

Renewable Energies

THEORETICAL & PRACTICAL ON PREDESIGN OF SOLAR THERMAL POWER PLANTS.

Key Aspects and Two Case Studies

COURSE:

DATE:

22-26 October, 2018

DURATION AND SCHEDULE:

32 hours

Monday to Thursday
from 9 to 17
Friday from 10 to 14

LANGUAGE:

English/Spanish



OBJECTIVE AND PRESENTATION:

The general objective of this course is the training to facilitate addressing the Basic Design of Solar Thermal Power Plants (STPP).

To address this general objective:

- i) the key elements that determine the operation and performance of the STP will be reviewed,
- ii) the methodologies and tools to address the pre-design of STPP will be introduced,
- iii) finally, with the objective to fix the learning, the basic design of STPP will be addressed, one based on Parabolic Trough Collectors and the other based on Central Receiver on Tower technology.



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CONTENTS:

Among the specific objectives and contents, the course will address::

- A review of criteria for selecting suitable sites for STP plants, with special attention to the characterization of the direct solar radiation resource and other meteorological parameters that influence the design.
- A review of the key components of their technical characteristics and selection criteria.
- A vision of the technological improvements still necessary and their margin of impact on the performance of STP plants.
- An overview of the typical terms of reference for the basic design of STP plants.
- A review of the process and free available tools for the pre-design and basic design of STP plants.
- Two case studies:
 - Basic design of a STP plant with parabolic trough collectors (PT) with thermal oil as heat-transfer fluid and thermal storage in molten salt tanks.
 - Basic design of a STP plant with Central Receiver on Tower (CRT) with molten salts as heat transfer fluid through receiver and as storage media in tanks.
- Calculation of the average annual energy yield and the multi-annual electricity generation during the life of the plant (for the case study).
- Calculation of uncertainties associated with the estimated electricity production.
- Parametric and sensitivity analysis to refine the designs (for the case study).
- Review of typical performance guarantees and overview of processes and standards associated with the acceptance tests of the "solar" components of the STE plants.

ADDRESSED TO :

Engineers, scientists and professionals of the sector interested in the knowledge of the procedure of pre-design and simulation of performance of solar thermal power plants.

DOCUMENTATION AND CERTIFICATION :

Documentation of the course will be provided and a diploma of attendance will be delivered.

DIRECTION AND COORDINATION:

- **Dirección:** Felix M. Tellez and Eduardo Zarza. Plataforma Solar de Almería (CIEMAT).
- **Coordinación:** Mirian Bravo Taranilla. Training Unit (CIEMAT).



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VENUE:

CIEMAT.
Avda. Complutense, 40 - 28040 Madrid

REGISTRATION AND COST OF COURSE:

Registration can be made up to 10 days before the start of the course. Admission to the course will be confirmed.

Registration fee: 650 Euros.

Please DO NOT MAKE THE PAYMENT UNTIL YOU HAVE CONFIRMED THE ADMISSION TO THE COURSE

PAYMENT :

Make bank transfer:
To: Research Center Energy, Environment and Technology.
Account
0182-2370-45-0200019431
IBAN ES89 0182 2370 4502 0001 9431

REMARKS :

The price of the course does not include meals. The CIEMAT has a self-service restaurant with low prices.

ADDITIONAL INFORMATION :

Training in Renewable Energy Environment and Biotechnology. CIEMAT

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