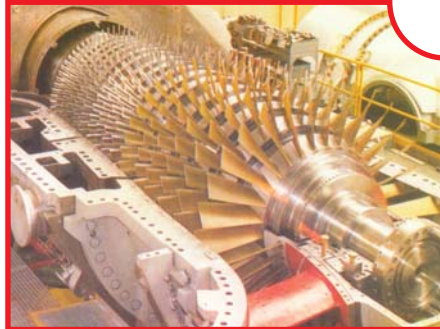


# Training & Academic Calendar



2016-2017



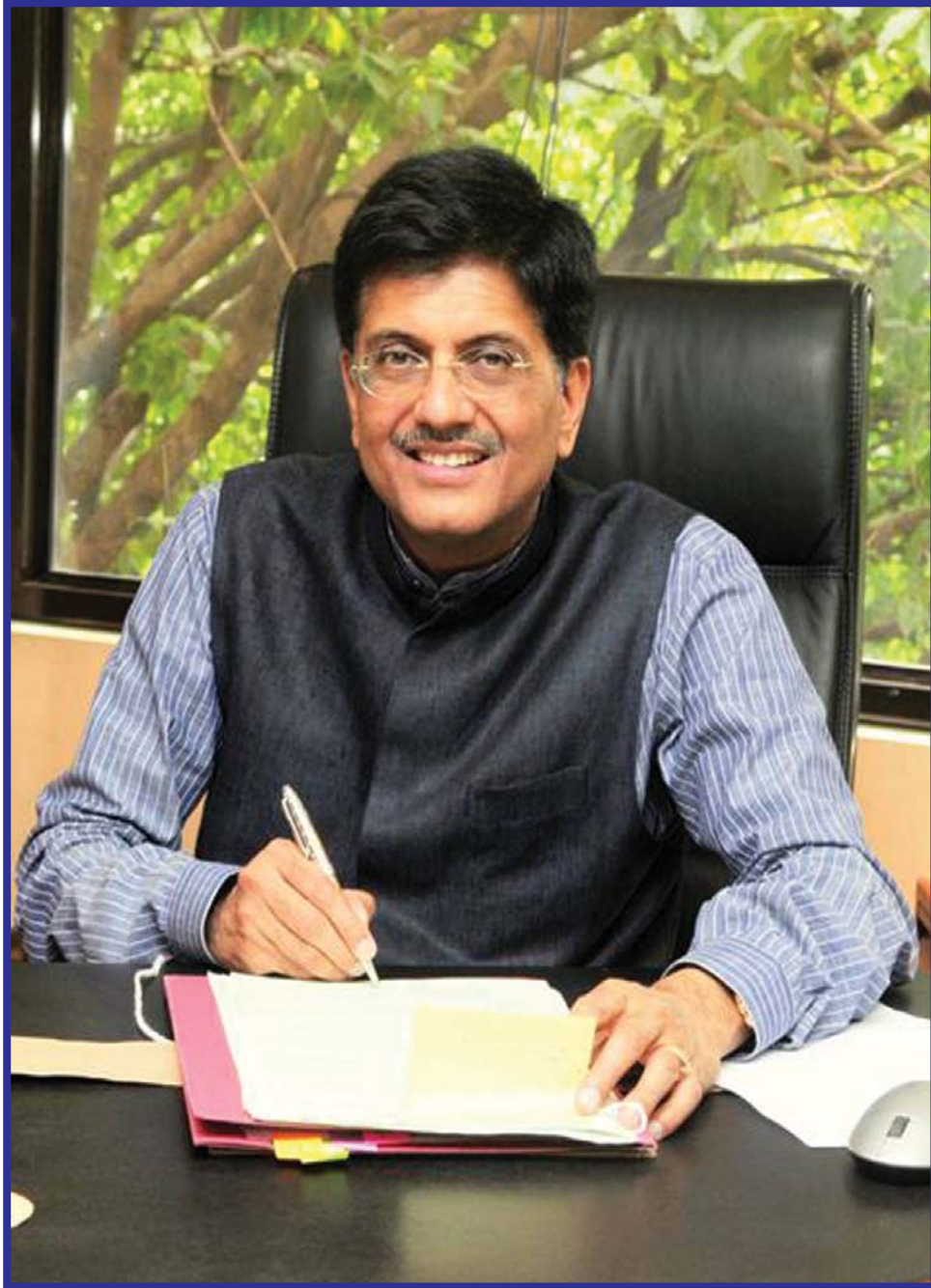
**Fifty Years of Service to the Power Sector**



**NATIONAL POWER TRAINING INSTITUTE**  
**An ISO 9001 : 2008 & 14001:2004 Organisation**  
(Ministry of Power, Government of India)  
NPTI Complex, Sector - 33, Faridabad - 121 003, India  
Tel.: 0129 2257131 Fax: 0129 2277412 Website: [www.npti.in](http://www.npti.in)



## Our Source of Inspiration



**Shri Piyush Goyal**  
*Hon'ble Minister of State with Independent Charge*  
*for*  
*Power, Coal, New and Renewable Energy*  
*Govt. of India*



# Training & Academic Calendar



2016-2017



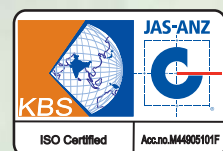
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Tel.: 0129 2257131 Fax: 0129 2277412 Website: [www.npti.in](http://www.npti.in)





Shri P. K. Sinha, Secretary (Power) releasing Training Calendar 2015-16 of NPTI



## **FOREWORD**

Continuing with its objectives of providing well equipped manpower to the Power Sector, National Power Training Institute (NPTI) is releasing its Annual Training & Academic Calendar 2016-17.

Over the past decade, the Power Generation, Transmission and Distribution Landscape around the Globe have changed, which brought about paradigm changes in policies and pattern of Training too.

Ministry of Power, Govt. of India has already embarked on the policy to provide **24x7 Power for All**.



Organizations are improving their operational efficiency and processes by leveraging the best-in-class training solutions to their needs. Standing tall in this highly demanding situations and achieving objectives, organizations will have to imbibe upgraded skill, knowledge, change in attitude and perception.

Adoption of rapidly evolving technologies requires strong institutional support to assist utilities in driving transformation. Government of India is continuously emphasizing for providing adequate training infrastructure to get trained manpower for utilities. We at NPTI, believe that trained personnel are most important resource of any organization and are responsible for its progress and stability. NPTI has trained over 2,65,200 Power Professionals in regular Programs over the last 5 decades. NPTI is the only power training institute of its kind in the world with extensive geographical spread and covering wide gamut of academic and training programs in Power Sector.

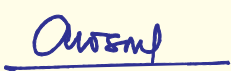
To keep our trainees upgraded with strategic training interventions, the existing training infrastructures of NPTI are also being upgraded. All out efforts are made to ensure that the courses offered by NPTI stand out and meet the Power Sector needs.

In order to further enrich the quality of training and understand the Sector's requirement, NPTI organized a stakeholder's meet on 28<sup>th</sup> January 2016. Suggestions and outcome of the Meet have also been considered in the training Calendar 2016-17.

I understand that Training and Academic Calendar 2016-17 will be the helping source of Training information for all stakeholders. Any further suggestions for improvement in the calendar are most welcome.

I am sure our quality training will help our stakeholders to deliver the best to our Nation.

**Faridabad**  
March 2016

  
(Dr. A. K. Verma)  
Director General



## **GOVERNING COUNCIL NATIONAL POWER TRAINING INSTITUTE**



**Shri P. K. Pujari**  
Secretary, Ministry of Power  
Chairman, Governing Council



**Sh. Major Singh**  
Chairperson (I/C), CEA  
Vice-Chairman, Governing Council



**Shri P.K. Pahwa**  
Member (GO&D)  
Permanent Member



**Dr. Pradeep Kumar**  
Joint Secretary & FA  
Ministry of Power, Permanent Member



**Shri Raj Pal**  
Economic Adviser  
Ministry of Power, Permanent Member



**Dr. A. K. Verma**  
Director General, NPTI  
Member Secretary, Governing Council

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





## **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**

NPTI cherishes a vision of value orientation and value addition to the national and transnational power and energy sectors through Training and Human Resources Development, endeavoring to energize the people who energize the Nation.

### **MISSION**

Emerge as global leaders in enhancing human and organizations excellence in Power and Energy Sectors by blending frontier Technologies with Management to facilitate HRD interventions that are instrumental in providing reliable, safe, economic and clean power.

### **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***







## List of Holidays to be Observed During the Year 2016 in NPTI

S.No.	Holiday	Date	Day
1.	Republic Day	January 26	Tuesday
2.	Holi	March 24	Thursday
3.	Good Friday	March 25	Friday
4.	Ram Navami	April 15	Friday
5.	Mahavir Jayanti	April 20	Wednesday
6.	Buddha Purnima	May 21	Saturday
7.	Id-ul-Fitr	July 06	Wednesday
8.	Independence Day	August 15	Monday
9.	Janmashtami	August 25	Thursday
10.	Id-ul-Zuha (Bakrid)	September 12	Monday
11.	Mahatma Gandhi's Birthday	October 02	Sunday
12.	Dussehra	October 11	Tuesday
13.	Muharram	October 12	Wednesday
14.	Diwali (Deepavali)	October 30	Sunday
15.	Guru Nanak Birthday	November 14	Monday
16.	Milad-Un-Nabi or Id-E-Milad	December 13	Tuesday
17.	Christmas Day	December 25	Sunday

Patron	:	Dr. A. K. Verma, Director General
Editor	:	Sh. R. K. Mishra, Director, (T/P)/(F&A)
Co-editors	:	Sh. S. Kar, Dy. Director Sh. V. K. Pandey, Astt. Director
Visuals	:	Sh. K. L. Vijay Kumar, AVO
Coordination	:	Sh. Ram Mehar, JSO



## **Stake Holders' Meet - 2016**



In order to further enrich the quality of Training and understand the Sector's requirement, NPTI organized a stakeholders' meet on 28<sup>th</sup> January 2016 at NPTI, Corporate Office, Faridabad.

The meet was organized for the stakeholders' to discuss and share their views/suggestions for finalization of the Training & Academic Calendar 2016-17. Suggestions and outcome of the meet have been considered in this Training Calendar 2016-17.



## Awards







**CITATION**

**"National Power Training Institute (NPTI)"**  
is the **"WINNER"** of the **VAJRA** in the  
Category: "ENERTIA - Pradeep Pimpley Award Trophy"  
for 'Institutional Research, Training and Excellence in Academia'  
At the "9th ENERTIA Awards 2015" given this Thursday, 5th November 2015

*The Eminent Jury of "9th ENERTIA Awards 2015" recognizes "National Power Training Institute (NPTI)" is the Sole and only of its kind Apex Institution of the Government of India providing Education, Supporting Research, Development and Training in the Power & Energy domain of Engineering.*

**EMINENT JURY PANEL**

CHAIRMAN	CO-CHAIRMAN	SPECIAL NATIONAL OBSERVER
 Prof. A. G. Iyer Editor-in-Chief & Founder Publisher, ENERTIA, President, ENERTIA Foundation & President, REPA & ASAEI	 Shri K. Ravi Kumar Former CEO, NTPC & Former VPI BAA & Former President, INWA	 Shri Vignesh Prasad Former CEO, NTPC & Former VPI BAA & Former President, INWA
<b>CHIEF CONVENOR &amp; J. CO-CHAIR</b>  Shri Pradeep Pimpley Executive Editor, ENERTIA, VPI & Secretary, ENERTIA Foundation, St. VPI & Secretary General, REPA, St. ASAEI	<b>EMINENT MEMBER JURY</b>  Shri T. C. Anand Former Associate Director, REPA, ACCUMENCY & Former Director, Toshiba India	<b>EMINENT MEMBER JURY</b>  Shri D. R. Jain Former Director Technical, NTPC Ltd. & CEO Thermal, NDL Power
<b>EMINENT MEMBER JURY</b>  Shri Ashwani Chaur Former Associate Director, REPA & Former GM - CC, BHEL	<b>EMINENT MEMBER JURY</b>  Shri P. V. N. Murthy Former Associate Director, REPA & Former VPI, VPIH India	<b>EMINENT MEMBER JURY</b>  Shri K. R. S. Datta Former Director Technical, NTPC Ltd. & CEO Thermal, NDL Power
<b>INTERNATIONAL JURY ADVISORY MEMBER</b>  Prof. S. K. Saha Former President, IAS, Chairman of IAS, Member Expert Committee, State Thermal, NDL, GO	<b>INTERNATIONAL JURY ADVISORY MEMBER</b>  Shri R. K. Saha Former President, IAS, Chairman of IAS, Member Expert Committee, State Thermal, NDL, GO	<b>INTERNATIONAL JURY ADVISORY MEMBER</b>  Shri R. K. Saha Former President, IAS, Chairman of IAS, Member Expert Committee, State Thermal, NDL, GO

NPTI has been conferred the 'WINNER OF VAJRA' in the category : "ENERTIA Pardeep Pimpley Award Trophy for Institutional Research Training & Excellence in Academia" at the Ninth ENERTIA Awards 2015 given on 5<sup>th</sup> November, 2015.



National Power Training Institute (NPTI) which is an autonomous organization under Ministry of Power, Govt. of India has been conferred the 8th Employer Brand Award 2014 for "**Excellence in Training**". The award was announced at a glittering ceremony held at Taj Lands End, Mumbai on 17<sup>th</sup> February, 2014. The award was decided by a panel of eminent jury consisting of Senior Professionals from the Industry. This was the part of World HRD Congress 2014, 22<sup>nd</sup> Edition.

NPTI has been conferred '**Global Training & Development Leadership**' award for "**Training Provider of the Year 2013**" by World Training & Development Congress. The award was announced at a glittering ceremony held at Taj Lands End, Mumbai on 15<sup>th</sup> February, 2014. This award was decided by an International Jury of World HRD Congress.







## **TRAINING & ACADEMIC CALENDAR 2016-2017**

<b>(A). ACADEMIC COURSES</b>	<b>Page No.</b>
1. MBA (Power Management)	31
2. B.Tech./B.E. in Power Engineering	32
3. Post Graduate Diploma Course in Thermal Power Plant Engineering	38
4. Post Graduate Diploma Course in Sub-transmission and Distribution Systems	39
5. Post Graduate Diploma Course in Hydro Power Plant Engineering	40
6. Post Graduate Diploma Course in Transmission & Distribution System	41
7. Post Diploma Course in Thermal Power Plant Engineering	42
8. Post Diploma Course in Hydro Power Plant Engineering	43
<b>(B). LONG TERM COURSES FOR ENGINEERS/SUPERVISORS/OPERATORS (17 WEEKS AND ABOVE)</b>	
1. Graduate Engineers Course (Thermal)	44
2. Distance Education Certificate Course on "Electricity Regulation & Commercial Aspects" of Indian Power Sector	45
3. PGCC in GIS & Remote Sensing	45
<b>(C). MEDIUM-TERM COURSES (5 WEEKS TO 16 WEEKS) FOR ENGINEERS/ SUPERVISORS/OPERATORS</b>	
1. Live Line Maintenance Techniques (LLMT), using Hot Stick Method (HSM)	47
2. Live Line Maintenance Techniques (LLMT) using Bare Hand Method (BHM) on 400KV Lines	47
3. Post Graduate Certificate Course in Thermal Power Plant Engineering	48
4. Certificate Course for Hydro Power Plant Engineers and Supervisors	49
5. Specialized Training for Hydro Power Plant Working Engineers and Supervisors	50
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4. Substation Planning & Engineering	52
5. Energy Efficiency Management in Power System	53



6. Capsule Course for Executive in Hot Line Activities	53
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15. Switchgear & Trans-former Maintenance	57
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17. Electrical Safety and Inspection of Electrical Installations Under IE Rules	58
18. Reactive Power Management	59
19. Distribution Metering	59
20. O & M of Transformers and Circuit Breakers	59
21. Power Quality and Harmonics Mitigation and Reactive Power Management	60
22. Boiler Operation/Boiler & its Auxiliaries Operation	60
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25. Power System Studies	61
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**(E) SIMULATOR TRAINING PROGRAMS**

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**Following program can be conducted/offered to National as well as International organization on request /demand basis on applicable terms and conditions at different NPTI Institutes**

**(F) MEDIUM TERM COURSES FOR ENGINEERS (5 WEEKS TO 16 WEEKS)**

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2. Control & Instrumentation for Supervisors/Technicians	95
3. Training Programme for Supervisor/Managerial Person Deployed in Power Industry	96
4. New and Renewable Sources and Grid Integration In India	96
5. Executive Development Program for the Supervisory Staff Working in Finance & Accounts Department	96

**(G) SHORT-TERM COURSE FOR ENGINEERS (1 DAY TO 4 WEEKS)**

6. Maintenance Planning & Cost Control	97
7. Training of Trainers	98
8. Operation & Maintenance of EHV Sub-station	98
9. Micro Processors	99
10. Vibration Analysis	99
11. Renovation & Modernization of Thermal Power Plant/Station	99
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65. Customer Orientation	103
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70. Valve Maintenance	104
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72. IT Application in Power System	104
73. Pump Storage Hydro Power Station	104
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75. Performance in Testing of Hydro Power System	104
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80. Energy Efficiency in Electrical Utilities	104
81. Power Distribution Management	104
82. Steam Turbine its Auxiliaries Operation	104
83. Advance Mechanical Maintenance Practices	104
84. O&M of Generators & Excitation System for Supervisors	104
85. Fuel (Coal & Oil) Handling System Operation	104
86. Material Management	104
87. Fluidised Bed Combustion Boilers	104
88. Reviewable Energy Source & Grid Integration	104



89. System Operator Training	104
90. Advances in Power Plant Chemistry for Chemists	104
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**N**ational 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 2,65,200 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 306 including 103 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 AND ACADEMIC PROGRAMMES**

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

- Two Year MBA in Power Management approved by AICTE
- Four year B.Tech./B.E. Degree in Power Engineering approved by AICTE
- One Year Post Graduate Diploma Course in Thermal Power Plant Engineering
- One Year Post Graduate Diploma Course in Sub-Transmission & Distribution system
- One Year Post Diplomat course in Thermal Power Plant Engineering
- 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.
- 12 Weeks Post Graduate Certificate Course in Thermal Power Plant Engineering for Engineers.



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 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 SIMULATOR**

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.

### **800 MW SUPERCRITICAL THERMAL TRAINING SIMULATOR**

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

6 more DCS based Multi 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.

TANGEDCO awarded a Third Party Inspection Agency (TPIA) Assignment under their RGGVY works for 3 Districts.

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 Framework in Power Sector"(REW) and "Power System Reliability" (PSR)**

NPTI's Power System Training Institute (PSTI) has for the first time in the country conducted Training & Certification of Power System Operators for executives of NLDC, RLDCs and SLDCs. In order to facilitate the system operators in their learning and development, customised short term training programs on 'RFW' & 'PSR' have been taken up by NPTI. These courses equip System Operators with necessary inputs to take up the System Operators Certification Exam.

The first Basic level On-Line System Operator Certification exam was conducted in November, 2011 and subsequently in December, 2012 and July, 2014 and November, 2015 at various centres across India. A total of 899 System Operators were certified against 1109 who appeared for the exam.

NPTI also for the first time conducted Specialist Level Learning & Development courses for Certified Basic Level System Operators in 'Regulatory Framework in Power Sector' and 'Power System Reliability'.

The first On-line exam for Specialist level Certification on 'Regulatory Framework in Power Sector' was held in March, 2013 for





Certified Basic level System Operators at various centres across India and 93 System Operators were certified against 181 who appeared for the exam.

NPTI has also organised a seminar on "Power System Stability & Control" for the system operations during February 2015 as many as 77 system operators were certified against 106 who appeared for this exam.

## **INTERNATIONAL TRAINING**

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

## **INDO-GERMAN ENERGY PROGRAM**

M/s STEAG Services (India) Pvt. Ltd. has entered with a long-term association with NPTI to jointly undertake activities related to the development, marketing, promotion and carrying out training program and training consultancy services.

## **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 Institute 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 reputed companies 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 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 advancement 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 been adjudged second for excellence in Display for the Ministries & Departments Pavillion 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 **RGVY works** for their 3 Districts.

NPTI also teamed up with **M/s TCE** for a



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

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 Stall at IITF-2015, New Delhi





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 2,49,557 personnel from Central PSUs, SEB, Power Utilities and Private Sector organizations. More than 15,000 operation engineers have been imparted effective integrated unit operation training on the Simulators available with NPTI.

NPTI has trained 18,287 personal with 1,24,476 Trainee-weeks in the financial year 2014-15.

