

Training Programme on

POWER FACTOR IMPROVEMENT AND REACTIVE POWER MANAGEMENT

29th October - 1st November, 2018



**आर ई सी
REC**

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आरईसी इंस्टीट्यूट ऑफ पावर मैनेजमेंट & ट्रेनिंग
REC INSTITUTE OF POWER MANAGEMENT & TRAINING
(Formerly known as Central Institute for Rural Electrification)

INTRODUCTION

Low power factor degrades the quality of power supply and leads to more loss in the system besides increasing the cost on consumers. Low Voltages are, by and large, the result of imbalance between the reactive power demand and supply. The reactive power demand arises not only from inductive load points, but also from system components like transformers and lines.

Long EHV transmission lines also generate reactive power, due to the capacitance of the line, during the light load conditions. The capacitive output of the line is almost constant except for variations in the voltage whereas during peak load reactive power loss, proportional to the square of the current far exceeds the line's reactive power generation. The low receiving end voltage adversely affects the stability of the line and/or its power transmission capability.

The reactive power demand needs to be met, preferably at the point where it arises to obviate problems effectively and economically. Reactance of lines also has to be compensated in long transmission lines for enhancing steady state transmission capability and stability. In respect of power factor improvement, shunt capacitors are the most versatile, flexible, economical, and fastest to be installed. Series capacitors mostly serve as automatic voltage regulators besides enhancing transmission capability and stability. Thyristor controlled capacitors and reactors have been fast acting and cost effective. However, the life of the capacitors depends on proper operating conditions and effective maintenance.

Considering the importance of the above, RECIPMT proposes to conduct a Training Programme on **“Power Factor Improvement and Reactive Power Management”** from **29th Oct - 1st Nov 2018** for the field engineers of the Power Sector.

PROGRAMME OBJECTIVES

- To study effective methods of Improving Power Factor and Voltage regulations and thereby reducing System Losses.
- To provide insight into the Design and O & M aspects of various equipment in usage for Reactive Power Compensation and Causes for failures
- To study the effective methods of the Equipment associated with Reactive Power Management, to ensure enhancement of life expectancy.

PROGRAMME CONTENTS

The programme will cover the following broad areas:

- Fundamental principles, Functions and Applications of Capacitors.
- Power Factor and Voltage Profile Improvement with Reactive Power Compensation
- Equipment for Reactive Power Compensation (a) Capacitors, (b) Shunt Reactor, (c) Series Reactor (d) Series Capacitors and (e) Static Var Compensation.
- 11kv and LT Switched Capacitors and Automatic Switching of Capacitors
- Capacitor Bank formation and Neutral Grounding.
- Associated Switch Gear, Control Gear and Protection for Power Capacitors and Capacitor Banks.
- Salient features of Series Capacitor, its Erection and O & M
- Salient features of Shunt and Series Reactors.

- O&M and Testing, Commissioning and Protection of Shunt Reactors.
- Case studies and Field visits.

PEDAGOGY

The programme will be conducted in an interactive environment providing greater scope for discussions. Eminent Engineers, professionals, consultants and experts from different organizations shall be involved as resource persons on different topics of their specialization. The pedagogy includes lectures, discussions, exercises, case studies, etc.

TARGET GROUPS

Junior/Middle level Engineers working in the areas of Generation, Transmission and Distribution, from Public and Private Sector Organizations, Power Utilities, Regulatory Commissions and Electricity/Power Departments will benefit from the programme

PROGRAMME DATE, TIMINGS & VENUE

29th Oct – 1st Nov 2018 from **9.45 am to 5.15 pm** with break for lunch, tea and refreshment. The venue will be RECIPMT Campus, Aramgarh X Road, NPA Post, Hyderabad-500 052.

PROGRAMME FEE

Category	Course Fee per participant	GST (18%)	Total Course Fee/Participant without Group Discount	Group Discount of 10% for 3 or more Participation from same utility ***
Residential*	₹ 22,000	₹ 3,960	₹ 25,960	10%
Non Residential**	₹ 18,000	₹ 3,240	₹ 21,240	10%

* Includes Boarding and Accommodation in addition to tuition, courseware & other facilities, Field Visit, etc.

** Excludes Accommodation, Includes only Working Lunch, Class room Tea & Snacks.

*** Only on Participation basis

The Accommodation is provided on Double Occupancy Basis

Note: No Pick-up or Drop facility will be provided and participants have to make their own arrangements to reach RECIPMT Campus.

Course Fee shall be paid in the form of a demand draft/cheque in favor of “**REC Institute of Power Management & Training**” payable at Hyderabad in advance or at least at the time of registration. The course fee may also be paid by NEFT/RTGS transfer to **HDFC Bank Account No: 00210350000930, IFSC Code: HDFC0000021**. GSTIN of RECIPMT: **36AAACR4512R3Z0**.

HOW TO REGISTER

Please send the nominations on or before **25th October, 2018** along with DD/ Cheque / NEFT transfer to: **The Additional Director, REC Institute of Power Management & Training**, NPA Post, Shivarampally, Hyderabad-500052. Fax: 040-29805896, E-mail: recipmt@gmail.com. Please contact Dr. R. Mohd. Nafi, in his Mobile 09441296670 for further information. Participants are advised to commence their journey, after receiving the confirmation from RECIPMT.

CERTIFICATE OF PARTICIPATION

On the concluding day, participants will receive a Certificate of Participation.

ABOUT REC

Since its inception in 1969, Rural Electrification Corporation (REC), a Navaratna PSU, has been playing a significant role in financing and promoting electrification projects across India. With a span of 49 years, REC has emerged as India's leading finance company in power sector. Be it generation, transmission, distribution or renewable energy, REC has always created benchmarks in its every performance. Based on the MOU with Ministry of Power, the performance of REC is rated as "Excellent" consistently for the last 24 years.

ABOUT RECIPMT

REC Institute of Power Management & Training (RECIPMT) earlier known as Central Institute for Rural Electrification was established at Hyderabad in 1979 under the aegis of Rural Electrification Corporation Limited to cater to the training and development needs of Engineers and Managers of Power and Energy Sector. RECIPMT is relentlessly engaged in capacity building to strengthen the human resources development initiatives of Power Sector. RECIPMT has been conferred with Education Leadership Award by reputed Business School and ABP News National Educational Award for 3 years in recognition of Leadership, Development, Innovation and Industry interface. The Institute is spread over an area of about 14 acres, with administrative, teaching and hostel blocks. Class rooms and hostel rooms are air-conditioned. An Energy Park has been set up to develop awareness on Renewable Energy Sources System and High Voltage Distribution System.



Upto March 2018, the Institute has organized 1972 training programmes and 43352 Engineers/ Managers from various Power Utilities, like Generation, Transmission & Distribution Companies, Electricity Departments, Rural Electric Cooperatives, Regulatory Commissions, Rural Development Agencies, Banks, CPUs, etc., participated in the programmes. The Institute has organized 87 International Training Programmes under ITEC/SCAAP of Ministry of External Affairs, GOI and trained 1389 executives from 86 countries.

Programme Coordinators:

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