-Dec-18			1,45,000 non sponsored 1,90,000 sponsored
3	Post Graduate Diploma Course (PGDC) in Power Systems	52 weeks				20-Aug-18								2,30,000 per annum non sponsored 3,60,000 per annum sponsored
4	Post Graduate Diploma Course (PGDC) in Hydro Power Plant Engineering	39 weeks			03-Sept-18									1,75,000 per annum non sponsored 2,00,000 per annum sponsored
5	Post Graduate Diploma Course in Energy Market Management	52 weeks	20-Aug-18			20-Aug-18			20-Aug-18		20-Aug-18			1,45,000 non sponsored 2,20,000 sponsored
6	Post Graduate Diploma Course in Power System Operation	52 weeks	20-Aug-18			20-Aug-18			20-Aug-18		20-Aug-18			80,000 non sponsored 1,35,000 sponsored
7	Post Graduate Diploma Course in Renewable Energy and Grid Interface Technologies	52 weeks	01-Aug-18 05-Feb-19			01-Aug-18 05-Feb-19			01-Aug-18 05-Feb-19		01-Aug-18 05-Feb-19			2,30,000 per annum non sponsored 3,60,000 per annum sponsored
8	Post Graduate Diploma Course in Smart Grid Technologies	52 weeks	01-Aug-18 05-Feb-19			01-Aug-18 05-Feb-19			01-Aug-18 05-Feb-19		01-Aug-18 05-Feb-19			2,30,000 per annum non sponsored 3,60,000 per annum sponsored
9	Post Diploma Course in Power Plant Engineering	52 weeks		17-Sept-18				26-Nov-18	01-Aug-18		05-Mar-19			2,30,000 per annum non sponsored 3,60,000 per annum sponsored
10	Post Diploma Course in Hydro Power Plant Engineering	26 weeks			06-Aug-18									80,000 per annum non sponsored 1,35,000 per annum sponsored
11	Post Diploma Course in Distribution & Sub-Station Management	26 weeks												80,000 per annum non sponsored 1,35,000 per annum sponsored
12	Post Diploma Course in Transmission Line Maintenance	26 weeks												80,000 per annum non sponsored 1,35,000 per annum sponsored
	B. LONG TERM COURSES (17 weeks and above)													
1	Graduate Engineers Course in Thermal Power Plant Engineering	52 weeks												2,30,000 per annum non sponsored 3,60,000 per annum sponsored
2	Distance Education Certificate Course on Electricity Regulatory Framework & Commercial Aspects of Indian Power Sector	26 weeks	01-Sept-18											80,000 per annum non sponsored 1,35,000 per annum sponsored

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
3	PGCC in GIS & Remote Sensing	26 weeks	02-Apr-18 01-Aug-18 01-Dec-18											80,000 per annum non sponsored 1,35,000 per annum sponsored
.	**C. NEW COURSES (Medium Term)**													
1.	Design, Erection And Commissioning Of Solar Power Plants	3 months												
2.	Distribution Substation Management & Optimal Utilization Of Components	3 months												
3.	Skill Development Training Program In Renewable Energy	1 month												
	NEW COURSES (Short Term)													
1.	Battery Energy Storage & Microgrids In India	02 days	14-Mar-19											9,000
2.	E-Mobility Mission Of India: Concepts & Implications	01 day	07-Sept-18											5,000
3.	Entrepreneurship Development Program On Solar PV Rooftop	05 days	18-Mar-19		18-Mar-19				18-Mar-19	18-Mar-19				18,000
4.	Accelerating Energy Efficiency In India: Initiatives & Opportunities	02 days	11-Jan-19											9,000
5.	Solar Photovoltaic Training For Master Trainers Of Technicians	05 days	11-Jun-18						11-Jun-18					18,000
6.	Geo-Spatial Approach In Power Sector	03 days	07-Dec-18											13,000
7.	Green Energy For Clean Environment	01 days	26-Mar-19											5,000
8.	Smart Power Flow Controller For Smarter Grid Applications	05 days	04-Oct-18			04-Oct-18								18,000
9.	Solar Photovoltaic System Design And Installation	05 days	08-Oct-18						08-Oct-18	08-Oct-18				18,000
10.	Regulatory Issues in Power Sector	05 days	17-Sep-18											18,000
11.	Disaster Management, Electrical Safety Procedures And Accident Prevention	05 days							27-Aug-18					18,000
12.	Best Practices In Distribution Operation & Management	05 days		09-Jul-18		09-Jul-18				09-Jul-18	09-Jul-18			18,000