## **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
- 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.
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## **MANPOWER IN NPTI**

NPTI is having on its roll total 306 nos. employees out of which group 'A' officers are 103.

## **ACADEMICS**

### **(I) MBA (Power Management)**

CAMPS launched its first ever MBA Program in Power Management, in the year 2002, which was a first for the sub-continent, to meet the huge requirement of Power Managers in Ministry of Power’s massive efforts of attaining self-sufficiency in Power Sector and run the Indian Power Sector on Commercial lines. This MBA Program duly approved by AICTE is affiliated to Maharshi Dayanand University, Rohtak. This Program with a Difference has a special emphasis on reforming Power Sector issues and ethos to give extra strength to Indian Power Sector Engineers applying management theories and concepts to live problems of electricity industry in these challenging times. This Post-Graduate program also provides cutting edge qualities to develop Business leaders and decision makers with appropriate managerial and technical skills capable of thinking innovatively and duly sensitized to social and environmental interface searching for alternative solutions and run the Indian Power Sector more effectively and efficiently. The intake for the program is 120 seats, out of which 15 seats are reserved for candidates sponsored from Power Sector organizations.

### **(II) B.Tech./B.E. (Power Engineering)**

The 4-year B.Tech./B.E., in Power Engineering (Mechanical/Electrical) course being offered by NPTI is the first of its kind in India. The program is directed at the young aspirants who are looking for a bright career in the Power Industry, the backbone off all industrial activities.

The program coverage includes the regular inputs generally provided in B.Tech. programs and lays special emphasis on Indian Electricity Act 1956, preparing skilled Engineering Executives for the Power Sector.

This is an AICTE approved course being offered at New Delhi, Nagpur & Durgapur Institutes with an intake of 60 seats each and are respectively affiliated to GGSIP University, RTM Nagpur



University & West Bengal University of Technology. The objective of the course is directed at creating a pool of committed and competent professionals equipped with appropriate Technical skills to steer the Indian Power Sector and run it on techno-commercial lines. The curriculum is also designed in such a way that by selecting Mechanical/Electrical electives the final award of Degree can be B.Tech., in Power Engineering (Mechanical/Electrical) which is offered at Badarpur Institute.

**(III) Post Graduate Diploma Course  
in Thermal 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 Thermal 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 for fresh and practicing Graduate Engineers for a period of one (1) year.

**(IV) Post Graduate Diploma Course  
in Sub-Transmission 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.

**(V) 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

**(VI) 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.

**(VII) Post Graduate Diploma Course  
in Thermal 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.

**(VIII) 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.

**(IX) 12 Weeks Post Graduate  
Certificate Course In Thermal  
Power Plant Engineering**

This 12 weeks Post Graduate Certificate Course in Thermal Power Plant Engineering for the candidates willing to make a career in the Power Industry. This course is designed for fresh and practicing Graduate Engineers. Venue of this Course is Faridabad & Guwahati Institute.





500 MW Training Simulator at NPTI (CO), Faridabad



Power System Operator Certificate Conferment Ceremony, New Delhi



### **NPTI CORPORATE OFFICE**

**T**he 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 from 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 from Faridabad to reach NPTI Corporate Centre. The Centre for Advanced Management and Power Studies (CAMPS) is located in the same campus.



NPTI Corporate Centre

DTC and Private Buses of Route No. 405, 415, 460, 473 & 479 ply to Badarpur, Buses are also available from Faridabad to reach the institute.



NPTI Northern Region Badarpur, New Delhi

### **NPTI (HPTC), NANGAL**

**T**he 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 from Delhi Railway Station and by bus from I.S.B.T. Kashmiri Gate, New Delhi. Bus services are also available from Chandigarh.



NPTI (HPTC), Nangal

### **NPTI NORTHERN REGION BADARPUR, NEW DELHI**

**T**he 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



## **POWER SYSTEMS TRAINING INSTITUTE, BENGALURU**

**T**he 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 services are available from 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.



Power Systems Training Institute, Bengaluru.

## **HOT LINE TRAINING CENTRE, BENGALURU**

**T**his 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 taxis are available.



Hot Line Training Centre, Bengaluru

## **NPTI SOUTHERN REGION, NEYVELI**

**T**he 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 Southern Region, Neyveli



## **NPTI EASTERN REGION, DURGAPUR**

**T**he 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 Eastern Region, Durgapur



NPTI North Eastern Region, Guwahati

## **NPTI WESTERN REGION, NAGPUR**

**T**he Nagpur Institute is located at about 8 kms. From the Nagpur railway station. Taxis, auto-rickshaws and city buses are available to reach the Institute. The Institute is situated opposite to the main gate of Vishweshwarayya 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 Western Region, Nagpur

## **NPTI NORTH EASTERN REGION, GUWAHATI**

**T**he 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.



## **MAIN OBJECTIVES**

The primary objectives of this organization are:

- To function as a National Organisation 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.



"Swachh Bharat Abhiyan" being observed in  
NPTI (NR), New Delhi

### **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, WBPDC, 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 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.



Delegates from SAARC Countries at the Library of NPTI (CO), Faridabad

### **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**

### **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-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.



Delegates in 500MW Training Simulator,  
NPTI Corporate Office, Faridabad

### **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-time simulation is carried out for normal and emergency conditions of the network with initial conditions. The behaviour of various Power System elements for different

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 commissioning a 800MW Supercritical Thermal Simulator at NPTI Corporate Office, Faridabad.

6 more DCS based Multi 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 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 Corporate 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.



Delegates from STEAG Services (India) Pvt. Ltd. during their visit to NPTI (CO), Faridabad



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

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” and “Power System Reliability”**

NPTI's Power System Training Institute (PSTI) has for the first time in the country conducted Training & Certification of Power System Operators for executives of NLDC, RLDCs



USAID/USEA Delegates during their visit to NPTI (CO), Faridabad





Teachers Day Celebration at NPTI (CO), Faridabad

and SLDCs. In order to facilitate the system operators in their learning and development, customised short term training programs on 'RFW' & 'PSR' have been taken up by NPTI. This course equips System Operators with necessary inputs to take up the System Operators Certification Exam.

The first Basic level On-Line System Operator Certification exam was conducted in November, 2011 and subsequently in December, 2012 and July, 2014 and November, 2015 at various centres across India. A total of 899 System Operators were certified against 1109 who appeared for the exam.

NPTI also for the first time conducted Specialist Level Learning & Development courses for Certified Basic Level System Operators in 'Regulatory Framework in Power Sector' and 'Power System Reliability'.

The first On-line exam for Specialist level

Certification on 'Regulatory Framework in Power Sector' was held in March, 2013 for Certified Basic level System Operators at various centres across India and 93 System Operators were certified against 181 who appeared for the exam.

NPTI has also organised a seminar on "Power System Stability & Control" for the system operations during February 2015 as many as 77 system operators were certified against 106 who appeared for this exam.

### **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 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 Academic Programs

NPTI is conducting the following training programs at its institutes

- Two year MBA in power management at Faridabad.
- Four Year B.Tech/B.E in Power Engineering
- One year Post Graduate Diploma in



'Hindi Pakhawada' Celebration at NPTI(NR), Badarpur, New Delhi



Presenting Awards to the Children of NPTI (CO) Employees During 'Hindi Pakhawada'



Presenting Awards to the Members of Ladies Club of NPTI Complex, Faridabad during 'Hindi Pakhawada'



Presenting Awards to the Staff of NPTI (CO), Faridabad during 'Hindi Pakhawada'



**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.
- 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.



Inauguration of 14<sup>th</sup> Batch of MBA Power Management at Corporate Office, Faridabad



## **NPTI ORGANISATION**

**B**esides 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 CORPORATE OFFICE**

#### **Director General**

#### **National Power Training Institute**

NPTI Complex, Sector-33, Faridabad – 121 003 (Haryana)  
Telephone: 0-129-2275475, 2257131, EPABX : 0129-2274916, 2274917  
Fax: 0-129-2277412 e-mail: nptifaridabad@npti.in Website: www.npti.in

### **TRAINING INSTITUTES**

- 1. Principal Director, (CP&M/BDD/Purchase)**  
NPTI Complex, Sector-33, Faridabad-121003 (Haryana)  
Ph.: (0129) 2275213  
**e-mail:** jssrao@npti.in
- 2. Principal, (Management Studies/IT/ER/NER)**  
NPTI Complex, Sector-33, Faridabad-121003 (Haryana)  
Ph.: (0129) 2270949  
**e-mail:** skchoudhary@npti.in
- 3. Director, (Training/ Project)/(F&A)**  
NPTI Complex, Sector-33, Faridabad-121003 (Haryana)  
Ph.: (0129) 2272210  
**e-mail:** rkmishra@npti.in
- 4. Head of Institute, National Power Training Institute (N.R.)**  
Badarpur, New Delhi -110044  
Ph.: (011) 26940722, 26947043  
Fax: (011) 26940722  
**e-mail:** nptibadarpur@npti.in
- 5. Head of Institute, National Power Training Institute (HPTC)**  
Opp. Nangal Dam Rly. Station, Nangal, Distt. Ropar, Punjab - 140124  
Ph.: (01887) 220573, 221129  
**e-mail:** nptinangal@npti.in
- 6. Head of Institute, Power Systems Training Institute, National Power Training Institute**  
P.O. Box: 8201 Subramanyapuram Road, Banashankari II Stage, Bengaluru-560070 (Karnataka)  
Ph.: (080) 26713758 Fax: (080) 26713758  
**e-mail:** nptipsti@npti.in
- 7. Head of Institute, Hotline Training Centre, National Power Training Institute**  
26th Km, Kanakapura Road, Somanahalli Gate Udayapura Post, Bengaluru-560082 (Karnataka)  
Ph.: (080) 28432596, 28432053 Fax: 28432596  
**e-mail:** nptihlhc@npti.in
- 8. Principal Director, National Power Training Institute (S.R.)**  
Block 14, NLC Township, Neyveli – 607803 (Tamil Nadu)  
Ph.: (04142) 269427, 268185 Fax: (04142) 269427  
**e-mail:** nptineyveli@npti.in
- 9. Head of Institute, National Power Training Institute (E.R.)**  
City Centre, Durgapur-7132616 (WB)  
Ph.: (0343) 2545888, 2546237 Fax: (0343) 2545888  
**e-mail:** nptidurgapur@npti.in
- 10. Head of Institute, National Power Training Institute (NER)**  
Dakhingaon, Kahilipara (Assam), Guwahati-781019  
Ph.: (0361) 2381346 Fax: (0361) 2381329  
**e-mail:** nptiguwahati@npti.in
- 11. Principal Director, National Power Training Institute (W.R.)**  
South Ambazari Road, Gopal Nagar, Nagpur – 440 022, (Maharashtra)  
Ph.: (0712) 2236545, 2226176 Fax: (0712) 2220413  
**e-mail:** nptinagpur@npti.in





Valedictory Function of Capacity Building Program on "Designing, Managing and Operating of Power Trading Entity", Module-I conducted by USAID, USEA, PTC India in collaboration with NPTI

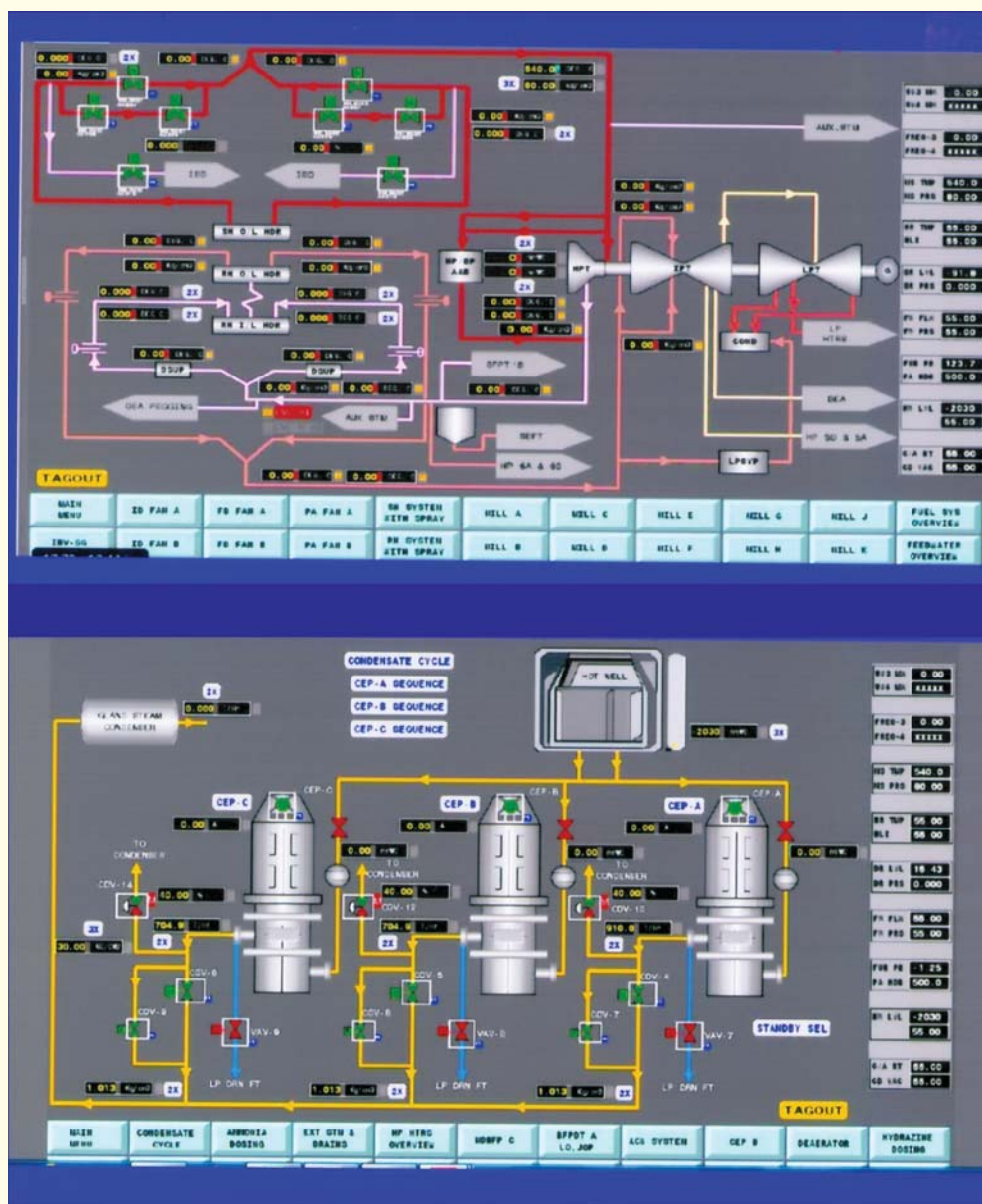


MBA Alumni Meet - "Samagam 2015" at NPTI (CO), Faridabad





## 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**

**N**PTI 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: 2016-2017**

<b>S.No.</b>	<b>Course</b>	<b>SAARC Countries</b>	<b>All other countries</b>
1	Regular Course on Power Plant Engg.	US \$700 per week per participant subject to maximum of US \$ 15000 up to 52 weeks duration	US \$ 800 per week per participant subject to maximum of US \$ 17000 up to 52 weeks duration
2	Simulator Training	US \$ 1650 per week per participant	US \$ 2000 per week per participant
3	Boarding and Lodging in NPTI Hostel	US \$ 700 per week per participant (AC Rooms on single occupancy basis)	US \$ 800 per week per participant (AC Rooms on single occupancy basis)
4	Specialized need based Tailor made courses	As per estimate	As per estimate



## **FEE STRUCTURE FOR VARIOUS TRAINING PROGRAMS OF NPTI FOR THE YEAR 2016-2017**

S.No.	Name of the Course	Duration	Training Fee (Common for all viz. SEBs/PSUs/ Private organisations) (₹)
<b>LONG TERM COURSES (Period 17 to 52 Weeks)</b>			
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 Thermal 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 in T&D Systems*		
	i) Non-sponsored candidates	26 Weeks	1,45,000
	ii) Sponsored candidates	26 Weeks	1,90,000
7	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
8	Post Diploma Course in Hydro Power Plant Engineering*		
	i) Non-sponsored candidates	26 Weeks	80,000
	ii) Sponsored candidates	26 Weeks	1,35,000
<b>MEDIUM TERM COURSE: (Period 5 to 16 Weeks)</b>			
9	Specialized Courses	16 weeks	1,20,000
10	Specialized Courses	15 weeks	1,15,000
11	Specialized Courses	14 weeks	1,10,000
12	Specialized Courses	13 weeks	1,05,000
13	Specialized Courses	12 weeks	1,00,000
14	Specialized Courses	11 weeks	95,000
15	Specialized Courses	10 weeks	90,000
16	Specialized Courses	9 weeks	84,000
17	Specialized Courses	8 weeks	78,000
18	Specialized Courses	7 weeks	72,000
19	Specialized Courses	6 weeks	65,000
20	Specialized Courses	5 weeks	57,000





<b>SHORT TERM COURSES: **(Period 1 to 4 Weeks)</b>			
21	Specialized Courses	4 weeks	47,000
22	Specialized Courses	3 weeks	37,000
23	Specialized Courses	2 weeks	27,000
24	Specialized Courses	1 week	15,000
25	Specialized Courses	4 Days	13,500
26	Specialized Courses	3 Days	11,000
27	Specialized Courses	2 Days	7,500
28	Specialized Courses	1 Day	4,000
29	Training Fees for On-site/On-plant training Programs	1 week	25,000
30	Training Fees for On-site/On-plant training Programs	4 Days	23,000
31	Training Fees for On-site/On-plant training Programs	3 Days	18,500
32	Training Fees for On-site/On-plant training Programs	2 Days	13,000
33	Training Fees for On-site/On-plant training Programs	1 Day	7,000

**\*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 (2016-2017)**

<b>S.No.</b>	<b>Name of Course</b>	<b>Duration</b>	<b>*Training fee ₹ Per Participant</b>
1	Live Line Maintenance Techniques(LLMT) using Hot Stick Method	12 weeks	1,55,000
2	Live Line Maintenance Techniques(LLMT) using Bare Hand Technique	05 weeks	1,15,000
3	Switchgear Maintenance Techniques using LLMT for Linemen/Supervisors	04 weeks	90,000
4	Special Course on Cold Line	04 weeks	72,000
5	Capsule course for Executives on Hot Line Activities	01 week	18,000
6	Training on Insulator washing Techniques	01 week	18,000

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



## SIMULATOR TRAINING FEE FOR THE YEAR 2016-17

Name of Simulator	* Training Fee (₹) / Week / Participant
Thermal Simulator	27,500
Hydel Simulator	20,000
CCGT Simulator	27,500
Power System Simulator	20,000
800 MW Super Critical Simulator	30,000

*\* Training fee include tea/snacks and working lunch.*

**NOTE :** Service Tax will be levied extra as applicable on various components like Training Fee, Boarding & Lodging Charges, Transportation Charges and the present rates are as under :

S.No.	Items	Rate of Service Tax*
1.	Training Fee	14.50%
2.	Boarding Charges	8.70%
3.	Lodging Charges (Above ₹ 1000/day/room)	8.70%
4.	Transportation Charges	5.80%

*\*Rate of Service Tax as applicable from time to time will be levied.*



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



## **(A). ACADEMIC COURSES**

### **1. MBA (POWER MANAGEMENT)**

The program is targeted towards fresh and practicing engineers and is a unique golden opportunity for the Management of Power Utilities to groom bright executives with engineering background who are expected to move to key positions in the near future. In addition to the inputs provided in regular MBA programs, this 'Program with a Difference' lends special emphasis on specific Power Sector issues and ethos to give extra strength to the Indian Power Sector engineers to steer Power Sector of the country in the challenging times ahead. The curriculum design and the learning process emphasize the development of students' skills and abilities to apply management theories and concepts to live problems of electricity industry. The course is duly recognized by AICTE and affiliated to Maharshi Dayanand University, Rohtak.

#### **Objective**

- i To create a pool of committed and competent professionals equipped with the appropriate managerial and technical skills to steer the Indian Power Sector and run it on commercial lines.
- ii To develop future world class business leaders and decision makers who can think innovatively, duly sensitized to social and environmental interface and are capable of searching for alternative solutions
- iii To imbibe basic values and ethos with in-depth understanding of Indian realities.

#### **Pedagogy**

Class room lectures, seminars, case studies, group discussions, role plays, group works, summer project at organizations related to electricity business will be resorted to impart knowledge and skills to the students. In

addition visits to power stations, Transmission and Distribution facilities, manufacturers' works shall be organized to ensure that the students have the real 'feel' of the power sector.

