

Student Thesis

Level: master's

Concentrating collector for Torsång district heating system

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Abstract:

In this thesis report for Dalarna University in Borlange and Absolicon company the study of a possibility to add an array of concentrating solar collectors to a Torsång district heating system was done. The whole idea of this work was to make a simulation of this kind of system, trying to get 15-20% of solar fraction, and make an economical evaluation.

At the same time, another goal was to make two comparisons: between concentrating and flat-plate collector in the same system, and between two tools for collector analysis – Polysun and Absolicon tool, based on TRNSYS, which was designed to estimate the output of the collector for a certain temperature, without any load.

During the study, the analysis of the simulating tools was made and the combination of those two tools was used. Using long iteration cycles, involving changing the field layout, number of collectors and distance between collector rows in flat-plate collector case, both types of collectors were analyzed. The method of the analysis was to get an equal output of the field and see the differences, which appear while using different collector types.

Keywords:

Concentrating solar collector, Absolicon, Arcon, Heatstore, flat-plate collector, Borlange, Torsang, Sweden, parabolic trough, thermal collector