

Master Thesis Brief Description

Thesis Title	Solar Energy in Industrial Processes
Programme of Studies	MSc in Sustainable Energy Systems
Course	SES 701 Maser Thesis I + II
Area of Study	Sustainable Energy Technologies
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Semester	Spring Semester 2018
Short Description	<p>In Europe, about 27 % of the total final energy demand is heat consumed by the industry, of which about 30 % occurs at low temperature levels below 100 °C and further 27 % between 100 °C and 400 °C (low to medium temperature). In many EU countries, a significant percentage of the heat demand, which concerns the lower temperature range below 100 °C, can be generated by commercially available solar thermal systems. The potential of applying solar energy for industrial purposes is still largely untapped. Using solar energy though to provide the heat or cooling necessary to industrial processes that need high reliability and high quality heat and cooling remains a challenge in the European region.</p> <p>This thesis aims to examine existing and novel solutions that cover by means of solar thermal energy the highest possible share of the heating and/or cooling demand of industrial processes (temperatures higher than 150°C). In terms of this thesis, a novel solar thermal system, to be defined through the literature review on existing systems, will be pre-engineered and its actual performance will be examined with the use of building information modelling (Autodesk Revit) and parametric assessment. The environmental and financial assessment of the proposed system under parametric conditions is also anticipated. The performance of the investigated technology should also be tested in EU countries where solar thermal systems currently have very limited or no application. The proposed technology should also consider relevant BREFs under the Industrial Emissions Directive.</p>