#### **Program Structure**

This is a two-year program spread over four Semesters. In the first year, the students take courses in major functional / general management areas like Human Resources, Operations, Finance & Accounting, Marketing, Information Technology and core Power Sector areas. In the second year, the students take compulsory specialized courses in the area of Power and Management. In addition they have to opt from a list of electives covering various specific courses from the areas of Power and Management.

#### **Summer Project**

Students are required to undertake 8-week Summer Training Projects in a Company/ Organization related to Consultancies, Power and associated industries after completion of First Year. A Compulsory Project also needs to be carried out in the IV Semester concurrently with the subjects. Evaluation will again be based on submission of written Project Reports and a defense presentation.

#### **Intake**

The intake is 120 Seats.

<b>Distribution of Seats</b>				
<b>Non-Sponsored Seats</b>				<b>Sponsored Seats</b>
<b>Gen</b>	<b>SC</b>	<b>ST</b>	<b>OBC</b>	
53	16	08	28	15

The reservation of seats is as per the Reservation Policy of the Central Government and is subject to any change/amendment by the Central Govt. from time to time

#### **Eligibility for Admission**

A) All candidates (excluding sponsored





category) are required to appear for CAT-2016 or MAT or CMAT Examination.

B) The candidates (including sponsored category) who have obtained B.E./B.Tech/B.Sc. (Engineering) in any branch of Engineering or any other exam recognized as equivalent thereof by M.D. University securing a minimum of 60% marks in aggregate of all semesters or equivalent in CGPA grade are eligible to apply for admission to the course. For SC/ST candidates minimum pass marks are required. (or equivalent in CGPA grade).

C) Candidates who have appeared in the current CAT or MAT or CMAT are only eligible to apply.

#### Notes

A) Candidates appearing in the final year/semester Examination can also apply.

B) Candidates called for GD & PI should ensure that they fulfill the eligibility criteria and merely being called for GD & PI does not entitle them for admission.

C) Graduate Engineers sponsored by various Central Public Sector Undertakings, Private Power Companies, State Electricity Boards/Power Utilities and allied energy sectors **and Engineering Colleges** who meet the above eligibility conditions are eligible for admission to this Course. The Candidates should bring with them the proof of their sponsorship. **CAT/MAT/CMAT Score is not a requirement for these Sponsored Category students.**

**Course Fees:** (includes development fund to the University)

Non-sponsored Rs.1,25,000/- per semester

Sponsored Rs. 5,00,000/- per annum

**Date of Commencement:** August 2016

## 2. B.TECH. / B.E. IN POWER ENGINEERING

### BADARPUR

B.Tech. Power Engineering (Electrical/Mechanical) program addresses the technical and human resource needs of the power sector, in context of remarkable changes in this particular sector since last decade. India, which is on growth trajectory, is witnessing high growth in all spheres of economy, and so does the power sector, the backbone of all industrial activity.

Power industry is multi disciplinary, highly capital intensive and as any other sector, human resource plays pivotal role in this sector. Power industry requires trained manpower for project planning, implementation, erection, commissioning, operation & maintenance protection and transmission & distribution. No conventional engineering stream available in educational institutions can equip a person with such vast knowledge of different inputs required for the job performance in the power sector. Therefore, a specialized degree course is necessary for the manpower needs of power sector which is growing at spectacular rate.

This four-year degree course, B.Tech. in Power Engineering (Electrical/Mechanical) being offered by NPTI (NR) is first of its kind in the country.

This degree course is duly recognized by AICTE and NPTI (NR) is running it with affiliation to Guru Gobind Singh Indraprastha University, New Delhi.

#### Admission

Admissions to this course are made through Common Entrance Test (CET) conducted by Guru Gobind Singh Indraprastha University (GGSIPU) in May/June every year with an intake of 60 students. Six seats are reserved for diploma holders who are admitted through

an entrance test, conducted by GGSIPU, in the third semester directly.

### Course Overview

B.Tech. Power Engineering (Electrical/Mechanical) program is divided into eight semesters. The first two semesters being the introduction to the technical world, inculcates the basics required by an engineer. The foundation for power engineering is laid

in the next two semesters by providing the insight in subjects like electrical machines, thermodynamics, fluid mechanics, control engineering and energy conversion. The course content laid down in the following semesters is designed in such a manner that it provides edge over conventional electrical and mechanical engineers and lead to the emergence of power engineers. The semester wise subject break-up is as follows:

## SYLLABUS

SEME STER	SUBJECTS					
I	Applied Mathematics-1	Applied Physics-1	Applied Chemistry-1	Manufacturing Process	Introduction to Computers	Communication Skills-1
II	Applied Mathematics	Applied Physics-2	Applied Chemistry-2	Introduction to Programming	Engineering Mechanics	Electrical Science
III	Material Science & Metallurgy	Thermo Dynamics	SOM TOM	Circuit Theory	Analog Electronics	Electrical Machines
IV	Engineering Economics	Energy Conversion	Heat & Mass Transfer	Fluid Mechanics	Digital Electronics	Control Engineering
V	Power Generation Engineering	Steam Generator and Its Auxiliaries	Steam Turbine And its Auxiliaries	PPEMS	Power System	RAC OR EEM
VI	Power System Protection and Switchgear	TPPER-I	Power Plant Operation	Power Plant Control and Instrumentation	I.C.Engines & Gas Dynamics OR Power Electronics & Electric Drives	Machine Design OR Engineering Electro-Magnetics
VII	Power Distribution And Utilization	TPPER-II	Power Plant Maintenance	Theory of Machine OR Power System Analysis & Stability	Manufacturing & Industrial Engineering OR Communication Engineering	Civil Works in Power Engineering
VIII	Load dispatch and regulatory issues	Environmental management, energy conversion	Management concepts and techniques	Mechanical vibration OR Design of electrical machines	Energy management OR HVDC Technology	

ISTS-Impact of Science & Technology on Society

SOM TOM-Strength of Material & Theory of Machines

PPEMS-Power Plant Electrical Machines & Systems

RAC-Refrigeration & Air Conditioning EEM-Electrical & Electronics Measurements

TPPER-Thermal Power Plant Engineering Related Topics

Course fee: As per University Norms

Intake Capacity: 60



## **DURGAPUR**

### **Course Overview and Admission**

This course started at Durgapur Institute from financial year 2002-2003 along with other institutes and approved by AICTE and affiliated to West Bengal University of Technology (WBUT). Admission to this course is open through WBJEE / AIEEE. The medium of instruction & examination is English. The duration of the course is four academic years. Each academic year (1st July to 30th June) is divided into two semesters of about sixteen effective weeks each. The courses include study at the college, visits to work sites and practical in the college workshop & labs, different engineering works, Power Plants etc.

### **ELIGIBILITY**

- A** Candidate is eligible for admission to B-Tech (Power Engineering) at NPTI (ER), Durgapur subject to the following conditions:
- (a) He / She should pass the Higher Secondary Examination (10+2) of West Bengal Council of Higher Secondary Education with English, Chemistry, Mathematics and Physics or an equivalent examination. In case of Lateral entry, he/she should pass the diploma in Mech-/Elect. Engg. from Govt. approved polytechnic college.
  - (b) He / She should maintain good mental and physical health. No abnormality in heart, Lungs and vision.
  - (c) He / She should have to qualify in the Joint Entrance Examination, of the year of admission, conducted by the West Bengal Board of Examination for Admission to Engineering and Technological Degree Colleges.
  - (d) He / She will have to submit school leaving / Migration Certificate / Continuity Certificate as the case may be, within a specified date, otherwise the provisional admission of the candidate will stand automatically concealed.

### **INTAKE CAPACITY - 60**

Course fee: As per University Norms.



Republic Day Celebration at NPTI (CO), Faridabad





## SYLLABUS

SEME STER	SUBJECTS					
I	Mathematics	Engineering Physics	Mechanical Sciences	Basic Electrical Engineering	Environment & Ecology	English Language & Communication
II	Engineering Physics	Mathematics	Mechanical Sciences	Introduction to Computing	Basic Electronics Engineering	Engineering Chemistry
III	Fluid Mechanics	Thermo Dynamics	Mathematics	Mechanics of Deformable Bodies	Circuit Theory & Network	Electrical Electronic Measurement
IV	Fluid Machinery	Engineering Thermodynamics	Materials Science and Technology	Theory of Machines	Electrical Machines	Digital Electronics & Integrated circuits
V	Renewable Energy Systems	Hydro Power Generation	Nuclear Power Generation	Electrical Machines - II	Heat Transfer	Microprocessor and Microcontrollers
VI	Steam Generators and its Auxiliaries	Steam Turbines and its Auxiliaries	Electrical Equipment in Power Station	Power Transmission and Distribution	Control Systems	Refrigeration and Air Conditioning OR High Voltage Engg
VII	Advance Technology	Protection, Control & Instrumentation	IC Engine	Control Systems	Elective Paper : II Design of Mech. Equipments OR  Design of Elect. Equipments	Elective Paper : III Power Electronics OR Tribology & CBM
VIII	Thermal Power Plant Operation & Maintenance	Operation Research & Industrial Engineering	Elective : IV Manufacturing Science OR Electric Drives	Elective : V Technology of Machining and metal cutting OR HVDC Transmission		



## **NAGPUR**

NPTI Nagpur has started 4 years degree course in the year 2001. The course is approved by AICTE and affiliated to RTM Nagpur University, Nagpur. The Tuition fees is approved by Shikshan Shulk Samiti Mumbai which is an approved body of Directorate of Technical education, Maharashtra Govt. and Tuition fees is revised every year based on the expenditure and infrastructure of the Institute.

Technical education contributes substantially to the Socio Economic development of the country as a whole. The development sustenance of the industrial sector is entirely dependent upon the availability of trained manpower to perform the multidimensional activities needed to keep the wheel of industry running. Thus this program aims towards making available these trained technically qualified hands to serve the power industry & society. Equality of educational opportunities and preparing highly skilled work force for enterprises widely with excellence is also objective of Technical Education. Technical Education system is thus has to be flexible enough to adopt to rapid change. Thus precise aim of the system is to develop and transfer of technology to the power sector.

### **Admission**

Admissions of 1st year B.E. (Power Engg.) students are made through Common Admission Process (CAP) by Directorate of Technical Education, Maharashtra Government. Semester Pattern has been implemented for all the years based on Credit Basis System (CBS). The degree is awarded by RTM Nagpur University, Nagpur. Essar Power Ltd. has sponsored Gold Medal for this degree course for the student who secure 1st merit position in this branch. The Tuition fees of this degree course is fixed by the Shikham Shulka Samiti of Directorate Technical Education, Mumbai and revised every year.

Intake capacity - 60



10 Weeks Training Program for Reliance Industries Ltd. at NPTI(WR), Nagpur



**SYLLABUS**

SEME STER	SUBJECTS							
	Applied Mathematics-I	Engineering Physics	Engineering Chemistry	Basic Electrical Engineering	Basic Civil Engineering	Engineering Graphics-I	Communicati on Skills	
I	Applied Mathematics-II	Advance Physics	Material Chemistry	Engineering Mechanics	Advance Electrical Engineering	Engineering Graphics-II	Workshop	Ethical Sciences
II	Applied Mathematics-III	Kinematics Of Machine	Manufacturing Processes	Fluid Mechanics	Engineering Metallurgy	Electronics Devices & Circuits		
III	Engineering Thermodynamics	Computer Programming	Electrical Machines-I	Hydraulic Machines	Environmental Studies	Digital and Linear Electronic Circuits		
IV	TPS Layout, Common Auxiliaries & Safety	Design of Machine Elements	Control Systems Engineering	Heat Transfer	Mechanics Of Materials	Machine Drawing		
V	Energy Conversion-I	Thermal Power Plant Control & Instrumentation	Steam Generator And Auxiliaries	Power Generation Technology & Regulatory Issues	Dynamics Of Machines	Functional English	Power Plant Scheme Tracing	
VI	Energy Conversion-I	Steam Turbine And its Auxiliaries	Design of mechanical drives	Turbo Generator And its Auxiliaries	Power Plant Operation and performance	Power Plant Visits	Project Seminar	
VII	Industrial management	Switchgear and protection	Power Plant Operation and practices (210 MW Simulator)	Renewable Energy Systems	Power Plant Erection and Commissioning	Power Plant Maintenance practices	Project Work	
VIII								





### **3. POST GRADUATE DIPLOMA COURSE IN THERMAL 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**

<b>Module No.</b>	<b>Description</b>	<b>Duration</b>
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 week
GF-6	Safety	1 week
GF-7	Plant training (Practical)	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	½ week
GF-11	Non-Destructive Testing	½ 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
		<b>Total 52 Weeks</b>

<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
Faridabad	52 weeks	22-08-2016
Badarpur	52 weeks	22-08-2016
Nangal	52 weeks	22-08-2016
Neyveli	52 weeks	22-08-2016
Durgapur	52 weeks	22-08-2016
Guwahati	52 weeks	22-08-2016
Nagpur	52 weeks	22-08-2016

#### **Who may attend**

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

## **4. PGDC IN SUB-TRANSMISSION AND DISTRIBUTION 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 Sub-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

### **Outline**

- 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 Sub-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 Sub-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 Sub T&D Systems:
- 23.0 Reliability issues:
- 24.0 O&M of Sub 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 Sub Transmission & Distribution Loss Reduction:



30.0 General Principles of Live Line Maintenance Techniques (LLMT):

31.0 Demo of LLMT on 11 kV and 33 kV systems:

<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
PSTI Bengaluru	52 weeks	21-11-2016

### **Who may attend**

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

### **Methodology**

Lectures, Lab Sessions, Appraisal, Communication skills & Project work

## **5. 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**

<b>Module No.</b>	<b>Description</b>	<b>Duration</b>
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
		<b>Total 39 Weeks</b>



Venue	Duration	Date of Commencement
Nangal	39 weeks	05-09-2016

### Who may attend

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

## 6. 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
<b>Total</b>	<b>26 Weeks</b>

Venue	Duration	Date of Commencement
Badarpur	26 weeks	19-09-2016
PSTI Bengaluru	26 weeks	08-08-2016 & 06-03-2017
NPTI-NER Guwahati	26 Weeks	14-11-2016
Nagpur	26 Weeks	06-06-2016 & 05-12-2016



### Who may attend

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

## 7. POST DIPLOMA COURSE IN THERMAL 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
<b>Total</b>		<b>52 Weeks</b>

Venue	Duration	Date of Commencement
Badarpur	52 weeks	19-09-2016
Neyveli	52 Weeks	28-11-2016
Durgapur	52 Weeks	01-09-2016
Guwahati	52 weeks	26-09-2016
Nagpur	52 Weeks	21-11-2016

### Who may attend

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

## **8. 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

<b>Module No.</b>	<b>Description</b>	<b>Duration</b>
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
<b>Total</b>		<b>26 Weeks</b>

<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
Nangal	26 weeks	08.08.2016

### **Who may attend**

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





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

### **1. GRADUATE ENGINEERS COURSE (THERMAL)**

#### **Objective**

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

#### **Program Profile**

<b>Module No.</b>	<b>Description</b>	<b>Duration</b>
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
		<b>Total 52 Weeks</b>

<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
Neyveli	52 weeks	20-02-2017
NPTI-NER-Guwahati	52 weeks	19-09-2016

#### **Who may attend**

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

## **2. DISTANCE EDUCATION CERTIFICATE COURSE ON "ELECTRICITY REGULATION & COMMERCIAL ASPECTS" OF INDIAN POWER SECTOR**

### **Objective**

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

### **Program Profile**

<b>Module No.</b>	<b>Description</b>
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

<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
NPTI-CO Faridabad	26 Weeks	01-05-2016 & 01-12-2016

### **Who may attend**

Power Sector Professionals through online admission

## **3. 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

<b>Module No.</b>	<b>Description</b>
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



<b>Venue</b>	<b>Duration</b>	<b>Date of Commencement</b>
NPTI-Faridabad	26 Weeks	15-02-2016 15-08-2016

### **Who may attend**

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



NPTI (ER), Durgapur organised an Interactive session on “ Harnessing Youth Potential for Successful Life and Better Relationship in the light of teachings of Swami Vivekanand” by Swami Amartyananda of Ram Krishna Mission, Port Blair



26 weeks Training Program for JEN of Rajasthan Rajya Vidyut Utpadan Nigam Limited at NPTI, CO, Faridabad.





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

### **1. 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.
- Safety 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.

<b>Venue</b>	<b>Duration</b>	<b>Date of Course</b>
HLTC, Bengaluru	12 Weeks	20-06-2016 17-10-2016 20-02-2017

#### **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 nominee be in the rank of Executive cadre.

### **2. 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 full 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	16-01-2017

### Who may attend:

Foreman, Linemen, Asst. Linemen, Supervisors Junior Engineers, Asst Engineers etc. actively involved in Line Maintenance activities having physical fitness. It is preferred 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.

## 3. POST GRADUATE CERTIFICATE COURSE IN THERMAL 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	06-06-2016 05-09-2016 23-01-2017
NPTI-NER Guwahati	12 weeks	02-01-2017

### **Who may attend**

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

## **4. 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
- O&M of Hydro Power Plant components;

Turbine, Governing System, Valves, Generators, Excitation system, etc.

- Switchgears, protection in HE station
- Power Plant Operation and function of Load dispatch centre
- Maintenance of Hydro Power Plant Equipments
- 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nangal	12 weeks	06.06.2016

### **Who may attend**

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



Award distribution during "Power Kaleidoscope - 2016" to MBA (Power) students





10<sup>th</sup> Batch of PGDC in T&D System at NPTI (WR), Nagpur

## **5. 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, Dewatering of water conductor systems

- O&M of Hydro Power Plant components; Turbine, Governing systems, Valve, Generator, Excitation system etc.
- Hydro Power Plant Simulator Training
- Plant visits at Hydro Power Plant sites

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nangal	6 weeks	20.06.2016

### **Who may attend**

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



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

### **1. SPECIALIZED TRAINING FOR HYDRO POWER PLANT ENGINEERING**

#### **Objective**

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

#### **Program Profile**

- Class room session on
- 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nangal	3 weeks	27.06.2016

#### **Who may attend**

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

### **2. SMART GRIDS**

#### **Objective**

To Provide comprehensive view of Distribution metering

#### **Outline**

- Smart Grid: goals, history, scale and scope, Functions of smart grid
- Features of Smart Grid
- Demand response support

- Net metering and grid connectivity for renewables
- Role of smart grid in integration of renewable energy and DSM
- Protection issues and relay coordination problems
- Micro – grid / protection strategies for micro grid
- Low voltage ride through (LVRT) implementation issues
- Grid operation and balancing of renewable energy power sector
- Interconnection standards of distributed generation
- Power quality (PQ) issues and remedial measure
- Case studies & Field visits

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	04-04-2016

#### **Who may attend**

Engineers from State Electricity Boards/ Power utilities/Distribution Systems, R & D organisations, Academic institutions, manufacturers, contractors, consultants etc.

### **3. 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: SCADA
- 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	25-04-2016

### Who may attend

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

## 4. 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 of Substation Earthing
- Electrical Clearances
- Over Voltages & Selection of Surge Arrestors
- Engineering of Protection System for Substation



Dr. A.K. Verma, Director General,  
at NPTI stall, India International Trade Fair, 2015, New Delhi



- Measurement of Soil Resistivity
- RPC System
- Metering in Sub-station
- Sub-station Automation
- Case Study
- Field visits

Venue	Duration	Date
PSTI Bengaluru	1 week	11-04-2016 02-01-2017

### Who may attend

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

## 5. 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	07-11-2016

### Who may attend

Engineers working in the area generation, transmission and distribution.

## 6. CAPSULE COURSE 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
HLTCBengaluru	1 week	22-08-2016

### Who may attend

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

## 7. 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	21-11-2016
Durgapur	1 week	25-04-2016

### **Who may attend**

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

## **8. 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 auxiliaries
- Operational aspects and efficiency
- Visit to modern Combined Cycle Power Plant.
- Case Studies

Venue	Duration	Date
Badarpur	1 week	18-04-2016
Neyveli	1 week	06-02-2017

### **Who may attend**

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

## **9. 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	05-12-2016
Neyveli	1 week	04-04-2016
Nagpur	3 days	22-11-2016

### **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	04-05-2016

### 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



Signing of MoU for conducting Capacity Building Program on "Designing, Managing and Operating of Power Trading Entity with PTC India

Inaugural Session of Capacity Building Program on "Designing, Managing and Operating of Power Trading Entity", Module -I conducted by USAID, USEA, PTC India in collaboration with NPTI







emergency conditions.

- Unit shut down procedures and safety.
- Performance monitoring.
- Duties and responsibilities of operation engineers.

