

**NATIONAL PRODUCTIVITY COUNCIL**  
**Dr. Ambedkar Institute of Productivity, Chennai.**

**ITEC TRAINING PROGRAMME ON**  
**ENERGY EFFICIENCY PRACTITIONERS COURSE IN INDUSTRIAL**  
**UTILITIES**

**COURSE CONTENT**

The curriculum for the course is a product of blending experiences of all training and consultancy work of NPC for past thirty years. The course content for the training has been carefully designed considering the need to strengthen energy auditing expertise among the energy professionals to meet the growing demand of the industries. First week will be oriented towards Energy Efficiency in Electrical System and Second week for Thermal System. The approach for energy auditing for various utility systems will be clearly explained, by experienced faculty, starting from the first principles to include things like what data to collect, what to look for during field audit, how to analyse data, and how to report the findings, with a menu of all possible energy conservation options.

| <b>S. No.</b> | <b>Module</b>                                  | <b>Subtopics</b>  | <b>Duration</b> |
|---------------|--|---|-----------------|
| <b>1</b>      | <b>Energy Efficiency in Electrical Systems</b> | <ul style="list-style-type: none"><li>➤ Global Energy Scenario</li><li>➤ Energy Auditing, Instruments &amp; Measurements</li><li>➤ Electrical Systems</li><li>➤ Electrical Motors &amp; Harmonics</li><li>➤ Fan &amp; Blower System</li><li>➤ Pumps &amp; Pumping System</li><li>➤ Compressed Air System</li><li>➤ Industrial Refrigeration System</li><li>➤ Industrial Air Handling &amp; Distribution Systems</li><li>➤ Cooling Towers</li><li>➤ Lighting System</li><li>➤ Diesel / NG Generators</li></ul> | <b>1 week</b>   |

|          |   |   |               |
|----------|---|---|---------------|
|          |   | <ul style="list-style-type: none"> <li>➤ Buildings</li> <li>➤ Energy Management System (EnMS): ISO 50001:2011</li> <li>➤ Case Studies on Electrical Energy Systems</li> <li>➤ Industrial Field Visit</li> <li>➤ Quiz</li> </ul>   |               |
| <b>2</b> | <b>Energy Efficiency in Thermal Systems &amp; Other Modules</b> | <ul style="list-style-type: none"> <li>➤ Boiler System</li> <li>➤ Steam System</li> <li>➤ Industrial Furnaces</li> <li>➤ Industrial Drying</li> <li>➤ Waste Heat Recovery</li> <li>➤ Heat Exchangers</li> <li>➤ Cogeneration</li> <li>➤ Water Audit &amp; Conservation</li> <li>➤ Renewable Energy Technologies</li> <li>➤ Monitoring &amp; Targeting</li> <li>➤ Energy Data Analytics</li> <li>➤ Case Studies on Thermal Energy Systems</li> <li>➤ Field / Site Visit</li> <li>➤ Assessment, Discussions &amp; Feedback</li> </ul> | <b>1 week</b> |