TRAINING CALENDAR 2018-2019														
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
13.	IT General For Utility Engineers	01 days	17-Aug-18											5,000
14.	Smart Grids And Renewable Energy Integration	01 days	25-Oct-18											5,000
15.	Cyber Security in Power Sector.	01 days	01-Feb-19											5,000
16.	Renewable Energy Grid Interface Technology & Regulatory Framework	02 days	27-Sep-18											9,000
17.	Advanced Operational Practice Of Supercritical Thermal Power Plant	02 days	15-Nov-18					15-Nov-18						9,000
18.	Environment Impact Assessment And Environment Management Plan	02 days	11-Feb-19											9,000
19.	Waste To Energy: Green Energy Development	02 days	21-Oct-18											9,000
20.	Flexible Operation Of Thermal Power Plant In India	03 days	16-Oct-18	16-Oct-18				16-Oct-18	16-Oct-18	16-Oct-18	16-Oct-18			13,000
21.	Development Of Floating Solar PV System (FSPV) In India	01 day	21-Dec-18											5,000
22.	Hybrid Renewable Energy System (HRES)	02 days	12-May-18											9,000
23.	Power Quality Measurement	03 days				13-Jun-18								13,000
24.	Renewable Energy Integration And Grid Operation	03 days			11-Jul-18				11-Jul-18		11-Jul-18			13,000
25.	Development Of Microgrid (MG) And Macrogrid (MCG) In India	03 days					22-Aug-18				22-Aug-18			13,000
26.	Synchronization And Automatic Power Control	02 days				13-Sep-18								9,000
27.	Dynamic Operation Of Transformer And Control	02 days					25-Oct-18				25-Oct-18			9,000
28.	High-Voltage Direct Current Transmission System	02 days				14-Jan-19								9,000
29.	Efficient Energy Management	01 days	09-Nov-18											5,000
30.	Adoption Of Big Data And Analtyics - Towards Utiities Transformation	03 days	11-Feb-19											13,000

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
	D. MEDIUM TERM COURSES (5 weeks to 16 weeks)													
1	Live line maintenance Techniques (LLMT), using Hot Stick Method (HSM)	11 weeks					09-Aprl-18 30-Jul-18 03-Dec-18							1,86,000
2	Live line maintenance Techniques (LLMT) using Bare and methods (BHM)	5 weeks					29-Oct-18							1,38,000
3.	Post Graduate Certificate Course in Thermal Power lant Engineering	12 weeks												1,96,000
4.	Certificate Course for Hydro Power Plant Engineers and Supervisior	12 weeks			23-Apr-18									1,20,000
5.	Specialized Training for Hydro Power Plant working Engg. and Supervisior	6 weeks			04-Jun-18									78,000
	E. SHORT TERM COURSES (One Day to 4 weeks)													
1.	Specialized Training Programme on Hydro Power Plant Engineering	3 weeks			28-May-18									45,000
2.	Smart Transmission & Distribution System for Gradute Engineers	1 week									16-Apr-18			18,000
3.	Power Systems Communication SCADA & EMS	1 week				09-Apr-18 17-Dec-18								18,000
4.	Substation Planning & Engineering	1 week				02-Apr-18 07-Jan-19								18,000
5.	Energy Efficiency Management in Power System	3 Days							05-Nov-18					13,000
6.	Awareness Programme for Executive in Hot Line activities	1 week					04-Jun-18 24-Sept-18 28-Jan-19							21,500
7.	Valve and Pump Maintenance	1 week		26-Nov-18					18-Jun-18					18,000
8.	Gas Turbine & CCPP (Refresher Course)	1 week		16 -Apr-18				04-Feb-19						18,000
9.	Pumps Operation, Maintenance and Performance Monitoring	1 week		03-Dec-18				02-Apr-18						18,000
		+ 3 Days									27-Nov-18			13,000