Venue	Duration	Date
Badarpur	1 week	09-05-2016
Neyveli	1 week	09-05-2016
Durgapur	1 week	06-06-2016
Nagpur	4 days	19-09-2016

#### **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	26-09-2016

### **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	13-06-2016

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	01-06-2016

### **Who may attend**

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

## **15. SWITCHGEAR & TRANSFORMER 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	1 weeks	02-06-2016

### **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 FOR LINEMEN/SUPERVISOR**

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 handling 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	16-05-2016

### 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 in the rank of 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 Bengaluru	1 week	09-05-2016
		27-02-2017

### 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 AVR, OLTCs, Power Capacitors, Shunt Reactors, SVCs, TCRs,
- Automatic Power Factor Controllers
- Harmonics – cause, measurement and mitigation
- Thyristor Based and Voltage Source Converter Based FACTS Controllers

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	3 days	23-01-2017

### **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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	23-05-2016
NPTI- NER Guwahati	1 week	16-05-2016

### **Who may attend**

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

## **20. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	03-10-2016

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

## 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 AVR, 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 Bengaluru	1 week	16-05-2016 06-03-2017

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
Neyveli	1 week	25-07-2016
		19-09-2016
Durgapur	1 week	21-11-2016
Nagpur	4 days	09-05-2016

## Who may attend

Chemists with minimum five years experience in TPS Laboratory.

## 23. HT/LT SWITCHGEAR (O&M)

## 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	05-09-2016

### Who may attend

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

## 24. CONTROL & INSTRUMENTATION 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	19-09-2016

Nagpur	3 days	21-06-2016
Neyveli	1 week	23-05-2016

### Who may attend

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

## 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	4 days	06-09-2016

### 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	2 weeks	02-05-2016
		01-08-2016
		21-11-2016
		13-02-2017

### **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 Sessions
- Tutorials
- Field visits

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	2 week	13-06-2016 13-03-2017

### **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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	20-06-2016 20-03-2017

### **Who may attend**

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

## **29. STEAM TURBINE & 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	16-01-2017
Neyveli	1 week	06-06-2016



Durgapur	1 week	09-01-2017
Nagpur	4 days	06-03-2017

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	22-06-2016

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	1 week	11-07-2016

### **Who may attend**

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

## **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 detail 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	09-01-2017
Neyveli	3 days	20-07-2016
Durgapur	1 week	23-05-2016
Nagpur	4 days	16-01-2017

#### **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

#### **Program 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	06-03-2017

#### **Who may attend**

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

### **34. 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	01-08-2016

#### **Who may attend**

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

### **35. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	16-11-2016

### **Who may attend**

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

## **36. REDUCTION IN POWER DISTRIBUTION 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 association and franchises to control commercial losses.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 days	16-05-2016

### **Who may attend**

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

## **37. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badadpur	1 week	28-11-2016
PSTI Bengaluru	1 week	25-07-2016



### Who may attend

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

## 38. POWER SYSTEM RELIABILITY

### Objective

Ensuring reliable and secure power system is the primary responsibility of every system operators. Recent grid incidents of July 2012 have underlined the importance of grid security. As the grid grows in size and complexity, grid 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

PSTI Bengaluru

### Duration Date

1 week 11-07-2016

### Who may attend

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

## 39. 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 Switchgear: 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 accident
- LV Distribution Systems Protection & Technical Visits

### Venue

PSTI Bengaluru

### Duration Date

1 week 22-08-2016

### 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.





## **40. GENERATOR & AUXILIARIES 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	12-12-2016
Neyveli	1 week	05-12-2016
Durgapur	1 week	08-08-2016
Nagpur	3 days	12-07-2016

### **Who may attend**

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

## **41. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	3 days	01-06-2016
PSTI Bengaluru		14-12-2016

### **Who may attend**

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

## **42. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	26-09-2016
		20-02-2017

### **Who may attend**

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

### 43. VIBRATIONAL ANALYSIS

#### Objectives

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

#### Programme 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	Date
Durgapur	1 week	13-06-2016

#### Who may attend

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

### 44. 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

#### Programme 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	29-08-2016 19-12-2016

#### Who may attend

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



## **45. POWER SYSTEM LOGISTICS**

### **Objective**

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

### **Outline**

- Renewable energy in Power Sector
- 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/ Substation
- EMS Software – Net working applications
- Test

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	19-09-2016

### **Who may attend**

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

## **46. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 Week	29-08-2016

### **Who may attend**

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

## **47. 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.

- Correlation 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	08-08-2016
Durgapur	1 week	01-08-2016
Nagpur	3 days	07-02-2017

#### **Who may attend**

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

### **48. 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	20-06-2016

#### **Who may attend**

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

### **49. 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	17-08-2016

#### **Who may attend**

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

### **50. 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, S.H. 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	05-09-2016
Durgapur	1 week	25-07-2016
Nagpur	4 days	14-11-2016

### **Who may attend**

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

## **51. 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	11-09-2016
Neyveli	02 days	19-05-2016

### **Who may attend**

Engineers working in Thermal Power Plant & other industries who deal with boiler (either operation or maintenance or both).

## **52. FAMILIARIZATION TRAINING PROGRAM ON 400 KV 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 technician 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	12-09-2016

### **Who may attend**

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

## **53. 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 & Erection.
- Measurement of works completion, Invoicing & Billing
- Market survey of electrical equipments.
- Estimation & bidding for electrical works
- Electricity: Generation, transmission & distribution.
- Principle of operation of electrical equipment.
- Codes & practices in electrical equipments.
- 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 Extinguishers.
- First aid & Artificial Respiration.

**Venue                      Duration      Date**

PSTI Bengaluru      1 week      13-09-2016

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

## **54. DISTRIBUTION AUTOMATION**

### **Objectives**

To familiarize participants with the Customer and system level functions that are associated with distribution automation. Describe the equipment and software used to implement these functions.

### **Program Profile**

- Customer Site automation functions: Load control
- Remote meter reading, Time-of-use rates,
- Remote connect/disconnect
- System level functions: Fault location, isolation, and service restoration
- Design of LT Distribution system
- Feeder reconfiguration & Transformer balancing
- Voltage/Var Control using: Capacitors, Regulators, and LTC; Distribution system monitoring
- Digital protection of substations and feeders
- Equipment for Feeder Automation & Customer Automation
- Implementing a DA Project
- Labs & Field Visits

**Venue                      Duration      Date**

PSTI Bengaluru      1 week      08-08-2016

### **Who may attend**

Engineers and Managers responsible for planning, cost-justifying, designing, implementing and working with Distribution automation systems.





## **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	1 week	05-09-2016

### **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.

### **Outline**

- General Introduction- Electrical Systems
- Electric motor
- Compresses Air System
- HVAC & Refrigeration System

- 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	07-11-2016

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	2 days	16-02-2017

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	14-10-2016

### **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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 Days	27-09-2016

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	05-10-2016

### **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 flexibility, 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	02-11-2016

#### **Who may attend**

Engineers working in Power Stations.

## **62. MOTOR 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 of different types of motors.
- Terminal connections and terminal box.
- Mounting/Enclosures, insulation material used in motors.
- Stripping down & inspections of motors.
- Cleaning and inspection.
- Bearings used in motors.
- Assembling, testing and commissioning.
- Problems of motor-case studies.

Venue	Duration	Date
Neyveli	1 week	21-11-2016

#### **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	07-03-2016
NPTI- NER	3 Days	18-07-2016
Guwahati		
Nagpur	3 Days	08-11-2016

#### **Who may attend**

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

## **64. O&M OF TRANSFORMER (SUPERVISORS/ TECHNICIAN)**

### **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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
NPTI- NER Guwahati	1 week	06-02-2017

### **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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
PSTI Bengaluru	1 week	24-10-2016

### **Who may attend**

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

## **66. 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





<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	1 week	26-09-2016

### **Who may attend**

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

## **67. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 days	19-09-2016

### **Who may attend**

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

## **68. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
HPTC Nangal	3 Days	07-12-2016

### **Who may attend**

Engineers working in Hydro Power Plants

## **69. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	06-06-2016

### **Who may attend**

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

## **70. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nagpur	3 days	06-12-2016

### **Who may attend**

Engineers and Senior Supervisor of Thermal Power Station and process industries.

## **71. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	02-05-2016
Neyveli	1 week	06-03-2017
Nagpur	4 days	19-12-2016

### **Who may attend**

Maintenance technicians with 2-3 years experience in the relevant field

## **72. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	2 days	01-12-2016

### **Who may attend**

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



## **73. 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, identification, sampling and testing procedures.
- Transformers maintenance procedures.
- Dissolved gas analysis techniques
- Case studies.
- Drying of Transformer

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	3 days	21-12-2016

### **Who may attend**

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

## **74. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
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Neyveli	1 week	16-01-2017
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### **Who may attend**

Engineers with 3-4 years experience in the relevant field.

## **75. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	1 week	02-01-2017
Nagpur	3 days	10-01-2017

### **Who may attend**

Maintenance Technicians with 2-3 years experience in the relevant field.



## **76. 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

26-12-2016

### **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.



Trainees from Punjab State Power Corporation Limited at NPTI (WR), Nagpur





## **77. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nagpur	3 days	03-01-2017

### **Who may attend**

Engineers working in Power station with 3-7 years experience.

## **78. RENEWABLE ENERGY TECHNOLOGIES - SOLAR**

### **Objectives**

Renewable Energy Technologies are now fundamental to growing global

### **Outline**

- Introduction to JNNSM
- Solar PV
- Solar Thermal
- Wind Power
- Bio-Mass Power
- Waste to energy

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 Days	06-03-2016

### **Who may attend**

Engineers with 2-3 years experience.

## **79. CONDITION BASED MAINTENANCE**

### **Objective**

To appraise of 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	1 week	05-12-2016

## **80. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Neyveli	1 week	20-02-2017

### **Who may attend**

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

## **81. ENVIRONMENTAL POLLUTION & POLLUTION CONTROL RELATED WITH THERMAL POWER PLANTS**

### **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 Aquatic environment.
- Evaluation Pollution Effects on Plant Productivity.
- Legislation and the control of Air, Noise and Water Pollution.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nagpur	3 days	14-02-2017
Badarpur	1 week	11-07-2016

### **Who may attend**

Engineers/Chemists working in process Industry/Power Stations.

## **82. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	1 week	19-12-2016

### **Who may attend**

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

## **83. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nangal	1week	11-07-2016



### Who may attend

Officers/Engineers working in Power Sectors and allied industries with 2- 3 years of experience

## 84. RENEWABLE ENERGY SOURCES & GRID INTEGRATION

### Objective

To investigate the impact of Renewable Source & their integration with the grid.

### Program Profile

- Overview of power scenario and important of renewable energy

- Solar energy
- Wind energy
- Bio-Mass Energy
- CDM
- Renewable energy and its grid integration
- Field Visits

Venue	Duration	Date
PSTI Bengaluru	1 week	27-06-2016 03-10-2016 13-03-2017

### Who may attend

Engineers from State Electricity Boards/ Power Utilities/ Distribution Systems, R&D organizations, involved in implementation of renewable source and their integration.



Inauguration of PGDC (Thermal) program 2015-16 at NPTI Corporate Office, Faridabad



## **85. ADVANCES C&I IN THERMAL POWER STATION**

### **Objectives**

To acquaint the engineers working in C&I areas with advanced Technologies in C&I with relative process/plant behaviors

### **Program Profile**

- General description of Power Station Instrumentation
- Advanced Technologies in C&I
- Temperature Measurement
- Flow Measurement
- On-Line Analytical Instrument
- Turbovisory Instruments & Vibration Analysis
- Various Protection and Interlocks
- Automatic Control Loops

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 Days	16-01-2017

### **Who may attend**

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

## **86. RENEWABLE ENERGY TECHNOLOGIES - HYDRAULIC**

### **Objectives**

Renewable energy Technologies are now fundamental to the growing global effort to combat damaging climate change. The objective of course is to understand the domain of Renewable energy in a relevant manner.

### **Program Profile**

- Overview of Hydro Power Plant of India
- Investigation for small Hydro power
- Flow Duration Curve and Water Power Studies
- Different Selection of Turbines

- Design and construction of Different Component of Hydro power.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 Days	06-02-2017

### **Who may attend**

Engineers with 2-3 years experience

## **87. CHANGE MANAGEMENT**

### **Objectives**

To familiarize the participants with change management concept which is an approach to shifting/transitioning individuals, teams and organization from a current state to a desired future state.

### **Program Profile**

- Change management process
- Readiness assessments
- Communication and communication planning
- Training and employee training development
- Resistance management
- Data collection, feedback analysis and corrective action
- Celebrating and recognizing success
- Changing the attitudes and behaviors of personnel

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Durgapur	3 Days	13-02-2017

### **Who may attend**

Executives with 2-3 years experience

## **88. SAFETY IN HYDRO POWER STATION**

### **Objectives**

To acquaint 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 day	25.05.2016

#### **Who may attend**

Engineers/Shift Engineers/Operators working in Hydro Power Plant

### **89. 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 power sharing and frequency control, operation during emergency conditions. Declared capacity, scheduling & ABT based system UI, CI etc.

Venue	Duration	Date
Nangal	1 week	22.06.2016

#### **Who may attend**

Engineers/Shift Engineers/Operators working in Hydro Power Plant

### **90. VALVES & PUMPS IN THERMAL POWER PLANTS**

#### **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 and Valves.

#### **Programme Profile**

Description of different types of Pumps and their construction, Selection & Operational aspect.

Venue	Duration	Date
Nangal	3 days	27.04.2016

#### **Who may attend**

Operators/Technicians working in Thermal Power Plant

### **91. HYDRO GENERATOR & ITS EXCITATION SYSTEMS**

#### **Objective**

To provide the in-depth knowledge of Hydro Generator & its Excitation systems.

#### **Programme 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	27.07.2016

#### **Who may attend**

Engineers/Sr. Engineers working in Hydro Power Plant.

### **92. 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	10.08.2016

#### **Who may attend**

Working professionals from hydro power station.

### **93. 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	21.09.2016

#### **Who may attend**

Engineers/Shift Engineers/Operators working in hydro power plant.

### **94. 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	14.11.2016

#### **Who may attend**

Engineers working in Hydro Power plants.

### **95. 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	06-02-2017

**Who may attend**

Engineers working in Transmission & Distribution sector.

## **96. 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, preventive, 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	27-02-2017

**Who may attend**

Executives in the rank of Jr. Engineers and above working in transmission line maintenance.

## **97. OPERATION AND MAINTENANCE OF SUB- STATION.**

**Objective**

To impart knowledge to the trainees about installation, commissioning, operation and maintenance of substation.

**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.
- Switchyard compressors, lightning arrester DC supply system
- General practices of EHV/HV/LV substation operation & maintenance.

Venue	Duration	Date
NPTI-NER	01 week	06-06-2016
Guwahati		21-11-2016

**Who may attend**

Engineers with 2-3 years of experience in operation and maintenance of substation.

## **98. 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.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
HLTC-Bengaluru	1 week	13-06-2016 10-10-2016 09-01-2017

### **Who may attend**

Supervisors in the rank of Jr. Engineers and ITI qualified technicians who had undergone their basic/induction level course after recruitment.

## **99. AUTOMATION SYSTEM (PLC & SCADA) FOR POWER PLANT**

### **Objective**

To enhance the knowledge of automation system in power plant

### **Program Profile**

- Interactive course with hands on practice with automation
- Systems (PLC & SCADA) & issues faced on working with
- Automation system

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nagpur	3 days	10-01-2017

### **Who may attend**

Working professionals, Engineers, Supervisors and Technicians associated/engaged with power plant.

## **100. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Nagpur	3 days	27.09.2016

### **Who may attend**

Engineers engaged in power sector and local load dispatch centre

## **101. FDP INNOVATION IN TEACHING PEDAGOGY**

### **Objective**

The program enables participants to develop competence in general as well as in management pedagogy. The program aims at equipping teachers with skills and knowledge that are essential for guiding and monitoring their progress towards their career.

### **Program Profile**

The major focus of the FDP is on upgrading the teaching, training, and research skills of management teachers especially those teachers who have not had an opportunity to acquaint themselves with recent development in teaching.

### **Module No.**

- Developing Case Studies
- Role playing & scenario analysis
- Integrating technology in teaching





- Social media for education & communication skills
- Establishing Teacher-Student congruence for effective learning

### **Description**

Will involve conceptual lectures from eminent resource persons, experience sharing and hands on work. Participants will be expected to actively participate in discussions. Certificates will be issued at the end of the program.

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Faridabad	5 Days	07-12-2016

### **Who may attend**

The program is designed for management teachers and researchers working in management schools, universities, colleges and professional institutes. People from any stream taking any management and allied subjects like economics, statistics, computer applications, commerce, banking, sociology, etc. are welcome.

## **102. 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

<b>Venue</b>	<b>Duration</b>	<b>Date</b>
Badarpur	1 week	04-07-2016

### **Who may attend**

Engineers as well as non technical managers involved in human resource development



4 weeks Training on "Attitude & Skill Development" for NEEPCO Liaison Personnel at NPTI (NER), Guwahati.

## **(E) SIMULATOR TRAINING PROGRAMS**

### **1. 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.

- Manoeuvring 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**

04-04-2016	18-04-2016	02-05-2016
16-05-2016	06-06-2016	20-06-2016
04-07-2016	18-07-2016	01-08-2016
22-08-2016	19-09-2016	03-10-2016
17-10-2016	31-10-2016	14-11-2016
28-11-2016	12-12-2016	02-01-2017
16-01-2017	30-01-2017	13-02-2017
27-02-2017	20-03-2017	



National Seminar on "Indian Power Sector - Focus on Key areas" organised at NPTI (ER), Durgapur



### **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.

## **2. 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**

Faridabad

### **Duration**

2 weeks

### **Date of Commencement**

04-04-2016	18-04-2016	02-05-2016
16-05-2016	30-05-2016	13-06-2016
27-06-2016	11-07-2016	25-07-2016
08-08-2016	22-08-2016	05-09-2016
19-09-2016	03-10-2016	17-10-2016
31-10-2016	28-11-2016	05-12-2016
09-01-2017	23-01-2017	06-02-2017
20-02-2017	06-03-2017	20-03-2017

### **Who may attend**

Shift charge Engineers/ Operation Engineers/ Desk controllers working in Thermal Power Station and also fresh Engineers posted in Thermal power stations.

## **3. 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**

Faridabad

### **Duration**

2 weeks

### **Date of Commencement**

04-04-2016	18-04-2016	02-05-2016
16-05-2016	30-05-2016	13-06-2016
27-06-2016	11-07-2016	25-07-2016
08-08-2016	22-08-2016	05-09-2016
19-09-2016	03-10-2016	17-10-2016
31-10-2016	28-11-2016	05-12-2016
09-01-2017	23-01-2017	06-02-2017
20-02-2017	06-03-2017	20-03-2017

### **Who may attend**

Shift charge Engineers/ Operation Engineers/





2-days Residential Program on "Protection of Consumer Interest" at NPTI CO. Faridabad

Desk controllers working in Combined Cycle Gas Turbine Power Station and also fresh Engineers posted in Combined Cycle Gas Turbine Power Station.

#### **4. 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**

HPTC, Nangal

##### **Duration**

1 week

##### **Date of Commencement**

04-04-2016	25-04-2016	09-05-2016
23-05-2016	13-06-2016	18-07-2016
01-08-2016	22-08-2016	05-09-2016
26-09-2016	24-10-2016	21-11-2016
19-12-2016	09-01-2017	30-01-2017
13-02-2017	06-03-2017	

##### **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





## **5. 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**

PSTI, Bengaluru

### **Duration**

2 Weeks

### **Dates of Commencement**

18-07-2016    21-11-2016    09-01-2017

### **Who May Attend**

Persons involved in System Operation and Control i.e. Generating Station, Transmission, Load Dispatch Centre, Sub-Station and Distribution Personnel

## **6. 800 MW SUPER CRITICAL THERMAL POWER PLANT TRAINING SIMULATOR**

### **Objective**

To train engineers on full scope replica simulator of 800 MW, Super critical 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% load Hot start/warm start up to full load
- Planned shut down
- Auto/manual control of parameters
- Operation under emergency conditions.

### **Venue**

Faridabad

### **Duration**

2 weeks

### **Date of Commencement**

25-07-2016	08-08-2016	26-09-2016
24-10-2016	21-11-2016	26-12-2016
16-01-2017	20-02-2017	20-03-2017

### **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 organization on request /demand basis on applicable terms and conditions at different NPTI Institutes**

## **(F) MEDIUM TERM COURSES FOR ENGINEERS (5 WEEKS TO 16 WEEKS)**

### **1. 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 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**

### **2. 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.



### **3. TRAINING PROGRAMME 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**

Faridabad

#### **Duration**

6 weeks

#### **Who may attend the program**

Staff deployed in power station/Industry with experience of 5 to 10 years.

