



## PROJECT NOTIFICATION

Ref. No.: 21-CP-24-GE-DLN-A-PN2100058-001

<b>Date of Issue</b>	10 August 2021
<b>Project Code</b>	21-CP-24-GE-DLN-A
<b>Title</b>	Self-learning e-Course on Energy Efficiency and Management in Thermal Systems
<b>Launch Date</b>	15 November 2021
<b>Hosting Country(ies)</b>	APO Secretariat
<b>Modality</b>	Digital Learning
<b>Implementing Organization(s)</b>	APO Secretariat
<b>Participating Country(ies)</b>	Open
<b>Overseas Participants</b>	Not Applicable
<b>Local Participants</b>	Not Applicable
<b>Qualifications of Participants</b>	Open
<b>Nomination of Participants</b>	Not Applicable
<b>Closing Date for Nominations</b>	Not Applicable

## 1. Objectives

- a. Provide updated knowledge on thermal utilities, associated equipment, and systems.
- b. Impart know-how on basic principles and performance evaluation of thermal utilities, guidelines for efficient use of related systems, and emerging technologies.
- c. Showcase the energy-saving potential, conservation of natural resources, and monetary benefits through the adoption of best practices and techniques for the efficient operation of thermal utilities.

## 2. Background

Thermal utilities convert chemical energy from fuel such as oil, coal, and gas in addition to agrosidues to heat energy for further application in processes or to generate power. Thermal energy constitutes a significant portion of total energy consumption at enterprise level. The associated steam systems and heat exchangers conveying the heat generated from sources to usage points also form an integral part of manufacturing, processes, and services. In the past few decades, rapid industrialization across the Asia-Pacific region has spurred economic growth, generated employment opportunities, and enhanced standards of living. However, the use of fossil fuels as a major source of primary energy for industry leads to environmental issues like pollution, climate change, etc. Those resources are nonrenewable and will be depleted in the foreseeable future. This calls for immediate attention and action.

Recent international sustainability initiatives like the UN Sustainable Development Goals and the Paris Agreement require nations, particularly industry, to be productive through efficient operations of machinery and equipment and reductions in the consumption of limited natural resources through energy conservation. According to the *APO Productivity Databook 2020*, Asia has lower energy productivity and higher carbon intensity of energy at the aggregate level compared with the EU28. This implies that there is ample scope for improvement in APO members, especially among SMEs in developing economies, to learn about and apply energy-efficient techniques and technologies. Moreover, enhanced energy productivity also narrows the fuel demand-and-supply gap at national level and increases competitiveness at organizational level.

However, lack of awareness, inadequate know-how, and the absence of a critical mass of consultants are challenges faced by industry while trying to reduce overall energy costs and resource consumption. In efforts to disseminate relevant knowledge through self-learning e-courses, the APO launched the course on General Aspects of Energy Management and Audit in 2020 to acquaint participants with the global energy scenario and environmental issues, familiarize them with international agreements on climate change, and impart knowledge of basic concepts of energy audits including related topics. This course is a continuation of that self-learning e-course, with a focus on thermal utilities and recent technological advances and equipment for industries.

## 3. Modality of Implementation

- a. The course is offered through the APO e-learning platform: <http://eAPO-tokyo.org>
- b. Participants should register on this portal and create their own accounts.
- c. Certificates of completion will be provided for those who satisfactorily complete all the modules of the course, including quizzes and a final examination.

## 4. Scope and Methodology

The course will comprise five modules:

Module 1:

Overview of thermal utilities, different fuel types, and efficient combustion techniques

Module 2:

Boilers and heaters: Classifications of steam boilers, their performance evaluation, water treatment, and thermic fluid heaters

Module 3:

Steam distribution networks, steam traps and their selection, and efficient utilization of steam

Module 4:

Furnaces, their performance parameters, minimizing heat losses, and recent developments

Module 5:

Applications for utilizing waste heat commercially, technological advances, and generating heat and power simultaneously

Final examination

### **Methodology**

Module study, additional study material for participants, quizzes for self-assessment, and a final examination.

### **5. Requirements**

- a. Have necessary devices and software comprising a computer/smartphone, updated browser, microphone, and speaker or headphones.
- b. Access to internet connections.
- c. Completion of all the modules, quizzes, and final examination.
- d. The APO e-certificate will be given to participants who score a minimum of 70% on the final examination.

### **6. Financial Arrangements**


The APO will meet the assignment costs for resource persons to develop the course modules including quizzes and a final examination.

### **7. Actions by Member Countries**

- a. Promote the courses nationwide.
- b. Provide the link to the APO e-learning platform on the NPO's website and social network services.

### **8. Actions by the APO Secretariat**

- a. Identify and assign the resource person(s) to develop the course.
- b. Announce course commencement on the APO website and social network services.



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Secretary-General