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
10.	Valve Actuator Maintenance	3 Days						02-May-18						13,000
11.	Thermal Power Station Operation	1 week		07-May-18				14-May-18	04-Jun-18					18,000
		+ 4 Days									04-Sep-18			16,000
12.	Power Plant Auto Control	1 week						08-Oct-18						18,000
13.	Valve Maintenance	1 week						18-Jun-18						18,000
		+3 Days												13,000
14.	Fans & Air Heaters	3 Days						28-May-18						13,000
15.	Switchgear and Transformer Maintenance	1 week				04-Mar-19			23-Apr-18					18,000
16.	Switchyard Maintenance Technique using LLMT	4 weeks					25-Feb-19							1,08,000
17.	Electrical Safety and Inspection of Electrical	1 week				07-May-18				20-Aug-18				18,000
	Installation Under IE Rules	+3 Days				26-Nov-18				10-Dec-18				13,000
18.	Reactive Power Management	1 week				25-Mar-19								18,000
19.	Distribution Metering	1 week								14-May-18				18,000
20.	Operation & Maintenance of Transformer and Circuit Breakers	1 week		08-Oct-18		23-Apr-18								18,000
21.	Power Quality and Harmonics Mitigation and Reactive Power Management	1 week				21-May-18 21-Jan-19								18,000
22.	Boiler Operation/ Boiler & its Auxiliaries Operations	1 week		29-Oct-18				23-Jul-18 24-Sep-18	26-Nov-18					18,000
		4 Days									08-May-18			16,000
23.	Operation & Maintenance (O & M) of HT/ LT Switchgear	1 week								03-Sep-18				18,000
24	Control & Instrumentation (C & I) in Power Station	1 week		24-Sep-18				18-Feb-19						18,000
	(for operation Engineers)	+ 3 Days									19-Jun-18			13,000
25	Power System Studies	1 week				26-Sept-18								18,000
26.	Power System Operation	2 weeks				14-May-18 03-Sep-18 11-Mar-19								33,000

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
27	Power System Protection	2 weeks				04-Jun-18 11-Feb-19								33,000
28	Advanced Power System Protection	1 week				11-Jun-18 18-Feb-19								18,000
29	Steam Turbine & its Aux. Operation	1 week		14-Jan-19				04-Jun-18	07-Jan-19					18,000
		4 Days									05-Mar-19			16,000
30	Electrostatic Precipitator	3 Days						20-Jun-18						13,000
31	Boiler Firing System & Equipments	1 week						09-Jul-18						18,000
32	Electrical Protection System	1 week		07-Jan-19					21-May-18					18,000
		4 Days						18-Jul-18			28-Jan-19			16,000
33	Distribution Engineering	1 week								04-Mar-19				18,000
34	Operation & Maintenance (O & M) of Distribution System	1 week									08-Oct-18			18,000
35	Reliability Centered maintenance of Rotary Equipment	1 week		23-Jul-18										18,000
		3 Days							03-Dec-18					13,000
36	Operation & Maintenance (O & M) of coal mill Feeder	3 Days						28-Nov-18						13,000
37	Emerging Technologies in Reducing AT&C Losses	3 Days							14-May-18					13,000
38	Flexible AC Transmission system (FACTS)	1 week		26-Nov-18		18-Jun-18								18,000
39.	Power System Reliability	1 week				02-Jul-18								18,000
40	Low Voltage Power Distribution System Design	4 Days				06-Aug-18								16,000
41.	Generator & Auxiliaries including Excitation System	1 week		10-Dec-18				03-Dec-18	06-Aug-18					18,000
		+ 3 Days									10-Jul-18			13,000
42	Power Cables & Jointing Techniques	3 Days				28-May-18								13,000
		4 Days				26-Nov-18								16,000
43.	High Voltage Testing of Power System Equipment	3 Days				11-Jul-18								13,000
44	Vibrational Analysis	3 Days							11-Jun-18					13,000