### **4. 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 Conversion – Solar Photovoltaic, Fuel Cells.
- Waste to Energy.
- Solar passive Architecture.
- Biomass Energy Systems.
- Bio-Fuels
- RE and Grids Integration
- Economic Viability
- Case studies

#### **Duration**

**6 weeks**

#### **Who may attend**

Graduate engineers having 3-4 years experience in Thermal Power Stations.

### **5. 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**

Faridabad

**Duration**

6 weeks

**Who may attend the program**

Supervisory staff working in Power Stations/  
Industry with to 10 year of experience.

**(G) SHORT-TERM COURSE FOR  
ENGINEERS (1 DAY TO 4 WEEKS)**

**6. 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,  
budgetary control.
- Contract procedures, Conditions of  
contract, project evaluation, interest and  
depreciation charges.
- use of computers in maintenance planning.



13<sup>th</sup> Batch of MBA Power Management at NPTI Corporate Office, Faridabad





**Duration**

**1 week**

**Who may attend:**

Engineers/Officers working in Power Stations/ Industries with 5-10 years experience.

**7. 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

**8. 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.



PGDC in Thermal Power Plant Engineering, Batch 2015 at NPTI Corporate Office, Faridabad

- 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.

## **9. 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**

**1 week/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 auxiliary.

- 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 to Thermal 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**

Faridabad

**Duration**

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**

Faridabad

**Duration**

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**

Faridabad

### **Duration**

1 week

### **Who may attend the program**

Finance Officer working in Power Stations/ Industry with 5 to 10 years of experience.

## **20. TRAINING MIND FOR EXCELLENCY**

## **21. EXECUTIVE/MANAGEMENT DEVELOPMENT PROGRAMS FOR EXECUTIVES & SUPERVISORS**

## **22. EXECUTIVE DEVELOPMENT PROGRAM FOR LAW STREAM**

## **23. SUPERVISORY DEVELOPMENT PROGRAMS**

## **24. HR FOR NON-HR EXECUTIVES**

## **25. EXECUTIVE DEVELOPMENT FOR SUPERVISORY STAFF WORKING IN FINANCE AND ACCOUNTS**

## **26. ENVIRONMENTAL MANAGEMENT**

## **27. BUSINESS COMMUNICATIONS & PRESENTATIONS SKILLS**

## **28. GENERAL INTRODUCTION TO HYDRO POWER PLANT**

## **29. HYDRO POWER PLANT SCHEMES & SYSTEMS DISCUSSIONS**

## **30. HYDRO POWER PLANT OPERATION & PUMP STORAGE OPTIONS TO GOVERNING**

## **31. HYDROPOWER PLANT PROTECTIONS**

## **32. MAINTENANCE (ON-JOB) IN HYDEL PLANT**

## **33. PLANNING AND COST CONTROL OF HYDRO ELECTRIC POWER STATION**

## **34. CONTROL & INSTRUMENTATION OF HYDRO ELECTRIC POWER STATION**

## **35. SITE SELECTIONS OF HYDRO ELECTRIC PLANTS, GEOLOGY, HYDROLOGY**

- |   |  |
|---|--|
| <b>36. TUNNELS &amp; CHANNELS,<br/>PENSTOCKS, SURGE SHAFT,<br/>SPILLWAYS</b>    | <b>49. HR ISSUES IN POWER<br/>SECTOR</b>             |
| <b>37. VALVES IN HYDRO POWER<br/>PLANTS</b>                                     | <b>50. TIME MANAGEMENT</b>                           |
| <b>38. CONSTRUCTION EQUIPMENT<br/>OF HYDRO ELECTRIC<br/>PLANTS</b>              | <b>51. STRESS MANAGEMENT</b>                         |
| <b>39. ENVIRONMENTAL IMPACT<br/>ASSESSMENTS</b>                                 | <b>52. LEAD AUDITORS PROGRAM<br/>ON ISO 9000</b>     |
| <b>40. MATERIAL HANDLING AND<br/>TRANSPORTATION</b>                             | <b>53. LEADERSHIP SKILLS</b>                         |
| <b>41. SAFETY IN HYDRO POWER<br/>PLANTS</b>                                     | <b>54. PROJECT MANAGEMENT</b>                        |
| <b>42. PUMPS IN HYDRO POWER<br/>PLANTS</b>                                      | <b>55. CUSTOMER RELATIONSHIP<br/>MANAGEMENT</b>      |
| <b>43. TRANSFORMERS &amp;<br/>ELECTRICAL EQUIPMENT IN<br/>HYDROPOWER PLANTS</b> | <b>56. FINANCE FOR NON-FINANCE<br/>EXECUTIVES</b>    |
| <b>44. CONSTRUCTIONAL DETAILS<br/>OF HYDRO TURBINES<br/>&amp; GENERATORS</b>    | <b>57. ABT, POWER TRADING</b>                        |
| <b>45. ELECTRICAL AUXILIARIES<br/>OF HYDRO POWER PLANTS</b>                     | <b>58. ELECTRICITY ACT 2003 &amp;<br/>CERC, SERC</b> |
| <b>46. ERECTIONS OF HYDRO<br/>TURBINES, GENERATORS<br/>AND AUXILIARIES</b>      | <b>59. FINANCIAL MANAGEMENT IN<br/>POWER SECTOR</b>  |
| <b>47. TYPES OF DAMS &amp; THEIR<br/>CONSTRUCTIONAL DETAILS</b>                 | <b>60. CURRENT HR PROBLEMS IN<br/>POWER SECTOR</b>   |
| <b>48. LEAD AUDITORS PROGRAM<br/>ON ISO-14001</b>                               | <b>61. FIRST – AID FOR TECHNICAL<br/>PERSONS</b>     |
|   | <b>62. TOTAL PRODUCTIVE<br/>MAINTENANCE</b>          |
|   | <b>63. RETIREMENT MANAGEMENT</b>                     |
|   | <b>64. CHANGE IN ATTITUDE</b>                        |
|   | <b>65. CUSTOMER ORIENTATION</b>                      |
|   | <b>66. CONTRACT MANAGEMENT</b>                       |
|   | <b>67. COMPUTER APPRECIATION<br/>PROGRAM</b>         |



- |  |  |
|--|--|
| <b>68. O &amp; M OF MOTORS</b>                             | <b>84. O &amp; M OF GENERATORS &amp; EXCITATION SYSTEM FOR SUPERVISORS</b> |
| <b>69. POWER SYSTEM STUDIES &amp; LOAD DISPATCH</b>        | <b>85. FUEL (COAL &amp; OIL) HANDLING SYSTEM OPERATION</b>                 |
| <b>70. VALVE MAINTENANCE</b>                               | <b>86. MATERIAL MANAGEMENT</b>   |
| <b>71. MAINTENANCE OF PUMPS</b>                            | <b>87. FLUIDISED BED COMBUSTION BOILERS</b>                                |
| <b>72. IT APPLICATION IN POWER SYSTEM</b>                  | <b>88. REVIEWABLE ENERGY SOURCE &amp; GRID INTEGRATION</b>                 |
| <b>73. PUMP STORAGE HYDRO POWER STATION</b>                | <b>89. SYSTEM OPERATOR TRAINING</b>  |
| <b>74. MANAGEMENT DEVELOPMENT PROGRAM</b>                  | <b>90. ADVANCES IN POWER PLANT CHEMISTRY FOR CHEMISTS</b>                  |
| <b>75. PERFORMANCE IN TESTING OF HYDRO POWER SYSTEM</b>    | <b>91. BOILER &amp; AUXILIARIES</b>  |
| <b>76. GIS/GPS FOR POWER UTILITIES</b>                     | <b>92. ELECTRICAL MOTORS FOR POWER PLANTS</b>                              |
| <b>77. MANAGING CARBON CREDIT OF TPS THROUGH CDM ROUTE</b> | <b>93. SWITCHGEAR FOR POWER PLANT</b>                                      |
| <b>78. ENERGY EFFICIENCY IN THERMAL UTILITIES</b>          | <b>94. HIGH VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION</b>                 |
| <b>79. IT APPLICATION IN POWER UTILITIES</b>               | <b>95. HYDRO POWER PLANT ENGINEERING</b>                                   |
| <b>80. ENERGY EFFICIENCY IN ELECTRICAL UTILITIES</b>       | <b>96. INSULATOR WASHING TECHNIQUE (ON-SITE)</b>                           |
| <b>81. POWER DISTRIBUTION MANAGEMENT</b>                   | <b>97. DISTRIBUTION FRANCHISE</b>  |
| <b>82. STEAM TURBINE ITS AUXILIARIES OPERATION</b>         |  |
| <b>83. ADVANCE MECHANICAL MAINTENANCE PRACTICES</b>        |  |

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| <b>98. GRID MANAGEMENT</b>   | <b>COMMUNICATION (PTCC)</b>  |
| <b>99. MAINTENANCE PUMPS<br/>AND VALVES</b>                              | <b>107. ADVANCE POWER<br/>GENERATION<br/>PROTECTION &amp; CONTROL</b>    |
| <b>100. POWER EXCHANGE AND<br/>POWER TRAINING</b>                        | <b>108. POWER MARKET<br/>REGULATIONS</b>                                 |
| <b>101. POWER BUSINESS<br/>TARRIF AND REGULATIONS</b>                    | <b>109. CONTROL &amp;<br/>INSTRUMENTATION</b>                            |
| <b>102. INDIAN ELECTRICITY<br/>ACT AND RULES &amp;<br/>DE-REGULATION</b> | <b>110. SMART GRID</b>   |
| <b>103. O&amp;M EHV<br/>TRANSMISSION LINES</b>                           | <b>111. REGULATORY<br/>FRAMEWORK IN POWER<br/>SECTOR</b>                 |
| <b>104. GOVERNING SYSTEM &amp;<br/>HYDRO POWER<br/>GENERATION</b>        | <b>112. COAL MILL/ MILLING<br/>SYSTEM MAINTENANCE<br/>(CASE STUDIES)</b> |
| <b>105. PROJECT MANAGEMENT<br/>FOR POWER SYSTEM<br/>ENGINEERS</b>        | <b>113. MAINTAINANCE OF BOILER<br/>ROTATARY MACHINE</b>                  |
| <b>106. POWER AND TELE-</b>  | <b>114. INDUSTRIAL SAFETY</b>  |



Health Check-up Camp organised by Fortis Escorts Hospital, Faridabad at NPTI Corporate Office, Faridabad





Works under PLAN SCHEME are in Progress at NPTI Corporate Office, Faridabad

## FACULTIES BIODATA NPTI-CORPORATE OFFICE, FARIDABAD

### Name/Designation



**Dr. A. K. Verma**  
*Director General*

**Dr. A.K. Verma**, an Indian Forest Service (IFS) officer of 1986 Gujarat Batch and Joint Secretary, Ministry of Power, Govt. of India has taken over the additional charge of Director General, National Power Training Institute (NPTI), Faridabad on 24.9.2015.

He holds Doctorate in Tribal Development Policy, Dual Masters of Science Degree in Physics & Forestry and a Post Graduate Diploma in Public Policy & Management from IIM Bangalore. In addition, he has been well trained from renowned National and International Institutions in diverse areas of Public Administration, Natural Resource Management, Computer applications, Energy Management, Remote sensing, Project Management, Financial Management etc.

He has over 29 years of administrative and management experience. He was associated with the Government of Gujarat in various capacities including Conservator of Forests, Social forestry circle Ahmadabad, Commissioner of Tribal Development and the Managing Director, Uttar Gujarat Viji Company Limited. Before joining Ministry of Power, Government of India he was posted as Member Secretary of Gujarat Ecology Commission, Gandhi Nagar and Project Director of the World Bank Funded Integral Coastal Zone Management from 29th July, 2011 to 14th November, 2014. In recognition of his distinguished services he has been ordained with the Rashtriya Gaurav Award.

### Name/Designation

### Educational Qualification

### Experience & Specialization

### Member/ Association/ Training



**Sh. J. S. S. Rao**  
*Principal Director  
(CP&M/BDD/Purchase)*

B. Tech. (Electrical) JNTU, Kakinada M.E. (Power System) Andhra University Visakhapatnam, 1982

More than 33 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



**Dr. S. K. Choudhary**  
*Principal  
(MS/IT)/ER/NER*

B.Sc. (Engg.) 1979, Electronics & Communication, Ph.D. (Management Stream-2014), MHRM – 2002, MBA(Fin). – 2006

More than 35 years of work experience in Power Plant O&M, Human Resource Development

### Specialization:

Power Sector Reforms, Consultancy Services in HRM, Faculty for Power Sector Reforms & Issues Strategic Management Investment.

CEGB, UK. – 12 Weeks, Lead Auditor ISO 9001; One year Training in Power Station O&M NLP Trainer.





## NPTI-CORPORATE OFFICE, FARIDABAD

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <p><b>Sh. R. K. Mishra</b> <i>Director</i> (Training/Project/F&amp;A)</p>	<p>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.</p>	<p>More than 29 years of experience in the fields of Teaching, Power Industry and Training in REC (Now NIT) Rourkela, Talcher Thermal Power Station and NPTI respectively.</p>	<p><b>Specialization:</b> Operation &amp; Mtce. of Thermal Power Station, Power Plant Automation 24 weeks training on Control&amp; Instrumentation at POWERGEN, U.K 1991.</p>
 <p><b>Mrs. Manju Mam</b> <i>Director</i> (MS/IT)</p>	<p>B.E. (E &amp; C) from NIT Srinagar, M.S. (Software Systems) from BITS Pilani, MBA (HR) from IGNOU, New Delhi</p>	<p>More than 28 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.</p> <p><b>Specialization:</b> HR, IT, GIS</p>	<p>Member of Institute of Electronics and Telecommunication Engineers.</p>

**NPTI (NR), BADARPUR**

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <b>Sh. Vijay Kumar Gupta</b> <i>Head of the Institute</i>	<p>B.Sc. (Engg.) (Mechanical) from Delhi College of Engg. Delhi in 1977.</p>	<p><b>Specialization:</b>                      Operation &amp; Efficiency aspect of large Thermal Power Plants                      37½ Years in DVC &amp; NTPI:-</p> <ul style="list-style-type: none"> <li>6 Years in Design &amp; Operation of large Thermal Plants</li> <li>28 years in Training of Power Engineers as faculty, Design and Conduct of Training Programs including On-site &amp; On-Job Program.</li> </ul> <p><b>Training</b></p> <ol style="list-style-type: none"> <li>12 weeks Operation of large plants (DCPL Calcutta 1980</li> <li>22 weeks Senior Operation Instructor's Training in CEGB, United Kingdom in</li> </ol>	<p>1986.</p> <ol style="list-style-type: none"> <li>2 weeks TPS Commissioning (NPTI-CEGB Delhi 1985</li> <li>2 weeks Power Plants Performance and Monitoring (NPTI-CEGB) Delhi 1985</li> <li>1 weeks Power Plants Performance and Monitoring (NPTI-CEGB) Nagpur 1988</li> <li>1 weeks Management of Training (ISTM) Delhi-1999</li> <li>3 Days Finance Management in Govt. with Financial &amp; Administrative Power (CTSR) Delhi 2010</li> <li>1 week Finance for Non-Finance Executive (NPTI) Faridabad-2011</li> </ol>
 <b>Sh. M. V. Pande</b> <i>Director</i>	<p>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</p>	<p>Total 36 years experience in various position in MSEB &amp; NPTI</p> <p><b>Specialization:</b>                      Steam Turbine Governing &amp; Protection                      TPS Operation hands on Training in 210 MW Simulator.                      Steam Turbine Operation.                      Power Plant Maintenance (Turbine, Pumps, Bearing, Valves)</p>	<p>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.</p>
 <b>Sh. Giriraj Kishore</b> <i>Director</i>	<p>B.E. (Mechanical) from Aligarh Muslim University                      Diploma in PC, Networking,                      Director, 3D Max and VJ++</p>	<p>More than 33 years experience in different organization like Panchsheel Brothers, Delhi Administration, Ministry of Defence, Arya Bhatt Polytechnic, Central Electricity Authority and now in NPTI.</p>	





## **NPTI (NR), BADARPUR**


<b>Name/Designation</b>	<b>Educational Qualification</b>	<b>Experience &amp; Specialization</b>	<b>Member/ Association/ Training</b>
 <p><b>Mrs. Meena Kumari</b> <i>Director</i></p>	<p>B.E. (Elct.) Delhi College of Engineering, Delhi MBA (IT) - IASE Deemed University Rajasthan</p>	<p>27 years of service including number of years service in Bhutan. Worked in Royal Government of Bhutan as an Assistant Engineer for 4 years. Worked in CBT Section for Developing Multimedia CBTs. Worked in Combined Cycle Gas Turbine (CCGT) Simulator as instructor in-charge of CCGT. Worked as Nodal Officer (AMR) for implementing IONS at NPTI. Gained knowledge in 500 MW Simulator (Fossil Fuel Fired) as instructor.</p>	<p>Undergone 12 weeks training in UK on Tools for developing multimedia softwares, under Colombo plan. - Undergone 2 weeks training in USA for learning tools &amp; techniques for development of CCGT Simulator. - Attended various training program in India. - Went to LAGU, Negeria as an expert faculty for conducting 2 weeks workshop. - Member - Institute of Engineers - Lifetime Membership - SESI, India (Solar Energy Society of India) - Developed many nos. of CBTs while working CBT section. - Coordinated / delivered lectures in short term &amp; long term program.</p>
 <p><b>Sh. Ravinder Singh</b> <i>Director</i></p>	<p>B. E. (Electronics &amp; Communications), MBA (IT), M. Phil. (Management), Pursuing Ph. D. (Management)</p>	<p>About 26 years of experience of working in ITI Ltd., and NPTI. <b>Specialization:</b> Design &amp; Development of Multimedia Computer Based Training Packages, Procurement &amp; Maintenance of IT hardwares &amp; softwares, EPABX System, Wi-Fi and LAN Networks, Virtual Private Server (VPS), Projection Systems, Website development &amp; updation etc.</p>	<p>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.</p>

## NPTI-HYDRO POWER TRAINING CENTRE, NANGAL

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <p><b>Sh. M. R. Chaubey</b> Head of the Institute</p>	<p>B.Sc. Lucknow University, 1973 B.E. (Mech.) - University of Roorkee, 1977</p>	<p>More than 35 years of work experience in different positions in Power Engineering comprising operation, maintenance, commissioning, procurement, performance monitoring, training etc. at Renusagar Power Co. Ltd., CTPS, DVC Corporate Centre and NPTI.</p> <p><b>Specialization:</b> Commissioning, Operation &amp; Maintenance of thermal power plants. 210 MW Simulator training at NPTI (NR). Launching of one year Post Graduate/Post Diploma Courses in TPPE at NPTI (NR) &amp; B.Tech. (Power Engineering) including of establishment of Labs at NPTI (ER). Quality improvement of training programs, Upgradation and modernisation of infrastructure at NPTI Badarpur &amp; Durgapur. Project monitoring &amp; implementation work for establishment of Hydro Power Training Centre, Nangal. Conducting International and national Conferences/ Seminars in the area of Power Sector development.</p>	<ol style="list-style-type: none"> <li>1. 9 Weeks Senior Simulator Instructor's Course in C.E.G.B. - UK, 1987.</li> <li>2. 6 Weeks training on Emission Upgradation Projects at Canada/ USA under CIDA</li> </ol>
 <p><b>Sh. S. K. Sinha</b> Associate Professor</p>	<p>B.E. (Electrical) Bihar Institute of Technology, Sindri in 1980. M. Phill. Computer Science in 1982 JNU New Delhi</p>	<p>More than 31 years Experience in NPTI.</p> <p><b>Specialization:</b> Computer &amp; simulator</p>	



## **NPTI-HYDRO POWER TRAINING CENTRE, NANGAL**

<b>Name/Designation</b>	<b>Educational Qualification</b>	<b>Experience &amp; Specialization</b>	<b>Member/ Association/ Training</b>
 <b>Sh. G. V. Harshe</b> <i>Director</i>	B.E. (Mech.), 1980 Walchand College of Engg. Sangli Shivaji University Kolhapur (M.S)	Total 34 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.