## DETAILED COURSE SCHEDULE

### TECHNICAL SESSION SCHEDULE WEEK- I (ELECTRICAL MODULE)

| Date/Day | 10:00 - 11.15                    |                                  | 11.30--13.00                                   |                                  | 14.00-15.15            |                                  | 15.30 - 17.00          |
|----------|----------------------------------|----------------------------------|--|----------------------------------|------------------------|----------------------------------|------------------------|
| Day 1    | GLOBAL ENERGY SCENARIO           | <b>B<br/>R<br/>E<br/>A<br/>K</b> | ENERGY AUDITING, MEASUREMENTS & INSTRUMENTS    | <b>B<br/>R<br/>E<br/>A<br/>K</b> | ELECTRICAL SYSTEMS     | <b>B<br/>R<br/>E<br/>A<br/>K</b> | ELECTRICAL MOTORS      |
| Day 2    | HARMONICS & POWER QUALITY        |                                  | FAN & BLOWER SYSTEM                            |                                  | LIGHTING SYSTEM        |                                  | PUMPS & PUMPING SYSTEM |
| Day 3    | INDUSTRIAL REFRIGERATION SYSTEMS |                                  | AIR HANDLING AND DISTRIBUTION SYSTEM           |                                  | COOLING TOWERS         |                                  | COMPRESSED AIR SYSTEM  |
| Day 4    | BUILDINGS                        |                                  | MONITORING & TARGETING                         |                                  | FIELD VISIT / INDUSTRY |                                  | FIELD VISIT / INDUSTRY |
| Day 5    | DG SETS                          |                                  | ENERGY MANAGEMENT SYSTEM (EnMS) ISO 50001:2011 |                                  | CASE STUDIES           |                                  | QUIZ                   |

**Day 6 & 7 (SATURDAY & SUNDAY): SELF STUDY THROUGH HOME ASSIGNMENT AND LIBRARY HOURS**

### TECHNICAL SESSION SCHEDULE WEEK- II (THERMAL MODULE)

| Date/Day | 10:00 - 11.15                |                                  | 11.30--13.00              |                                  | 14.00-15.15                   |                                  | 15.30 - 17.00                   |
|----------|------------------------------|----------------------------------|---------------------------|----------------------------------|-------------------------------|----------------------------------|---------------------------------|
| Day 8    | COMBUSTION MODULE            | <b>B<br/>R<br/>E<br/>A<br/>K</b> | BOILER SYSTEM             | <b>B<br/>R<br/>E<br/>A<br/>K</b> | BOILER SYSTEM                 | <b>B<br/>R<br/>E<br/>A<br/>K</b> | STEAM SYSTEMS                   |
| Day 9    | WATER AUDIT AND CONSERVATION |                                  | INDUSTRIAL FURNACES       |                                  | INDUSTRIAL DRYING             |                                  | COGENERATION                    |
| Day 10   | WASTE HEAT RECOVERY          |                                  | HEAT EXCHANGERS           |                                  | RENEWABLE ENERGY TECHNOLOGIES |                                  | RENEWABLE ENERGY DATA ANALYTICS |
| Day 11   | CULTURAL / HISTORIC VISIT    |                                  | CULTURAL / HISTORIC VISIT |                                  | CULTURAL / HISTORIC VISIT     |                                  | CULTURAL / HISTORIC VISIT       |
| Day 12   | ENERGY DATA ANALYTICS        |                                  | CASE STUDIES              |                                  | ASSESSMENT / QUIZ             |                                  | SUMMING-UP & CLOSING SESSION    |

# **APPROVAL FROM COMPETENT AUTHORITY**

## **National Productivity Council**

**File No. AIP-11013/2/2023-AIP\_CHN\_NPC (Computer No. 2262)**

The proposed budget of the following three proposals on Energy Efficiency and Renewable Energy theme were reviewed by the committee

The pre-approval committee reviewed the proposal and found it in order as appended below.

### **COMMITTEE RECOMMENDATIONS:**

Committee reviewed following Three (2 residential+ 1 Online) training programme submitted by AIP Chennai's on:

- 1) Exploitation of Renewable Energy Technologies for Industrial Applications (Residential)
- 2) Energy Efficiency Practitioners Course in Industrial Utilities (Residential)
- 3) Exploitation of Renewable Energy Technologies for Industrial Applications (Online)

The committee, therefore, recommends consideration of the proposals for kind approval.

Submitted for kind consideration and approval of the competent authority.

**10/01/2023 12:20 PM**

**AMITAVA RAY  
(GH (ADMIN))**

### **Note No. #6**

यथा प्रस्तावित।

**10/01/2023 2:20 PM**

**SUNDEEP KUMAR NAYAK  
(DG)**

### **Note No. #7**

**10/01/2023 6:24 PM**

**AMITAVA RAY  
(GH (ADMIN))**