TRAINING CALENDAR 2018-2019														
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
45	Regulatory Framework in Power Sector	1 week				02-Jul-18								18,000
46	Power Systems Logistics	1 week				29-Oct-18								18,000
47	Non Destructive Testing & Welding Defects	1 week		27-Aug-18										18,000
48	Thermal PP Efficiency & Performance Monitoring	1 week						06-Aug-18	30-Jul-18					18,000
		+ 3 Days									05-Feb-19			13,000
49	Operation & Maintenance (O & M) of Transmission lines & Sub-Station	1 week				24-Dec-18			25-Jun-18					18,000
50	Relay Maintenance	3 Days						29-Aug-18						13,000
51	Power Plant Chemistry for operation Engineers	1 week		10-Sep-18					23-July-18					18,000
		4 Days									22-Oct-18			16,000
52	Boiler Tube Failure & Case Studies	1 week							09-Jul-18					18,000
		2 Days						07-Jun-18						9,000
53	Training Program on Cold Lines	4 weeks					02-Jul-18							86,500
54	Management of Electrical Contacts	3 Days				20-Aug-18								13,000
55	Power System Energy Losses	1 week						03-Sep-18						18,000
56	Energy Efficiency in Electrical Utilities	3 Days				17-Sep-18								13,000
57	Issues Related to Super-Critical Technology	2 Days						21-Jan-19						9,000
58	Burner Management System/ FSSS	3 Days						12-Dec-18						13,000
59	Power Systems Studies Load Dispatch	1 week						21-May-18						18,000
60	Battery Maintenance	3 Days						03-Oct-18						13,000
61	Large Capacity CFBC Boilers	3 Days						14-Nov-18						13,000
62	Electrical Motor for Power Plant its Maintenance	3 Days						26-Nov-18						13,000
63	Energy Conservation & Energy Audit	1 week				04-Nov-18		04-Mar-19						18,000
	Generation Sector	3 Days								16-Jul-18	13-Nov-18			13,000
64	Operation & Maintenance (O & M) of Transformer	1 week								04-Feb-19				18,000

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
65	HVDC Transmission System	1 week				08-Oct-18								18,000
66	Operation & Maintenance (O&M) of HVDC Transmission Systems	1 week									24-Sep-17			18,000
67	Welding Practices	1 week							10-Sep-17					18,000
68	Trouble shooting of Steam Turbines	3 Days							10-Sept-18 14-Jan-19					13,000
69	Small. Mini & Micro Hydro Power Generation	3 Days			03-Dec-18				04-Dec-18					13,000
70	Fan & Air Heaters Maintenance	1 week		04-Jun-18										18,000
71	Fire Prevention, Protection & Safety	3 Days									04-Dec-18			13,000
72	Bearing Maintenance and Shaft Alignment	1 week		14-May-18				11-Mar-19						18,000
		+ 4 Days									11-Dec-18			16,000
73	Switchgear Maintenance	2 Days						26-Apr-18						9,000
74	Transformer Maintenance	3 Days						19-Dec-18						13,000
75	Transformers	1 week						07-Jan-19						18,000
76	Pump Maintenance	1 week						11-Feb-19						18,000
		3 Days									16-Jan-19			13,000
77	Operation & Maintenance (O & M) of Power & Distribution Transformers	1 week				18-Mar-19								18,000
78	Data Acquisition & Distributed Digital Control System in Thermal Power Station	3 Days									02-Jan-19			13,000
79	Renewable Energy Technologies	3 Days							04-Mar-19					13,000
80	Condition Bases Maintenance	1 week							10-Dec-18					18,000
81	Energy Audit & Demand side Management in power Utilities	1 week						22-Oct-18						18,000
82	Environment Pollution & Pollution Control	1 week		9-Jul-18										18,000
	Related with Thermal Power Plants	+ 3 Days									12-Feb-19			13,000