## **NPTI-PSTI BENGALURU**

<b>Name/Designation</b>	<b>Educational Qualification</b>	<b>Experience &amp; Specialization</b>	<b>Member/ Association/ Training</b>
 <b>Sh. M. N. Murthy</b> <i>Head of the Institute</i>	B. Tech. (EEE) JNT University A.P., 1979 M.E. (High Voltage Engg.) IIS, Bengaluru, 1981	More than 31 Years experience in various position in CEA & NPTI. <b>Specialization:</b> Power System Studies Operation, Simulation & Protection	12 Weeks simulator Software course training in Energy System Computer Application USA, 1990

## HOT LINE TRAINING CENTRE, BENGALURU

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <b>Sh. K. S. Venu Babu</b> <i>Deputy Director Head of the Institute</i>	<p>B. Tech. (Mechanical), JNT University, AP, 1982.</p> <p>M. Tech (Prodn. Engg.), IIT, Delhi in 1989.</p> <p>M.B.A. (Marketing), IGNOU, New Delhi in 2000.</p>	<p>More than 32 years experience in Pressteels &amp; Fabrications Pvt. Ltd., Hyderabad, CEA &amp; NPTI.</p> <p><b>Specialization:</b></p> <p>Contracting, Engineering of Thermal Power Plant equipment, Teaching in Mechanical Maintenance of power plant equipment &amp; Live Line Maintenance techniques up to 400 KV Lines &amp; switch yards.</p>	

## NPTI-SR, NEYVELI

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <b>Sh. S. Viswanathan</b> <i>Principal Director</i>	<p>Director B.E. (Mechanical) Anna University Tamil Nadu 1978</p>	<p>More than 34 Years experience in various positions in M/s Jinda Aluminum Ltd., TNEB &amp; NPTI</p> <p><b>Specialization:</b></p> <p>Mehanical power boilers O&amp;M Power Plants</p>	<p>24 weeks welding instruction course in CEGB, U.K. 1984</p>
 <b>Sh. J. Jayasamraj</b> <i>Director</i>	<p>B.E. (Computer Technology &amp; Information) from Government College of Technology, Coimbatore, Tamil Nadu, 1989.</p>	<p>More than 23 years of experience in various positions in ITI, Bangalore and NPTI.</p>	<p>Computer Technology &amp; Control Systems</p>





## NPTI-ER, DURGAPUR

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
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**Sh. Atish Banerjee**  
*Head of the Institute*

B.E. (Electrical) from  
Jadavpur University 1976  
M.E. (Electrical) from  
Jadavpur University 1982  
M.I.E. 1990

More than 35 Years  
experience in different  
positions in CEA and NPTI

**Specialization:**  
Electrical machines and  
Systems of TPS

22 Weeks Sr. Instructor  
course CEG, UK, 1986

## NPTI –NER, GUWAHATI

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
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**Sh. Sanjay. V. Malpe**  
*Director*

B . E . ( Mechanical )  
Visvesvaraya National  
Institute of Technology in  
1982, M.E. (Mechanical) from  
Victoria Jubilee Technical  
Institute Mumbai in 1985,  
Certified Energy Auditor.

**Specialization:**

More than 33 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.

**NPTI-WR, NAGPUR**

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <b>Sh. A. G. Vinchurkar</b> <i>Principal Director</i>	<p>B.E. (Mechanical) from Visveshwaraya National Institute of Technology in 1977.</p> <p>M.Tech. (Heat Power Engg.) from VNIT in 1985. PGDHRM from IGNOU in 1996.</p>	<p><b>Experience:</b> More than 36 years experience in different positions in MSEB and NPTI</p> <p><b>Specialization:</b> Thermal Power Plant Operation Performance &amp; 210 MW Simulator Operation, Testing and Commissioning.</p>	<ol style="list-style-type: none"> <li>1. Member - Institution of Engineers, India.</li> <li>2. Chairman - Board of Studies, ETM Nagpur University.</li> <li>3. 12 weeks Sr. Instructor Course in CEGB, UK in 1989.</li> <li>4. 2 weeks Training for Trainers in ISTM, New Delhi.</li> <li>5. 2 weeks Energy Conservation in CIRE, Hyderabad.</li> <li>6. 5 weeks Simulator course GSE Systems Inc., USA in 1994.</li> </ol>
 <b>Dr. D. M. Lokhande</b> <i>Professor</i>	<p>B.E. (Electrical) VRCE (VNIT) Nagpur, 1980.</p> <p>MBA (Production &amp; Personnel) Nagpur University 1984.</p> <p>Ph.D in Management from RTM Nagpur University, Nagpur - 2015</p>	<p>Total 34 years of experience in power industry. About 6 years experience in O&amp;M of thermal power plant. About 24 years of experience in training &amp; development including 210 MW simulator project &amp; operation, training etc.</p>	<ol style="list-style-type: none"> <li>1. 10 weeks senior instructor training in CEGB UK in 1990</li> <li>2. Simulator Modelling Training of GSE Systems INC USA in 1994</li> <li>3. Simulator Instructor course GSE Systems INC USA (5 weeks) in 1995</li> <li>4. Various trg programs in India in power industry areas.</li> </ol>
 <b>Sh. V. K. Sinha</b> <i>Associate Professor</i>	<p>B.E. (Mechanical) from VNIT Nagpur, 1980.</p> <p>M.Tech. (Heat Power Engg.) from VNIT, Nagpur 2002</p>	<p>More than 34 Years of experience in various positions in Private Sector, MSEB and NPTI</p> <p><b>Specialization:</b> Training in various areas of Power Sector.</p> <p>Worked in Operation, Maintenance and Commissioning of 210 MW TPS under MSEB, Koradi Thermal Power Station.</p> <p>Worked as I/C of Computer Based Training Section at NPTI Faridabad.</p> <p>Developed CBT Packages on</p> <ol style="list-style-type: none"> <li>1. Drum &amp; Drum internal</li> <li>2. Super-heater, Re-heater &amp; De-superheater</li> </ol> <p>Co-ordinated On-job training programs</p> <p>Co-ordinated and delivered lectures in long term and short programs.</p>	<ol style="list-style-type: none"> <li>1. 6 weeks training in Training Resource Unit conducted by CEGB, U.K.</li> <li>2. 3 weeks study tour regarding "Development and implementation of Computer Based Training in Power Sector" in U.K.</li> </ol>



## NPTI-WR, NAGPUR

Name/Designation	Educational Qualification	Experience & Specialization	Member/ Association/ Training
 <p><b>Sh. P. K. Yadav</b> <i>Director</i></p>	<p>B.E. (Electrical), Nagpur University</p> <p>M.Tech (Integrated Power System), Nagpur University</p>	<p>More than 33 years of work experience in various position in MSEB, Koradi &amp; NPTI</p> <p>Operation maintenance, testing of 210MW thermal power plant equipments</p> <p>210 MW thermal power plant control room / plant in-charge.</p> <p>To conduct &amp; impart thermal power plant operation &amp; maintenance training to different LT/ST training courses.</p> <p>To conduct regular 2 weeks 210 MW simulator training to different course trainees.</p> <p>To co-ordinate &amp; conduct 26 weeks course in O&amp;M of T&amp;D system.</p> <p>To conduct theory &amp; practical classes for B.E. (Power Engineering).</p> <p>Evaluation &amp; paper setting work of RTM Nagpur University.</p>	<p>52 weeks course in Thermal Power Plant Engineering</p> <p>2 weeks training for Model Development &amp; Instructor Training for 210 MW Simulator</p> <p>Department of Electronics (DoE) Govt. of India "O" level certification course</p>
 <p><b>Sh. N.C. Moharil</b> <i>Director</i></p>	<p>B.E. (Mechanical), VRCE (VNIT) Nagpur, 1983</p> <p>MBA, Department of Business Management, Nagpur University, 1986</p> <p>Certified Energy Auditor</p>	<p>30 years experience:</p> <ul style="list-style-type: none"> <li>- 5 years experience in Thermal Power Plant Operation</li> <li>- 23 years at NPTI in Training and Teaching including Simulator Training</li> </ul>	<p>Simulator Instructor Course GSE</p> <p>Systems Inc. USA (2 weeks) in 1995</p> <p>Various Training Programs in Power Sector India.</p>

**NPTI PUBLICATIONS**

<b>S.No.</b>	<b>Title</b>	<b>Price (₹)</b>	<b>Price (US\$)</b>
<b>A) THERMAL POWER PLANT</b>			
1	Power Plant Familiarisation (Vol.I)	400	20
2	Power Plant Familiarisation (Vol.II)	600	30
3	Power Plant Familiarisation (Vol.III)	425	21
4	Power Plant Familiarisation (Vol.IV)	400	20
5	Power Plant Operation	600	30
6	Thermal Power Plant Metallurgy	175	9
7	Ash Handling System	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 Thermal Power Station	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	Atmospheric 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 Feeder	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 System for Power Station	300	15
27	210 MW Simulator Training	550	28





28	Steam Turbine for Power Generation	650	33
29	Vibration	200	10
<b>B) HYDRO POWER PLANT</b>			
30	Hydro Power Plant Familiarisation	400	20
31	Hydro Power 2000: An Indian Perspective	1000	50
32	Sitting 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
<b>C) COMBINED CYCLE GAS TURBINE POWER PLANT</b>			
36	Gas Turbine and Combined Cycle Power Plant	400	20
<b>D) CONTROLS and INSTRUMENTATION</b>			
37	Controls & Instrumentation (Vol. I)	600	30
38	Controls & Instrumentation (Vol. II)	425	21
39	Controls & 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
<b>E) REGULATORY ISSUES</b>			
45	Journal on ERC Orders-2nd Edition	595	30
<b>F) MAINTENANCE MANUALS</b>			
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

<b>G) POWER PLANT AUXILIARIES</b>			
55	Fan & Heater	425	21
56	Fan & Heater (Hindi)	425	21
57	Compressor & Compressed Air	200	10
58	Valves	400	20
59	Power Station Pump	350	18
<b>H) POWER SYSTEMS MANUALS</b>			
60	Electrical Protection System	350	18
61	Power System Studies and Load Dispatch	350	18
62	Emerging Trends in Power Distribution by Birinchi	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
<b>I) SUB STATION MANUALS</b>			
68	O&M of EHV Sub-Station Vol. I	250	13
69	O&M of EHV Sub-Station Vol. II	200	10
<b>J) RENEWABLE ENERGY SOURCES</b>			
70	Renewable Energy	595	30
71	Non Conventional Power Plant	350	18
<b>K) ENERGY AUDIT MANUAL</b>			
72	Energy Conversation and Management	250	13
73	Energy Audit and DSM in Power Utilities	400	20
<b>L) OTHER MANUALS</b>			
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	Environment 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	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	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.
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B.Tech (Power) Students of Durgapur performing during Annual Festival

## 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
<b>COAL THERMAL</b>				
<b>A) BOILERS</b>				
1.	Combustion System in Boilers	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
2.	Boiler Drum and Drum Internals	-do-	-do-	-do-
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4.	Air Heater	-do-	-do-	-do-
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<b>B) TURBINES</b>				
7.	Water/Steam cycle of a Thermal Power Plant	₹ 25,000/-	₹ 15,000/-	₹ 12,000/-
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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-
<b>D) AUXILIARIES</b>				
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21.	Electrical Motors in Power Station	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
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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/-
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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/-
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51.	Renewable Energies	₹ 40,000/-	₹ 25,000/-	₹ 15,000/-
<b>MANAGEMENT</b>				
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Advance Training Program on 500 MW Thermal Power Station for Asstt. Managers (PS) of West Bengal Power Development Corporation at NPTI(ER), Durgapur



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**Republic Day Celebration on 26<sup>th</sup> January, 2016  
at NPTI (CO), Faridabad**





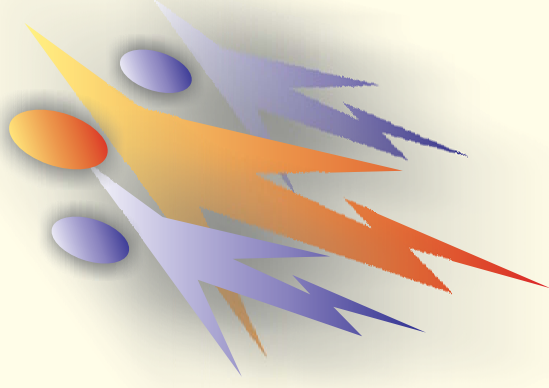


**"POWER KALEIDOSCOPE - 2016" MBA (POWER) STUDENTS AT NPTI(CO), FARIDABAD**





TOGETHER IN PURSUIT OF EXCELLENCE



# TRAINING & ACADEMIC CALENDAR

2016-2017

AT A GLANCE





विद्या है धनम्, विद्या है बलम्  
Knowledge is Power Supreme

Life @ **NPTI**, Faridabad





TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
A. ACADEMIC COURSES												
1	MBA in Power Management	2 years	1-Aug-15									2,50,000 per annum non sponsored 5,00,000 per annum sponsored
2	B. Tech/ BE in Power Engineering	4 years		1-Aug-16					Jul-16		Jul-16	*refer to booklet
3	Post Graduate Diploma Course in Thermal Power Plant Engineering	52 weeks	22-Aug-16	22-Aug-16	22-Aug-16			22-Aug-16	22-Aug-16	22-Aug-16	22-Aug-16	2,30,000 per annum non sponsored 3,60,000 per annum sponsored
4	Post Graduate Diploma Course in Sub-Transmission & Distribution System	52 weeks				21-Nov-16						2,30,000 non sponsored 3,60,000 sponsored
5	Post Graduate Diploma Course in Hydro Power Plant Engineering	39 weeks			05-Sep-16							1,75,000 non sponsored 2,00,000 sponsored
6	Post Graduate Diploma Course in Transmission & Distribution System	26 weeks		19-Sep-16		08-Aug-16 06-Mar-17				14-Nov-16	06-Jun-16 05-Dec-16	1,45,000 non sponsored 1,90,000 sponsored
7	Post Diploma Course in Thermal Power Plant Engineering	52 weeks		19-Sep-16				28-Nov-16	01-Sep-16	26-Sep-16	21-Nov-16	1,45,000 non sponsored 2,20,000 sponsored
8	Post Diploma Course in Hydro Power Plant Engineering	26 weeks			8-Aug-16							80,000 non sponsored 1,35,000 sponsored
B. LONG TERM COURSES (17 weeks and above)												
1	Graduate Engineers Course in Thermal Power Plant Engineering	52 weeks						20-Feb-17		19-Sept-16		2,30,000 per annum non sponsored 3,60,000 per annum sponsored
2	Distance Education Certificate Course on Electricity Regulation & Commercial Aspects	26 weeks	01-Apr-16 01-Oct-16									15,000
3	PGCC in GIS & Remote Sensing	26 weeks	01-Jun-16 01-Dec-16									80,000 non sponsored 1,35,000 sponsored
C. MEDIUM TERM COURSES (5 weeks to 16 weeks)												
1	Live line maintenance Techniques (LLMT), using Hot Stick Method (HSM)	12 weeks					20-Jun-16 17-Oct-16 20-Feb-17					1,55,000
2	Live line maintenance Techniques (LLMT) using Bare and methods (BHM) up to 400 KV lines	5 weeks					16-Jun-16					1,15,000
3.	Post Graduate Certificate Course in Thermal Power Plant Engineering	12 weeks	06-Jun-16 05-Sep-16 23-Jan-17							02-Jan-17		
4.	Certificate Course for Hydro Power Plant Engineers and Supervisor	12 weeks			06-Jun-16							1,00,000
5.	Specialized Training for Hydro Power Plant working Engg. and Supervisor	6 weeks			20-Jun-16							65,000



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Ferdabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
<b>D. SHORT TERM COURSES (One Day to 4 weeks)</b>												
1.	Specialized Training for Hydro Power Plant working Engg. and Supervisor	3 weeks			27-Jun-16							37,500
2	Smart Grid	4 days				04-Apr-16						13,500
3	Power Systems Communication SCADA & EMS	1 week				25-Apr-16						15,000
4	Substation Planning & Engineering	1 week				11-Apr-16 02-Jan-17						15,000
5	Energy Efficiency Management in Power System	3 Days							07-Nov-16			11,000
6	Capsule Course for Executive in Hot Line activities	1 week					22-Aug-16					18,000
7	Valve and Pump Maintenance	1 week		21-Nov-16					25-Apr-16			15,000
8	Gas Turbine & CCPP (Refresher Course)	1 week		28-Apr-16				06-Feb-17				15,000
9	Pumps Operation, Maintenance and Performance Monitoring	1 week		05-Dec-16				04-Apr-17				15,000
10	Valve Actuator Maintenance	+ 3 Days									22-Nov-16	11,000
11	Thermal Power Station Operation	3 Days						04-May-16				11,000
		1 week		09-May-16				09-May-16	06-Jun-16			15,000
		+ 4 Days									19-Sep-16	13,500
12	Power Plant Auto Control	1 week						26-Sep-16				15,000
13	Valve Maintenance	1 week						13-Jun-16				15,000
14	Fans & Air Heaters	3 Days						01-Jun-16				11,000
15	Switchgear and Transformer Maintenance	1 week							02-May-16			15,000
16	Switchyard Maintenance Technique using LLMT for linemen supervisors	4 weeks					16-May-16					90,000
17	Electrical Safety and Inspection of Electrical Installation Under IE Rules	1 week				09-May-16 27-Feb-17						15,000
18	Reactive Power Management	3 Days				23-Jan-17						11,000
19	Distribution Metering	1 week				23-May-16				16-May-16		15,000
20	O & M Transformer and circuit Breakers	1 week		03-Oct-16		06-Jun-16 06-Feb-17						15,000



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Fardabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
21	Power Quality and Harmonics Mitigation and Reactive Power Management	1 week				16-May-16 06-Mar-17						15,000
22	Boiler Operation/ Boiler & its Auxiliaries Operations	1 week						25-Jul-16 19-Sep-16	21-Nov-16			15,000
		4 Days									09-May-16	13,500
23	HT/ LT Switchgear Operation & Maintenance	1 week								05-Sep-16		15,000
24	C & I in Power Station (for operation Engineers)	1 week		19-Sep-16				23-May-16				15,000
		+ 3 Days									21-Jun-16	11,000
25	Power System Studies	4 Days				06-Sept-16						13,500
26	Power System Operation	2 weeks				02-May-16 01-Aug-15 21-Nov-16 13-Feb-17						27,500
27	Power System Protection	2 weeks				13-Jun-16 13-Mar-17						27,500
28	Advanced Power System Protection	1 week				20-Jun-16 20-Mar-17						15,000
29	Steam Turbine & Aux. Operation	1 week		16-Jan-17				06-Jun-16	09-Jan-17			15,000
		+ 4 Days									06-Mar-16	13,500
30	Electrostatic Precipitator	3 Days						22-Jun-16				11,000
31	Boiler Firing System & Equipments	1 week						11-Jul-16				15,000
32	Electrical Protection System	1 week		09-Jan-17					23-May-16			15,000
		3 Days						20-Jul-16				11,000
		+ 4 Days									16-Jan-17	13,500
33	Distribution Engineering	1 week								06-Mar-17		15,000





TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Fardabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
34	Reliability Centered maintenance of Rotary Equipment	1 week		01-Aug-16								15,000
35	O&M of coal mill Feeder	3 Days						16-Nov-16				11,000
36	Reduction in Power Distribution Losses	1 week							16-May-16			15,000
37	Flexible AC Transmission system (FACTS)	1 week		28-Nov-16		25-Jul-16						15,000
38	Power System Reliability	1 week				11-Jul-16						15,000
39	Low Voltage Power Distribution System Design	1 week				22-Aug-16						15,000
40	Generator & Auxiliaries including Excitation System	1 week		12-Dec-16				05-Dec-16	08-Aug-16			15,000
		+ 3 Days									12-Jul-16	11,000
41	Power Cables & Jointing Techniques	3 Days				01-Jun-65						11,000
						14-Dec-16						11,000
42	High Voltage Testing of Power System Equipment	1 week				26-Sep-16						15,000
						20-Feb-17			13-Jun-16			
43	Vibrational Analysis	1 week										15,000
44	Regulatory Framework in Power Sector	1 week				29-Aug-16						15,000
						19-Dec-16						
45	Power Systems Logistics	1 week				19-Sept-16						15,000
46	Non Destructive Testing & Welding Defects	1 week		29-Aug-16								15,000
47	Thermal PP Efficiency & Performance Monitoring	1 week						08-Aug-16	01-Aug-16			15,000
		+ 3 Days									07-Feb-17	11,000
48	O & M of Transmission lines & Sub-Station	1 week							20-Jun-16			15,000
49	Relay Maintenance	3 Days						17-Aug-16				11,000
50	Power Plant Chemistry for operation Engineers	1 week		05-Sep-16					25-July-16			15,000
		+ 4 Days									14-Nov-16	13,500
51	Boiler Tube Failure & Case Studies	1 week							11-Jul-16			15,000
		2 Days						19-May-16				75,00



