



# ENERGY EFFICIENCY CAPACITY BUILDING PROGRAMME

.Industries & Commercial Establishments [08/03/2016-09/03/2016]

.ENCON Project Implementation [08/03/2016-09/03/2016]



## **Energy Management Centre – Kerala**

An autonomous centre under the Department of Power, Govt. of Kerala  
Sreekrishna Nagar, Sreekaryam P.O, Thiruvananthapuram



Energy Management Centre, the state designated agency to enforce the provisions of Energy Conservation Act 2001 in the State of Kerala was established in the year 1996 under Department of Power, Government of Kerala, to enhance energy efficiency in all sectors of economy through promotion of energy conservation and energy management. EMC has evolved a novel and comprehensive energy management approach and institutional philosophy encompassing management of energy technology systems - both conventional and non-conventional energy resource management, rural and urban energy systems, energy education and training, energy generation and conservation based programmes. EMC is formulating and implementing projects on small hydropower development, IT based energy management systems, Energy Audit, Energy efficiency improvement studies and total consultancy on Small Hydro Power Projects. Small Hydro Promotion Cell of Government of Kerala and UNIDO regional Centre on Small Hydro Power is also functioning in the Centre.

## **Training programme in 2016-2017:**

This year (2016-2017) EMC announces 2 Programmes namely:

- 1.ENERGY EFFICIENCY IN INDUSTRIES AND COMMERCIAL ESTABLISHMENTS**
- 2.IDENTIFYING AND IMPLEMENTING ENERGY CONSERVATION PROJECTS**

**Date:** 08/03/2016-09/03/2016

**Duration:** 2 days

**Methodology:** The course would involve class room sessions by Energy efficiency and domain experts, industry specialists and case study presentations

**Registration:** Registration is free of cost; however seats will be limited to 60 per programme. The Venue and date of the programme will be intimated to the registered participants.

**\*Participants will be directly enrolled in EMCs Alumni Network in which they will get frequent updates of EMCs programmes, Publications, Scholarships available etc..**

Invite your presence,

**Er. K.M. Dhariesan Unnithan**  
Director, EMC

For more details

**Dr. R Harikumar**, Head-Education Training & Research Division, EMC  
hari@keralaenergy.gov.in

**Er. B V Subhash Babu**, Energy Technologist  
Education Training & Research Division, EMC  
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### **Background & Objective:**

Increasing efficiency of energy use leads to direct benefits in reducing energy demand and operational cost. Many organisations have recognised its importance as a strategy for carbon emission reduction and in their sustainability initiatives. There is an imperative need to disseminate the benefits of energy conservation and energy efficiency to a wider cross section of industry and commercial sector which account for the single largest share in the overall energy consumption in the country. This programme will highlight on practical measures for increasing energy efficiency covering both electrical and thermal energy.

### **Course Coverage:**

- Energy efficiency and carbon emission reduction – an overview
- Plant energy management
  - Energy use in industries
  - Energy use in commercial establishments
  - Metering and Monitoring
- Energy efficiency in boilers and fired heaters
  - Efficient use of steam
  - Condensate recovery
  - Thermal insulation
- Electrical energy demand management
  - Load categorisation
  - Demand reduction
  - Power factor improvement
  - Automatic power factor controller
- Energy efficiency in electrical systems
  - High efficiency motors
  - Application of variable frequency drives
  - Energy efficient lighting systems
- Electrical end use efficiency improvements
  - Compressed air system
  - Refrigeration and air-conditioning system
  - Optimisation in pumping systems
- Heat recovery devices
- Case Studies
- Check list for energy savings

### **Target Audience:**

This programme is intended for practising engineers and managers and also energy managers from industries and commercial establishments.







## PROGRAMME SCHEDULE

### Day-1:

09.30 – 11.00 Hrs.	Inauguration Energy efficiency & carbon emission reduction – overview Plant energy management
11.00 – 11.15 Hrs.	Tea Break
11.15 – 12.15 Hrs.	Energy efficiency in boilers and fired heaters
12.15 – 13.15 Hrs.	Steam utilisation Condensate recovery Thermal insulation
13.15 – 14.00 Hrs.	Lunch Break
14.00 – 15.00 Hrs.	Electrical demand management Power factor improvement
15.00 – 16.00 Hrs.	Energy efficiency in lighting systems
16.00 – 16.15 Hrs.	Tea Break
16.15 – 17.15 Hrs.	Compressed air systems

### Day-2:

09.30 – 11.00 Hrs.	High efficiency motors Application of variable frequency drives
11.00 – 11.15 Hrs.	Tea Break
11.15 – 12.15 Hrs.	Energy efficiency in refrigeration and air-conditioning systems
12.15 – 13.15 Hrs.	Energy optimisation in pumping system
13.15 – 14.00 Hrs.	Lunch Break
14.00 – 15.00 Hrs.	Heat recovery devices
15.00 – 16.00 Hrs.	Case studies Check list for energy savings
16.00 – 16.15 Hrs.	Tea Break
16.15 – 17.15 Hrs.	Program review and Conclusion

