Planning and simulation of grid-connected photovoltaic system with a software tool

Course overview

Credits 1 cr

Teaching Period V

Workload
- Contact teaching (meetings) and poster gala 8 h;
- Independent work individually and in teams 14 h;
- Preparation of the poster presentation 5 h;

Learning Outcomes
- Practical experience from and basic skills of using a professional photovoltaic system design and simulation software PVSyst. Poster presentation skills.

Schedule and plan

Students work in teams of 2-3 persons to design a grid-connected photovoltaic system and simulate its solar electricity production.

Schedule and distribution of the workload

Meetings are on Thursdays 12:15 - 14:00 in seminar room 228, Puumiehenkuja 2 (R009). Poster gala will be held in Energy Garage.

14.4. Introduction (2 h)
- Introduction, organization and demonstration of the PVSyst software.
- Introduction of the example case.

Week #1 (4 h). After the 1st meeting, the students familiarize themselves with the software, using the example case as the starting point. Teams prepare for the next meeting a proposal for their design project (site characteristics, type of PV system, and questions to work on in the project).

21.4. Project ideas (2 h)
- Teams present their project ideas (verbally with or without slides).
- Feed-back on and further development of the project ideas.

Weeks #2 (4 h). Work on the projects.

28.4. Progress (1 h)
- Updates by the teams on their progress.

Weeks #3-4 (6 h). Work on the projects.

12.5. Final goals and drafting the poster (1 h)
- Updates by the teams on their progress.
- Drafting the outline of the poster based on the existing and planned results.
Week #5 (5 h). Teams finish up their projects and prepare a poster for the final gala. Posters are printed on A3 paper, taped together and put on display in Energy Garage in beforehand gala. The best poster will be later printed in A0 and showcases in EG.

19.5. Poster gala (2 h)
- Final presentations and end of the course.

The design projects consists of selecting an interesting case, choosing the type of installation (roof, facade, etc.), sizing the system, designing the arrangement of the solar panels, sketching roughly the visual outlook of the system based on aerial / Google Street View photographs, a site visit and estimation of the shading effects by the horizon and nearby objects, choice of the system components, and performing the simulations with PVsyst taking into account the the meteorological insolation data of the location.

### Study Material
The course requires purchasing the student license of PVsyst6 (12 months, ca. 25 CHF). Instructions for obtaining the student license are given to registered participants.


### Grading Scale
Range 0-5. The evaluation is based on the visual poster (50%) and its oral presentation in the final gala (50%). The evaluation is a composite of peer-evaluation (40%), evaluation by the teacher (30%) and other participants of the final gala (30%). The same grade is given to each team member.

### Registration for Courses
Registration by e-mail to janne.halme@aalto.fi.

### Language of Instruction
EN. English

### Course Staff and Contact Information
Doc. Janne Halme (janne.halme@aalto.fi)