

Course Syllabus

Solar Thermal Power 5 Credits*, Second Cycle Level 2

Learning Outcomes

On completion of this course, students will be able to:

- analyze the impact of different design and operating parameters for concentrating solar collectors and other components in a complete solar thermal power system, including heat storage
- describe, analyse and compare different techniques for solar thermal power generation as well as calculate electricity production with the help of mathematical models
- explain the current state of solar thermal power generation as well as analyze the impact of various factors on the economic viability of solar power

Course Content

Concentrating solar collectors of various kinds and their theoretical models are studied along with their use in various applications for solar thermal power: power tower, trough, Fresnel reflectors, big dish and dish stirling systems. Power cycles and high-temperature heat storage are discussed as necessary components of a complete solar power system.

Hybrid systems with e.g. desalination are studied and analyzed with simulation software. The current situation in the world for solar thermal power (research and market) will be studied and factors affecting the viability of solar thermal power are taken up and discussed.

A case study is conducted as a homework assignment (project work) where students will have to formulate objectives and plan work. Goals and planning are discussed in a seminar and the results in another and the whole project will be described and analyzed in a written report

Assessment

Written exam (3 credits), U, 3, 4, 5. Seminar and written assignment (2 credits), U, G

Forms of Study

Lectures, exercises, assignments, seminars.

Grades

The Swedish grades U, 3, 4, 5.

The overall grade is based on results of the exam.

Prerequisites

At least 45 HEC of the courses of the Master Programme in Solar Energy Engineering or equivalent have to be passed.

Other Information

Number of examination attempts is limited to five.

Subject:

Energy Technology

Group of Subjects:

Energy Technology

Disciplinary Domain:

Technology, 100%

This course can be included in the following main field(s) of study:

1. Solar Energy Engineering

Progression Indicator within (each) main field of study:

1. A1F

Approved:

Approved 3 October 2013

Valid from 3 October 2013

Revised:

Revised, 9 October 2014

Revision is valid from 9 October 2014