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Faridabad	Badarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
52	Familiarization Training Program on 400Kv Cold Lines	4 weeks					12-Sep-16					72,000
53	Management of Electrical Contacts	4 Days				13-Sep-16						13,500
54	Distribution Automation	1 week				08-Aug-16						15,000
55	Power System Energy Losses	1 week						05-Sep-16				15,000
56	Energy Efficiency in Electrical Utility	1 week				07-Nov-16						15,000
57	Issues Related to Super-Critical Technology	2 Days						16-Feb-17				7,500
58	Burner Management System/ FSSS	3 Days						14-Dec-16				11,000
59	Power Systems Studies Load Dispatch	1 week						17-Oct-16				15,000
60	Battery Maintenance	3 Days						05-Oct-16				11,000
61	Large Capacity CFBC Boilers	3 Days						02-Nov-16				11,000
62	Motor Maintenance	1 week						21-Nov-16				15,000
63	Energy Conservation & Energy Audit Generation Sector	1 week						07-Mar-17				15,000
		3 Days								18-Jul-16	08-Nov-16	11,000
64	O & M of Transformer (Supervisor / Technician)	1 week								06-Feb-16		15,000
65	HVDC Transmission System	1 week				24-Oct-16						15,000
66	Welding Practices	1 week							26-Sep-16			15,000
67	Trouble shooting of Steam Turbines	3 Days							19-Sept-16			11,000
68	Small. Mini & Micro Hydro Power Generation	3 Days			07-Dec-16							11,000
69	Fan & Air Heaters Maintenance	1 week		06-Jun-16								15,000
70	Fire Prevention, Protection & Safety	3 Days									06-Dec-16	11,000
71	Bearing Maintenance and Shaft Alignment	1 week		02-May-16				06-Mar-17				15,000
		+ 4 Days									19-Dec-16	13,500
72	Switchgear Maintenance	2 Days						01-Dec-16				7,500
73	Transformer Maintenance	3 Days						21-Dec-16				11,000
74	Transformers	1 week						16-Jan-17				15,000



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No.	Name of Course	Duration (Years/ weeks/ days)	Fardabad	Badapur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
75	Pump Maintenance	1 week						02-Jan-17				15,000
		3 Days									10-Jan-17	11,000
76	O & M of Power & Distribution Transformers	1 week				26-Dec-16						15,000
77	Data Acquisition & Distributed Digital Control System in Thermal Power Station	3 Days									03-Jan-17	11,000
78	Renewable Energy Technologies Solar	3 Days							06-Mar-17			11,000
79	Condition Bases Maintenance	1 week							05-Dec-16			15,000
80	Energy Audit & Demand side Management in power Utilities	1 week						20-Feb-17				15,000
81	Environment Pollution & Pollution Control Related with Thermal Power Plants	1 week		11-Jul-16								15,000
		+ 3 Days									14-Feb-17	11,000
82	Power Plant Instrumentation	1 week							19-Dec-16			15,000
83	Management Development Program	1 week			11-Jun-16							15,000
84	Renewable Energy Source & Grid Integration	1 week				27-Jun-16 03-Oct-16 13-Mah-17						15,000
85	Advance C&I in Thermal Power Station	3 Days							16-Jan-17			11,000
86	Renewable Energy Technology Hydraulic	3 Days							06-Feb-17			11,000
87	Change Management	3 Days							13-Feb-17			11,000
88	Safety in Hydro Power Station	3 Days			25-May-16							11,000
89	Hydro Power Plant Operation	1 week			22-Jun-16							15,000
90	Valve & Pumps in Thermal Power Plants	3 Days			27-Apr-16							11,000
91	Hydro Generator & its Excitation System	1 week			27-Jul-16							15,000
92	Valve & Pumps in Hydro Power Plant	3 Days			10-Aug-16							11,000
93	Auxiliaries in Hydro Power Plants	3 Days			21-Sep-16							11,000
94	Hydro Turbine Governing & its Protection System	1 week			14-Nov-16							15,000



**TRAINING AND ACADEMIC CALENDAR 2016-2017**

S. No.	Name of Course	Duration (Years/ weeks/ days)	Fardabad	Bidarpur	Nangal	PSTI Bengaluru	HLTC Bengaluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
95	Role of Smart Grids in the Indian Power Sector : Current Developments Challenges and Way Forward	2 Days		06-Feb-17								7,500
96	Transmission Line Maintenance & Introduction to Live Line Maintenance Tech.	1 week		27-Feb-17								15,000
97	Operation and Maintenance of Sub-station.	1 week								06-Jun-16 21-Nov-16		15,000
98	Live Line Punctured Insulator Detection (PID) On EHV Lines	1 week				13-Jun-16 10-Oct-16 09-Jan-17						18,000
99	Automation System (PLC & SCADA) For Power Plant	3 Days									10-Jan-17	11,000
100	Power System & Load Despatch	3 Days									27-Sept-16	11,000
101	FDP on Innovation in Teaching Pedagogy	1 week	07-Dec-16									15,000
102	Training For Trainers	1 week		04-Jul-16								15,000





TRAINING AND ACADEMIC CALENDAR 2016-2017							
	Duration (weeks)	Faridabad	HP/TC Nangal	PSTI Bengaluru	Nagpur	Trg. Fees (₹)	
E. SIMULATOR TRAINING PROGRAMS							
1 210 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING	2 weeks	04-04-2016 16-05-2016 27-06-2016 08-08-2016 19-09-2016 31-10-2016 09-01-2017 20-02-2017	18-04-2016 30-05-2016 11-07-2016 22-08-2016 03-10-2016 21-11-2016 23-01-2017 06-03-2017	02-05-2016 13-06-2016 25-07-2016 05-09-2016 17-10-2016 05-12-2016 06-02-2017 20-03-2017	04-04-2016 16-05-2016 04-07-2016 22-08-2016 17-10-2016 28-11-2016 16-01-2017 27-02-2017	18-04-2016 06-06-2016 18-07-2016 19-09-2016 31-09-2016 12-12-2016 30-01-2017 20-03-2017	55,000
2 500 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING	2 weeks	04-04-2016 16-05-2016 27-06-2016 08-08-2016 19-09-2016 31-10-2016 09-01-2017 20-02-2017	18-04-2016 30-05-2016 11-07-2016 22-08-2016 03-10-2016 21-11-2016 23-01-2017 06-03-2017	02-05-2016 13-06-2016 25-07-2016 05-09-2016 17-10-2016 05-12-2016 06-02-2017 20-03-2017			55,000
3 COMBINED CYCLE GAS TURBINE PLANT SIMULATOR TRAINING	2 weeks	04-04-2016 16-05-2016 27-06-2016 08-08-2016 19-09-2016 31-10-2016 09-01-2017 20-02-2017	18-04-2016 30-05-2016 11-07-2016 22-08-2016 03-10-2016 21-11-2016 23-01-2017 06-03-2017	02-05-2016 13-06-2016 25-07-2016 05-09-2016 17-10-2016 05-12-2016 06-02-2017 20-03-2017			55,000
4 250 MW HYDRO SIMULATOR TRAINING	1 week	04-04-2016 09-05-2016 13-06-2016 01-08-2016 05-09-2016 24-10-2016 19-12-2016 30-01-2016 06-03-2017	25-04-2016 23-05-2016 18-07-2016 22-08-2016 26-09-2016 21-11-2016 09-01-2017 13-02-2017	04-04-2016 09-05-2016 13-06-2016 01-08-2016 05-09-2016 24-10-2016 19-12-2016 30-01-2016 06-03-2017			20,000
5 DISPATCH TRAINING SIMULATOR	2 weeks			18-07-2016 21-11-2016 09-01-2017			40,000
6 800 MW SUPER CRITICAL THERMAL POWER PLANT TRAINING SIMULATOR	2 weeks	25-07-2016 24-10-2016 16-01-2017	08-08-2016 21-11-2016 20-02-2017	26-09-2016 26-12-2016 20-03-2017			60,000

Service Tax as applicable from time to time will be levied



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No	Name of Course	Duration (years/weeks /days)	Fardabad	Badarpur	Nangal	PSTI Bengluru	HLTC Bengluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
	Following program can be conducted/offered for national as well as international organization on request / demand basis at different Institutes of NPTI											
	<b>A. MEDIUM TERM COURSES FOR ENGINEERS (5 WEEKS - 16 WEEKS)</b>											
1	Distribution Engineering	6 weeks										
2	Control and Instrumentation for Supervisors/Technicians	6 weeks										
3	Training program for Supervisors/Managerial Person deployed in Power Plant	6 weeks										
4	New and Renewable sources and grid integration in India	6 weeks										
5	Executive Development Program the supervisory staff working in Finance and Accounts Department	6 weeks										
	<b>B. SHORT TERM COURSES FOR ENGINEERS (1 day - 4 WEEKS)</b>											
6	Maintenance Planning and Cost Control	1 week										
7	Training of Trainers	1 week										
8	Operation and Maintenance of EHV Sub Station	2 weeks										
9	Microprocessors	1 week/ 2 weeks										
10	Vibration Analysis	3 Days										
11	Renovation and modernisation of Thermal Power Plant/Station	1 week										
12	Regenerative Feed Heating System	1 week										
13	Transmission Distribution Equipment Maintenance	1 week										
14	Balancing and Alignment Techniques	3 Days										
15	Electricity Act and Regulation	3 Days										
16	Basic Electronics	1 week										
17	Training for Assistant Level Persons/Personal Staff	1 week										
18	Human Resources Development Program for Finance Officer/Manager	1 week										
19	Development of Finance Managers	1 week										
20	Training mind or Excellency											
21	Executive/Management Development Programs for Executives & Supervisors											
22	Executive Development Program for Law Stream											
23	Supervisory Development Programs											
24	HR for Non-HR Executive											
25	Executive Development for Supervisory Staff Working in Finance and Accounts											
26	Environment Management											



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No	Name of Course	Duration (years/weeks /days)	Fardabad	Badarpur	Nangal	PSTI Bngluru	HLTC Bngluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
27	Business Communications & presentations skills											
28	General Introduction to Hydro Power Plant											
29	Hydro Power Plant Schemes & System Discussions											
30	Hydro Power Plant Operation & Pump Storage Options to Governing											
31	Hydro Power Plant Protection											
32	Maintenance (On-Job) in Hydel Plant											
33	Planning and Cost Control of Hydro Electric Power Station											
34	Control & Instrumentation of Hydro Electric Power Station											
35	Site Station of Hydro Electric Plants, Geology, Hydrology etc.											
36	Tunnels & Channels, Penstocks, Surge shaft, Spillways											
37	Valves in Hydro Power Plants											
38	Construction equipment of Hydro Electric Plants											
39	Environmental Impact Assessment											
40	Material Handling and Transportation											
41	Safety in Hydro Power Plants											
42	Pumps in Hydro Power Plants											
43	Transformers & Electrical Equipments in Hydro Power Plants											
44	Constructional Details of Hydro Turbines & Generators											
45	Electrical Auxiliaries of Hydro Power Plants											
46	Erection of Hydro Turbines, Generators and Auxiliaries											
47	Types of Dams & Their Constructional Details											
48	Lead Auditors Program on ISO-14001											
49	HR issues in Power Sector											
50	Time Management											
51	Stress Management											
52	Lead Auditors Program ISO 9000											
53	Leadership Skills											
54	Project Management											
55	Customer Relationship Management											
56	Finance for Non-Finance Executive											



TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No	Name of Course	Duration (years/weeks /days)	Faridabad	Badarpur	Nangal	PSTI Bngluru	HLTC Bngluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
57	ABT, Power Trading											
58	Electricity Act 2003 & CERC, SERC											
59	Financial Management in Power Sector											
60	Current HR Problems in Power Sector											
61	First – Aid for Technical Persons											
62	Total Production Maintenance											
63	Retirement Management											
64	Change in Attitude											
65	Customer Orientation											
66	Contact Management											
67	Computer Appreciation Program											
68	O & M of Motors											
69	Power System Studies & Load Dispatch											
70	Valve Maintenance											
71	Maintenance of pumps											
72	IT Application in Power System											
73	Pump Storage Hydro Power Station											
74	Management Development Program											
75	Performance in Testing of Hydro Power System											
76	GIS/GPS for Power Utilities											
77	Managing Carbon Credit of TPS through CDM Route											
78	Energy Efficiency in Thermal Utilities											
79	IT Application in Power Utilities											
80	Energy Efficiency in Electrical Utilities											
81	Power Distribution Management											
82	Steam Turbine its Auxiliaries Operation											
83	Advance Mechanical Maintenance Practices											
84	O & M of Generators & Excitation System for Supervisors											
85	Fuel (Coal & Oil) Handling System Operation											
86	Material Management											





TRAINING AND ACADEMIC CALENDAR 2016-2017												
S. No	Name of Course	Duration (years/weeks /days)	Faridabad	Badarpur	Nangal	PSTI Bngluru	HLTC Bngluru	Neyveli	Durgapur	Guwahati	Nagpur	Trg. Fee (₹) per participants
87	Fluidised Bed Combustion Boilers											
88	Reviewable Energy Source & Grid Integration											
89	System Operator Training											
90	Advances in Power Plant Chemistry for Chemists											
91	Boiler & Auxiliaries											
92	Electrical Motors for Power Plants											
93	Switchgear for Power Plant											
94	High Voltage Direct Current (HVDC) Transmission											
95	Hydro Power Plant Engineering											
96	Insulator Washing Techniquwa (On-Site)											
97	Distribution Franchise											
98	Grid Management											
99	Maintenance Pumps and Valves											
100	Power Exchange and Power Training											
101	Power Business Tariff and Regulations											
102	Indian Electricity Act and Rules & De-regulation											
103	O&M EHV Transmission Lines											
104	Governing System & Hydro Power Generation											
105	Project Management for Power System Engineers											
106	Power and Tele-Communication (PTCC)											
107	Advance Power Generation Protection & Control											
108	Power Market Regulations											
109	Control & Instrumentation											
110	Smart Grid											
111	Regulatory Frame Work in Power Sector											
112	Coal Mill/Milling System Maintenance (Case Study)											
113	Maintenance of Boiler Rotary Machines											
114	Industrial Safety											



TRAINING AND ACADEMIC CALENDAR 2016-2017																
FARIDABAD																
S. No.	Names of Course	Batch	Duration (Years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
A. ACADEMIC COURSES																
1	MBA IN POWER MANAGEMENT	2014-16	2 years		↖		↖									
		2015-17			↖											
		2016-18					01-08-2016									
2	Post Graduate Diploma Course in Thermal Power Plant Engg.	2015-16 2016-17	52 weeks 22-08-2016		↖				↖							
3	Distance Education Certificate Course In Electricity Regulation & Commercial Aspects	26 weeks	01-04-16		↖											
			01-10-16								01-10-16					
4	PGDC IN GIS REMOTE SENSING	26 weeks	01-06-16				01-06-16									
5	POST GRADUATE CERTIFICATE COURSE IN THERMAL POWER PLANT ENGINEERING		01-12-16										01-12-16			
		12 weeks	06-06-16													
			05-09-16					06-06 -16 — 05-09-16								
6	FDP ON INNOVATION IN TEACHING PEDAGOGY	5 days	06-06-16													
B. SIMULATOR TRAINING																
1	500 MW FOSSIL FUEL POWER PLANT SIMULATOR TRAINING	2 weeks	04-04-16, 18-04-16, 16-05-16, 30-05-16, 13-06-16, 27-06-16, 11-07-16, 25-07-16, 08-08-16, 22-08-16, 05-09-16, 19-09-16, 03-10-16, 17-10-16, 31-10-16, 21-11-16, 05-12-16, 09-01-17, 23-01-17, 06-02-17, 20-02-17, 06-03-17, 20-03-17	04-04-16 18-04-16	02-05-16 16-05-16 30-05-16	13-06-16 27-06-16	11-07-16 25-07-16	08-08-16 22-08-16	05-09-16 19-09-16	03-10-16 17-10-16 31-10-16	21-11-16	05-12-16	09-01-17 23-01-17	06-02-17 20-02-17	06-03-17 20-03-17	



TRAINING AND ACADEMIC CALENDAR 2016-2017																
FARIDABAD																
S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
2	COMBINED CYCLE GAS TURBINE POWER PLANT SIMULATOR TRAINING	2 weeks	04-16, 18-04-16 16-05-16, 30-05-16 13-06-16, 27-06-16 11-07-16, 25-07-16 08-08-16, 22-08-16 05-09-16, 19-09-16 03-10-16, 17-10-16 31-10-16, 21-11-16 05-12-16, 09-01-17 23-01-17, 06-02-17 20-02-17, 06-03-17 20-03-17	16-05-16 18-04-16		13-06-16 30-05-16	11-07-16 27-06-16	08-08-16 25-07-16	05-09-16 22-08-16	03-10-16 19-09-16	21-11-16 17-10-16 31-10-16	05-12-16	09-01-17	06-02-17 23-01-17	06-03-17 20-02-17	20-03-17
3	800 MW SUPER CRITICAL THERMAL POWER PLANT TRAINING SIMULATOR	1 weeks	25-07-16, 08-08-16 26-09-16, 24-10-16 21-11-16, 26-12-16 16-01-17, 20-02-17 20-03-17					25-07-16	08-08-16	26-09-16	24-10-16	21-11-16	26-12-16	16-01-17	20-02-17	20-03-17



TRAINING AND ACADEMIC CALENDAR 2015-2016																
BADARPUR																
S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
A. ACADEMIC COURSES																
1	B.Tech in Power Engineering	2012-16	4 years		↓											
		2013-17			↓											
		2014-18			↓											
		2015-19			↓											
		2016-20						01-08-2016								
2	Post Graduate Diploma Course in Thermal Power Plant Engg.	2015-16	52 weeks	22-08-2016	↓											
		2016-17						22-08-2016								
3	Post Diploma Course in Thermal Power Plant Engg.	2015-16	52 weeks	19-09-2016	↓											
		2016-17						19-09-2016								
4	Post Graduate Diploma Course in Transmission & Distribution System	2015-16	26 weeks	19-09-2016	↓											
		2016-17						19-09-2016								
B. SHORT TERM COURSES (One Day to 4 weeks)																
1	Gas Turbine & CCGP		1 week	18-04-2016	18-22											
2	Bearing Maintenance and Shaft Alignment		1 week	02-05-2016		02-06										
3	Thermal Power Station Operation		1 week	09-05-2016		09-13										
4	Fans and Air Heaters Maintenance		1 week	06-06-2016			06-10									
5	Training for Trainers		1 week	04-07-2016				04-08								
6	Environment pollution & pollution control related to thermal power plant		1 week	11-07-2016				11-15								





TRAINING AND ACADEMIC CALENDAR 2016-2017															
BADARPUR															
S. No.	Names of Course	Duration (Years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
7	Reliability Centered Maintenance of Rotary Equipment	1 week	01-08-2016					01-05							
8	Non Destructive Testing & Welding Defects	1 week	29-08-2016					29-02							
9	Power Plant Chemistry for Engineers	1 week	05-09-2016						05-09						
10	C&I in Power Station (for Operation Engineers)	1 week	19-09-2016						19-23						
11	O & M Transformer and Circuit Breakers	1 week	03-10-2016							03-07					
12	Valve & Pump Maintenance	1 week	21-11-2016								21-25				
13	Flexible AC Transmission System (FACTS)	1 week	28-11-2016								28-02				
14	Pumps Operation Maintenance of Performance Monitoring	1 week	05-12-2016									05-09			
15	Generator & Auxiliaries including Excitation System	1 week	12-12-2016									12-16			
16	Electrical Protection System	1 week	09-01-2017										09-13		
17	Steam Turbine and its Auxiliaries Operation including Governing System	1 week	16-01-2017										16-20		
18	Role of Smart Grids with Indian power sector- Current developments and Challenges and way forward.	2 days	06-02-2017											06-07	
19	Transmission line maintenance and Introduction to live line Maintenance Techniques	1 week	27-02-2017											27-03	

### Legend :

■ Courses started in previous year(s).

■ Courses started in current year.