TRAINING CALENDAR 2018-2019														
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
83	Power Plant Instrumentation	1 week							17-Dec-18					18,000
		4 Days									07-Jan-19			16,000
84	Management Development Program	1 week			16-Jul-18									18,000
85	Renewable Energy Source & Grid Integration	1 week				17-Dec-18 08-Jan-19								18,000
86	Safety in Hydro Power Station	3 Days			18-May-18									13,000
87	Hydro Power Plant Operation	1 week			18-Jun-18									18,000
88	Valve & Pumps in Power Plants Engineering	3 Days			23-Apr-18									13,000
89	Hydro Generator & its Excitation System	1 week			03-Sep-18									18,000
90	Valve & Pumps in Hydro Power Plant	3 Days			06-Aug-18									13,000
91	Auxiliaries in Hydro Power Plants	3 Days			17-Sep-18									13,000
92	Hydro Turbine Governing & its Protection System	1 week			12-Nov-18									18,000
93	Role of Smart Grids in the Indian Power Sector : Current Developments Challenges and Way Forward	4 Days				01-May-18 28-Jan-19								16,000
		2 Days		04-Feb-19										9,000
94	Transmission Line Maintenance & Introduction to Live Line Maintenance Tech.	1 week		25-Feb-19										18,000
95	Operation & Maintenance (O & M) of Sub-Station.	1 week								04-Jun-18 19-Nov-18				18,000
96	Operation & Maintenance (O & M) of Sub-Station.	1 week									18-Feb-19			18,000
97	Live Line Punctured Insulator Detection (PID) on EVH Lines	1 week					25-Jun-18 22-Oct-18 18-Feb-19							24,000
98	Power System & Load Despatch	3 Days									17-Sept-18			13,000
99	Training For Trainers	1 week		02-Jul-18										18,000
100	Management of Renewable Energy (Solar Energy in Particular) Finance and Economics of Renewable Energy	2 week							03-Sep-18					33,000

TRAINING CALENDAR 2018-2019

S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
101	Power Market Specialist	1 week				25-Feb-19								18,000
102	Design and Operation and Maintenance of LED Ligthing	3 Days				01-Aug-18								13,000
103	RLA & LE of Substation Equipment	3 Days				01-Aug-18								13,000
104	Distribution Metering, Smart Meters and demand Side Management	1 week				25-Jun-18								18,000
105.	Distribution Automation	3 Days				25-Jun-18								13,000
106.	Protection Of Industrial Power Systems	3 Days				29-Aug-18								13,000
107.	Project Management Of EHV Lines & Towers Including Sub Station.	1 Week									17-Dec-18			18,000
108.	Emerging Trends In Excitation System & AVR	2 Days							07-May-18 10-Sep-18					9,000
109.	Electrical Protection System – Numerical Relay	2 Days							18-Jun-18 06-Dec-18					9,000
110.	Smart Grid For Utility Engineers	2 Days							12-Nov-18					9,000
111.	Condition Based Maintenance Aspect Of Electrical Equipments	3 Days							10-Dec-18					13,000
112.	Environmental Issues In Thermal Power Stations And PGD Technology.	2 Days							05-Nov-18 28-Jan-19					9,000
113.	Finance For Non Finance Executive	2 Days							09-Aug-18					9,000
114	Protection Philosophy, Interlock Or Relays Gradation	2 Days							14-May-18					9,000
115	Operational Safety	2 Days							04-Oct-18					9,000
116.	Protection And Maintenance Of Transformers	2 Days							30-Aug-18					9,000
117.	Intelligent Load Management System	2 Days							21-Jan-19					9,000
118.	Contract Management	2 Days							04-Jun-18 26-Nov-18					9,000