Register your nomination for participation in **Programme to training@keralaenergy.gov.in**  
on or before **25/02/2016**







## IDENTIFYING AND IMPLEMENTING ENERGY CONSERVATION PROJECTS

[08/03/2016-09/03/2016]

### **Background & Objective:**

Implementing energy conservation projects other than housekeeping measures would require careful study for technical feasibility, financial viability, source of funding and above all top management commitment and concurrence. There are instances where investment decisions and project implementation are deferred or even dropped due to poor appraisals and lack of clarity in terms of outcome of the project. This is apart from the problem of financial constraints and fund availability. This programme aims to impart adequate knowledge and skills to enable implementation of energy conservation measures involving investments in a project mode.

### **Course Coverage:**

- Identifying sound energy conservation projects
  - Through energy audit
  - Equipment suppliers' proposals
  - Plant teams experiences and initiatives
- Management appraisal and concurrence- enablers
  - Effective communication and presentation
  - Getting message across, clear and concise
  - Simple appraisal note
  - DPR preparation
  - Financial viability
  - Profitability analysis
  - Funding
- Implementation through
  - In-house expertise
  - Through principal equipment supplier
- Implementation through performance contracting by Energy Service Company (ESCO)
  - Model ESCO contract
  - Monitoring and verification protocol
- Case studies in implementation investment oriented energy conservation projects

### **Target Audience:**

This programme is intended for practising engineers and managers and also project managers from industries, Government Departments and service establishments, municipalities and equipment suppliers interested in implementing energy conservation





## PROGRAMME SCHEDULE

### Day-1:

09.30 – 11.00 Hrs.	Identifying and implementing ENCON Projects- an over view
11.00 – 11.15 Hrs.	Tea Break
11.15 – 13.00 Hrs.	Management appraisal
	Effective communication and presentation
13.00 – 14.00 Hrs.	Lunch Break
14.00 – 15.30 Hrs.	Reporting and documentation
	Preparation of detailed project report
15.30 – 15.45 Hrs.	Tea Break
15.45 – 17.15 Hrs.	Financial viability and profitability analysis

### Day-2:

09.30 – 11.00 Hrs.	Performance contracting and implementation through ESCO route
11.00 – 11.15 Hrs.	Tea Break
11.15 – 13.00 Hrs.	Monitoring and verification protocol
	Model ESCO project
13.00 – 14.00 Hrs.	Lunch Break
14.00 – 15.30 Hrs.	Case studies on implementation of investment grade ENCON projects
15.30 – 15.45 Hrs.	Tea Break
15.45 – 17.15 Hrs.	Case studies
	Programme conclusion

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## KEY FACULTIES

### 1. **Shri. T. Sankaranarayanan**

**Regional Director, National Productivity Council, Mumbai**

Mr. Sankaranarayanan has over 20 years of experience in the field of energy audit and conservation studies in all sectors of industries. He is currently with the Energy Management Division at National Productivity Council, Mumbai. He has carried out over 150 studies in energy and resource conservation in various areas such as energy audits, energy analysis, waste minimization and cleaner production. Besides he is also a qualified trainer in energy management.

### 2. **Shri. Subbarao Balasubramanya Sadananda**

**Former Director, National Productivity Council, Mumbai**

Mr. S B Sadananda has over 35 years of experience as a consultant and trainer in the field of energy efficiency and energy management covering a wide spectrum of areas related to industry, service and government. He was the Head of National Productivity Council, Regional Professional Management Group at NPC, Mumbai. He has led and carried out over 300 energy efficiency studies addressing various facets like plant level energy audits, energy efficiency, Demand Side Management etc.

### 3. **Shri. P Dharmalingam**

**Director, Center of Excellence in Energy Efficiency (CETEE), Chennai**

Mr. P Dharmalingam has been an Energy Audit Consultant for over 30 years. Executed more than 300 assignments covering Process, Engineering & Service industry. He has conducted over 250 training programs on Energy Management and Conservation. He is currently the Director & Head of Center of Excellence in Energy Efficiency (CETEE), Ambedkar Institute of Productivity, Chennai which is a renowned training wing of NPC.

### 4. **Shri. J Nagesh Kumar**

**Former Director, National Productivity Council, Chennai**

Mr. J Nagesh Kumar is a Mechanical engineer with post graduation in Energy Management. He has three decades of experience in energy audits and training in India and abroad. He is an Empanelled accredited energy auditor of BEE. He is also a certified lead auditor for ISO 50001.

## Internal Faculties

#### 1. **Shri. A M Narayanan**

Head- Energy Efficiency Division

#### 2. **Dr. R Harikumar**

Head- Education Training & Research Division

#### 3. **Shri. Johnson Daniel**

Energy Technologist-Energy Efficiency Division

#### 4. **Shri B V Subhash Babu**

Energy Technologist-Education Training & Research Division

#### 5. **Shri. Sandeep K**

Energy Technologist -Energy Efficiency Division





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