TRAINING AND ACADEMIC CALENDAR 2016-2017												
HPTC NANGAL												
S. No.	Names of Course	Batch	Duration (Years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November
A. ACADEMIC COURSES												
1	Post Graduate Diploma Course in Thermal Power Plant Engg.	2015-2016 2016-2017	52 weeks	22-08-2016	→	→	→	→	→	→	→	→
2	Post Graduate Diploma Course in Hydro Power Plant Engg.	2015-2016 2016-2017	39 weeks	05-09-2016	→	→	→	→	→	→	→	→
3	Post Diploma Course in Hydro Power Plant Engg.	2015-2016 2016-2017	26 weeks	08-08-2016	→	→	→	→	→	→	→	→
B. MEDIUM TERM COURSES ( 5 Weeks to 16 Weeks)												
1	Certificate Course for Hydro Power Plant Engg. & Supp.	2016-2017	12 weeks	06-06-2016	→	→	→	→	→	→	→	→
2	Specialised Training course for Hydro Power Plant Engg. & Supp.	2016-2017	6 weeks	20-06-2016	→	→	→	→	→	→	→	→
C. SHORT TERM COURSES (One Day to 4 Weeks)												
1.	Valves & Pumps in Thermal Power Plants		3 Days	27-04-2016	→	→	→	→	→	→	→	→
2.	Safety in Hydro Power Station		3 Days	25-05-2016	→	→	→	→	→	→	→	→
3.	Hydro Power Plant Operation		1 week	22-06-2016	→	→	→	→	→	→	→	→
4.	Specialized Training Program on Hydro Power Plant Engineers		3 weeks	27-06-2016	→	→	→	→	→	→	→	→
5.	Management Development Program		1 week	11-07-2016	→	→	→	→	→	→	→	→
6.	Hydro Generation & its Excitation Systems		1 week	27-07-2016	→	→	→	→	→	→	→	→
7.	Valves & Pumps in Hydro Power Plants		3 Days	10-08-2016	→	→	→	→	→	→	→	→
8.	Auxiliaries in Hydro Power Plants		3 Days	21-09-2016	→	→	→	→	→	→	→	→
9.	Hydro Turbines, Governing & its Protection System		1 week	14-11-2016	→	→	→	→	→	→	→	→
10.	Small, Mini & Micro Hydro Power Generation		3 Days	07-12-2016	→	→	→	→	→	→	→	→



TRAINING AND ACADEMIC CALENDAR 2016-2017																
HPTC NANGAL																
S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
D. SIMULATOR TRAINING																
1	250 MW HYDRO SIMULATOR TRAINING		1 week	04-04-16 25-04-16 09-05-16 23-05-16 13-06-16 18-07-16 01-08-16 22-08-16 05-09-16 26-09-16 24-10-16 21-11-16 19-12-16 09-01-17 30-01-17 13-02-17 06-03-17	04-04-16 25-04-16	09-05-16 23-05-16	13-06-16	18-07-16	01-08-16 22-08-16	05-09-16 26-09-16	24-10-16	21-11-16	19-12-16	09-01-17 30-01-17	13-02-17	06-03-17

**Legend :**

■ Courses started in previous year(s).

■ Courses started in current year.



**TRAINING AND ACADEMIC CALENDAR 2016-2017**

**PSTI Bengluru**

S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
<b>A. ACADEMIC COURSES</b>																
1	Post Graduate Diploma Course in T&D System	2015-16 2016-17	26 weeks													
				08-08-2016					08-08-2016							
				06-03-2017												06-03-2017
2	PGDC in Sub-Transmission & Distribution System	2015-16 2016-17	52 weeks													
				21-11-2016								21-11-2016				
<b>B. SHORT TERM COURSES (One Day to 4 Weeks)</b>																
1	Smart Grids		4 Days	04-04-16	04-07											
2	Substation Planning & Engineering		1 week	11-04-16	11-15											
3	Power System Communication, SCADA & EMS		1 week	25-04-16	25-29											
4	Power System Operation		2 weeks	02-05-16	02-14											
5	Electrical Safety & Inspection of Electrical Installations under IE, Rules		1 week	09-05-16	09-13											
6	Power Quality and Harmonics Mitigation and Reactive Power Management		1 week	16-05-16	16-20											
7	Distribution Metering		1 week	23-05-16	23-27											
8	Power Cables and jointing techniques		3 days	01-06-16	01-03											
9	O&M of Transformers and Circuit Breakers		1 week	06-06-16	06-10											
10	Power System Protection		2 weeks	13-06-16	13-24											
11	Vibration Analysis		1 week	13-06-16	13-17											
12	Advanced Power System Protection		1 week	20-06-16	20-24											
13	Renewable Energy Source & Grid Integration		1 week	27-06-16	27-02											
14	Power System Reliability		1 week	11-07-16	11-16											





TRAINING AND ACADEMIC CALENDAR 2016-2017															
PSTI Bengluru															
S. No.	Names of Course	Duration (Years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
15	Flexible AC Transmission Systems (FACTS)	1 week	25-07-16				25-29								
16	Power System Operation	2 weeks	01-08-16					01-13							
17	Distribution Automation	1 week	08-08-16					08-12							
18	Low Voltage Power Distribution System Design	1 week	22-08-16					22-26							
19	Regulatory Framework in Power Sector	1 week	29-08-16					29-03							
20	Power System Studies	4 Days	06-09-16						06-09						
21	Management of Electrical Contracts	4 Days	13-09-16						13-16						
22	Power System Logistics	1 week	19-09-16						19-24						
23	Power System Operation	2 weeks	21-11-16								21-03				
24	High Voltage Testing of Power System Equipment	1 week	26-09-16						26-30						
25	Renewable Energy Sources & Grid Integration	1 week	03-10-16							03-07					
26	HVDC Transmission Systems	1 week	24-10-16							24-28					
27	Energy Efficiency in Electrical Utilities	1 week	07-11-16								07-11				
28	Power Cables and Jointing Techniques	3 Days										14-12-16			
29	Regulatory Frame Work in Power Sector	1 week	19-12-16									19-23			
30	O&M of Power & Distribution Transformers	1 week	26-12-16									26-30			
31	Substation Planning & Engineering	1 week	02-01-16										02-06		
32	Reactive Power Management	3 days	23-01-17										23-25		
33	O&M of Transformers and Circuit Breakers	1 week	06-02-17											06-10	
34	Power System Operation	2 weeks	13-02-17											13-25	
35	High Voltage Testing of Power System Equipment	1 week	20-02-17											20-24	

# TRAINING & ACADEMIC CALENDAR 2016-2017



## National Power Training Institute

### TRAINING AND ACADEMIC CALENDAR 2016-2017

#### PSTI Bengluru

S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
36	Electrical Safety and Inspection of Electrical Installations under IE, Rules	1 week	27-02-17											27-03	
37	Power Quality and Harmonics Mitigation and Reactive Power Management	1 week	06-03-17												06-10
38	Power System Protection	2 weeks	13-03-17												13-24
39	Renewable Energy Source & Grid Integration	1 week	13-03-17												13-18
40	Advanced Power System Protection	1 week	20-03-17												20-24
<b>C. SIMULATOR TRAINING</b>															
1	Dispatcher Training Simulator	2 weeks	18-07-16 21-11-16 09-01-17				18-29				21-02		09-20		

#### Legend :

█ Courses started in previous year(s).

█ Courses started in current year.



TRAINING AND ACADEMIC CALENDAR 2016-2017															
HLTC Bengaluru															
S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
A. MEDIUM TERM COURSES (5 weeks to 16 week)															
1	Live Line Maintenance Technique (LLMT) using Hot Stick Method (HSM)	12 weeks	20-06-2016 17-10-2016 20-02-2017					20-06-16 to 09-09-16				17-10-16 to 03-03-17			
2	Live Line Maintenance Technique (LLMT) using bare Hand Methods (BHM) up to 400Kv lines	5 weeks	16-01-2017										16-01-17 to 17-02-17		20-02-16 to 12-05-17
B. SHORT TERM COURSES (One Day to 4 Weeks)															
1	Switchyard Maintenance Techniques using LLMT for Linemen/supervisors	4 weeks	16-05-2016			16-5-16 to 10-06-16									
2	Live Line Punctured Insulator Detector	1 week	13-06-2016			13-17									
3	Capsule Course for Executive in Hot Line activities	1 week	24-06-2017			24-28									
4	Capsule Course for Executive in Hot Line activities	1 week	22-08-2016					22-26							
5	Familiarization Training Program on 400 kV on Cold Lines	4 week	12-09-2016						12-09-2016 to 07-10-2016						
6	Live Line Punctured Insulator Detector	1 week	10-10-2016							10-14					
7	Live Line Punctured Insulator Detector	1 week	09-01-2017										09-13		

**Legend :**

— Courses started in previous year(s).

— Courses started in current year.



**TRAINING AND ACADEMIC CALENDAR 2016-2017**

**NEYVELI**

S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
<b>A. ACADEMIC COURSES</b>																
1	Post Graduate Diploma Course Thermal Power Plant Engg.	2015-16 2016-17	52 weeks	22-08-2016	←				22-08-2016							
2	Post Diploma Course in Thermal Power Plant Engg.	2015-16 2016-17	52 weeks	28-11-2016	←							28-11-2016				
<b>B. LONG TERM COURSES (16 week and above)</b>																
1	Graduate Engineers Course (Thermal) [GEC]	2015-16 2016-17	52 weeks	20-02-2017	←										20-02-2017	
<b>C. SHORT TERM COURSES (One Day to 4 weeks)</b>																
1	Pumps-Operation Maintenance & Performance Monitoring		1 week	04-04-2016	04-08											
2	Valve Actuators		3 days	04-05-2016	04-06											
3	Thermal Power Station Operation		1 week	09-05-2016	09-13											
4	Boiler Tube Failure - Case Studies		2 days	19-05-2016	19-20											
5	C&I in Power Sector		1 week	23-05-2016	23-27											
6	Valve Maintenance		1 week	13-06-2016	13-17											
7	Fans and Air Heaters		3 days	01-06-2016	01-03											
8	Steam Turbine & Auxiliaries Operation		1 week	06-06-2016	06-10											
9	Electrostatic Precipitator		3 days	22-06-2016	22-24											
10	Boiler Operation		1 week	25-07-2016	25-29			25-29								
11	Boiler Firing System & Equipment		1 week	11-07-2016	11-15			11-15								
12	Electrical Protection System		3 days	20-07-2016	20-22			20-22								
13	Efficiency & Performance Monitoring		1 week	08-08-2016	08-12			08-12								





TRAINING AND ACADEMIC CALENDAR 2016-2017															
NEYVELI															
S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
14	Relay Maintenance	3 days	17-08-2016					17-19							
15	Boiler & its Auxiliaries	1 week	19-09-2016						19-23						
16	Power System Energy Losses	1 week	05-09-2016						05-09						
17	PLC & Micro Controllers	2 days	15-09-2016						15-09						
18	Power Plant Auto Control	1 week	26-09-2016						26-30						
19	Battery Maintenance	3 days	05-10-2016							05-07					
20	Power System Studies Load Despatch	1 week	17-10-2016							17-21					
21	Large Capacity CFBC Boiler	3 days	02-11-2016								02-04				
22	O&M of Coal Mills & Feeder	3 days	16-11-2016								16-18				
23	Motor Maintenance	1 week	21-11-2016								21-25				
24	Switchgear Maintenance	2 days	01-12-2016									01-02			
25	Generator & Auxiliaries including Excitation System	1 week	05-12-2016									05-09			
26	Burner Management System/FSSS	3 days	14-12-2016									14-16			
27	Transformer Maintenance	3 days	21-12-2016									21-23			
28	Pump Maintenance	1 week	02-01-2017										02-06		
29	Transformers	1 week	16-01-2017										16-20		
30	Gas Turbine Combined Cycle Power Plant Appreciation	1 week	06-02-2017											06-10	
31	Issues Related to Supercritical Technology	2 days	16-02-2017											16-17	

# TRAINING & ACADEMIC CALENDAR 2016-2017



## National Power Training Institute

TRAINING AND ACADEMIC CALENDAR 2016-2017															
NEVELI															
S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
32	Energy Audit & Demand Side Management in Power Utilities	1 week	20-02-2017											20-24	
33	Energy Conservation and Energy Audit	1 week	07-03-2017												07-11
34	Bearing Maintenance & Shaft Alignment	1 week	06-03-2017												06-10

### Legend :

- █ Courses started in previous year(s).
- █ Courses started in current year.



TRAINING AND ACADEMIC CALENDAR 2016-2017												
DURGAPUR												
S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November
<b>A. ACADEMIC COURSES</b>												
1	B. Tech. in Power Engineering	2012-16 2013-17 2014-18 2015-19 2016-20	4 Years	July 2016	↓	↓	↓	↓	↓	↓	↓	↓
2	PGDC in Thermal Power Plant Engineering	2015-16 2016-17	52 weeks	22-08-2016	↓	↓	↓	↓	↓	↓	↓	↓
3	PDC in Thermal Power Plant Engineering	2015-16 2016-17	52 weeks	01-09-2016	↓	↓	↓	↓	↓	↓	↓	↓
<b>B. SHORT TERM COURSES (One Day to 4 weeks)</b>												
1	Valve & Pump maintenance		1 week	25-04-2016	25-29							
2	Switchgear & Transformer Maintenance		1 week	02-05-2016	02-06							
3	Reduction in Power Distribution Losses		3 Days	16-05-2016	16-18							
4	Electrical protection system		1 week	23-05-2016	23-27							
5	Thermal Power Station Operation		1 week	06-06-2016		06-10						
6	Vibrational Analysis		1 week	13-06-2016		13-17						
7	O&M of Transmission Lines and Sub Station		1 week	20-06-2016		20-24						
8	Boiler Tube Failure and Case Study		1 week	11-07-2016				11-15				

**Legend :**

- ↓ Courses started in previous year(s).
- ↓ Courses started in current year.

# TRAINING & ACADEMIC CALENDAR 2016-2017



## National Power Training Institute

TRAINING AND ACADEMIC CALENDAR 2016-2017															
DURGAPUR															
S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
9	Power Plant Chemistry for Operation Engineers	1 week	25-07-2016				25-29								
10	Thermal Power Plant Efficiency and Performance Monitoring	1 week	01-08-2016					01-05							
11	Generator & Auxiliaries including Excitation System and AVR	1 week	08-08-2016					08-12							
12	Trouble Shooting of Steam Turbine	3 Days	19-09-2016						19-21						
13	Welding Practice	1 week	26-09-2016						26-30						
14	Energy Efficiency Management in Power System	3 Days	07-11-2016								07-09				
15	Boiler and its Auxiliaries Operation	1 week	21-11-2016								21-25				
16	Condition bases Maintenance	1 week	05-12-2016									05-09			
17	Power Plant Instrumentation	1 week	19-12-2016									19-23			
18	Steam Turbine its Aux. Operation	1 week	09-01-2017										09-13		
19	Advanced C&I in Thermal Power Station	3 Days	16-01-2017										16-18		
20	Renewable Energy Technologies Hydraulic	3 Days	16-02-2017											16-18	
21	Change Management	3 Days	13-02-2017											13-15	
22	Renewable Energy Technologies - Solar	3 Days	06-03-2017												06-08

### Legend :

- █ Courses started in previous year(s).
- █ Courses started in current year.





TRAINING AND ACADEMIC CALENDAR 2016-2017																
NPTI- NER GUWAHATI																
S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
A. ACADEMIC COURSES																
1	Post Graduate Diploma Course in Thermal Power Plant Engg.	2015-2016	52 week	22-08-2016	↓				↓							
		2016-2017							22-08-2016							
2	Post Diploma Course in Thermal Power Plant Engg.	2015-2016	52 week	26-09-2016	↓				↓							
		2016-2017							26-09-2016							
3	Graduate Engg. Course in TPPE	2015-2016	52 week	19-09-2016	↓				↓							
		2016-2017							19-09-2016							
4	PGDC in Transmission & Distribution System	2016-2017	26 week	14-11-2016	↓											
5	Post Graduate Certificate Course in Thermal Power Plant Engg	2016-2017	12 week	02-01-2017								14-11-2016				
B. SHORT TERM COURSES (1 Day to 4 Weeks)																
1.	Distribution Metering		1 week	16-05-2016		16-20										
2.	Operation & Maintenance Sub-Station		1 week	06-06-2016			06-10									
3.	Energy Conservation & Energy Audit (For Generation Sector)		3 days	18-07-2016				18-20								
4.	Operation & Maintenance HT/LT Switchgear		1 week	05-09-2016						05-09						
5.	Operation & Maintenance Sub-Station		1 week	21-11-2016												
6.	Operation & Maintenance Transformers		1 week	06-02-2017								21-25			06-10	
7.	Distribution Engineering		1 week	06-03-2017												06-10



**TRAINING AND ACADEMIC CALENDAR 2016-2017**

**NAGPUR**

S. No.	Names of Course	Batch	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
<b>A. ACADEMIC COURSES</b>																
1	B.E. in Power Engineering	2012-16 2013-17 2014-18 2015-19 2016-20	4 Years	July 2016	↓		↓									
					↓		↓									↑
					↓		↓									↑
					↓		↓									↑
								July 2016								↑
2	Post Graduate Diploma Course in Thermal Power Plant Engg.	2015-16 2016-17	52 weeks	22-08-2016	↓				22-08-2016							↑
3	Post Diploma Course in Thermal Power Plant Engg.	2015-16 2016-17	52 weeks	21-11-2016	↓							21-11-2016				↑
4	PGDC in Transmission & Distribution System	2015-16 2016-17	26 weeks	06-06-2016			06-06-2016									↑
				05-12-2016									05-12-16			↑
<b>B. SHORT TERM COURSES (One Day to 4 weeks)</b>																
1	Boiler & its Auxiliaries Operation		4 days	09-05-2016		09-12										
2	Control & Instrumentation for Operation Engineers		3 days	21-06-2016		21-23										
3	Generator Auxiliaries including Excitation System		3 days	12-07-2016				12-14								
4	Thermal Power Plant Operation		4 days	19-09-2016						19-22						
5	Power System Studies & Load Dispatch		3 days	27-09-2016						27-29						



TRAINING AND ACADEMIC CALENDAR 2016-2017															
NAGPUR															
S. No.	Names of Course	Duration (years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
6	Energy Conservation & Energy Audit for Generation Sector	3 days	08-11-2016								08-10				
7	Pumps Operation, Maintenance & Performance Monitoring	3 days	22-11-2016								22-24				
8	Power Plant Chemistry for Operation Engineers	4 days	14-11-2016								14-17				
9	Fire Prevention, Protection & Safety for Thermal Power Station	3 days	06-12-2016									06-08			
10	Bearing Maintenance & Shaft Alignment	4 days	19-12-2016									19-22			
11	Data Acquisition & Distributed Digital Control System in Thermal Power Station	3 days	03-01-2017										03-05		
12	Automation System for Power Plant (PLC & SCADA)	3 days	10-01-2017										10-12		
13	Pump Maintenance	3 days	10-01-2017										10-12		
14	Electrical Protection System	4 days	16-01-2017										16-19		
15	Thermal Power Plant Efficiency & Performance Monitoring	3 days	07-02-2017											07-09	
16	Environmental Pollution & Pollution Control related with Thermal Power Plants	3 days	14-02-2017											14-16	
17	Steam Turbine & Its Auxiliaries Operation	4 days	06-03-2017												06-09

**Legend :**

- █ Courses started in previous year(s).
- █ Courses started in current year.

# TRAINING & ACADEMIC CALENDAR 2016-2017



## National Power Training Institute

TRAINING AND ACADEMIC CALENDAR 2016-2017															
NAGPUR															
S. No.	Names of Course	Duration (Years/ Weeks/ Days)	Dates	April	May	June	July	August	September	October	November	December	January	February	March
C. SIMULATOR TRAINING															
1	210 MW Fossil Fuel Power Plant Simulator Training	2 week	04-04-2016 18-04-2016 02-05-2016 16-05-2016 06-06-2016 20-06-2016 04-07-2016 18-07-2016 01-08-2016 22-08-2016 19-09-2016 03-10-2016 17-10-2016 31-10-2016 14-11-2016 28-11-2016 12-12-2016 02-01-2017 16-01-2017 30-01-2017 13-02-2017 27-02-2017 20-03-2017	04-04-2016 18-04-2016	02-05-2016 16-05-2016	06-06-2016 20-06-2016	04-07-2016 18-07-2016	01-08-2016 22-08-2016	19-09-2016	03-10-2016 17-10-2016 31-10-2016	14-11-2016 28-11-2016	12-12-2016 02-01-2017	16-01-2017 30-01-2017	13-02-2017 27-02-2017	20-03-2017





NPTI Corporate Office, Faridabad

# National Power Training Institute



तमसो मा ज्योतिर्गमय्

*Fifty Years of Service to the Power Sector*





तमसो मा ज्योतिर्गमय्  
विद्या है धनम्, विद्या है बलम्  
Knowledge is Power Supreme