TRAINING CALENDAR 2018-2019														
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Alapuzzaha	Shivpuri	Trg. Fee (₹) per participants
119.	Regulatory Framework In Power Sector	2 Days							13-Sept-18 07-Feb-19					9,000
120.	Solar Power Generation Technology - On Grid & Off Grid	2 Days							06-Aug-18					9,000
121.	Behavioral Science	2 Days							19-Jul-18 21-Feb-19					9,000
122.	Water Conservation Through 3 R	2 Days							29-Nov-18					9,000
123.	Vibration Diagnostics And Fault Analysis	2 Days							26-Apr-18 06-Dec-18					9,000
124.	Boiler Efficiency	2 Days							28-Jun-18					9,000
125	Condition Based Maintenance For Rotary Equipments	3 Days							03-Dec-18					13,000
126.	Steam Turbine Governing	3 Days							18-Jul-18					13,000
127.	An Overview Of Supercritical Technology	3 Days							10-Dec-18					13,000

TRAINING CALENDAR 2018-2019

	Duration (weeks)	Faridabad	HPTC Nangal	PSTI Bengaluru	Nagpur	Trg. Fees (₹)
E. SIMULATOR TRANING PROGRAMS						
1 210 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING	2 weeks				02-04-2018 16-04-2018 30-04-2018 14-05-2018 28-05-2018 18-06-2018 09-07-2018 23-07-2018 06-08-2018 20-08-2018 03-09-2018 17-09-2018 01-10-2018 12-10-2018 20-11-2018 10-12-2018 24-12-2018 07-01-2019 21-01-2019 04-02-2019 04-03-2019 18-03-2019	33,000
2 500 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING	2 weeks	02-04-2018 16-04-2018 30-04-2018 14-05-2018 28-05-2018 11-06-2018 25-06-2018 09-07-2018 23-07-2018 06-08-2018 20-08-2018 03-09-2018 17-09-2018 01-10-2018 15-10-2018 29-10-2018 19-11-2018 03-12-2018 07-01-2019 21-01-2019 04-02-2019 18-02-2019 04-03-2019 18-03-2019				33,000
3 COMBINED CYCLE GAS TURBINE PLANT SIMULATOR TRAINING	2 weeks	02-04-2018 16-04-2018 30-04-2018 14-05-2018 28-05-2018 11-06-2018 25-06-2018 09-07-2018 23-07-2018 06-08-2018 20-08-2018 03-09-2018 17-09-2018 01-10-2018 15-10-2018 29-10-2018 19-11-2018 03-12-2018 07-01-2019 21-01-2019 04-02-2019 18-02-2019 04-03-2019 18-03-2019				33,000
4 250 MW HYDRO SIMULATOR TRAINING	1 week		02-04-2018 23-04-2018 07-05-2018 21-05-2018 11-06-2018 09-07-2018 13-08-2018 27-08-2018 10-09-2018 24-09-2018 08-10-2018 05-11-2018 17-12-2018 07-01-2019 21-01-2019 11-02-2019 04-03-2019			24,000
5 DISPATCH TRAINING SIMULATOR	2 weeks			16-07-2018 10-12-2018		24,000
6 800 MW SUPER CRITICAL THERMAL POWER PLANT TRAINING SIMULATOR	2 weeks	21-05-2018 04-06-2018 18-06-2018 09-07-2018 06-08-2018 27-08-2018 10-09-2018 24-09-2018 08-10-2018 22-10-2018 12-11-2018 26-11-2018 10-12-2018 07-01-2019 04-02-2019 11-03-2019				33,000


SATYAGRAH