

## Absolicon – The obvious choice for your Master Thesis Project

Global warming is the biggest threat to society as we know it and the dominant cause for this is our consumption of fossil fuels. The hype around electric cars and solar cells suggests that most people are open to the idea of change towards more renewable options.

However, what is often overlooked is the fact that the energy usage for heating and cooling (thermal energy) equals that of electricity and transport combined<sup>1</sup>. You can help solve this part of the climate challenge!

Absolicon Solar Collectors is a stock market listed company in Härnösand with 25 employees working towards changing heat production in industry from fossil to solar. We sell the Absolicon T160, see figure (1), the most efficient solar concentrating collector in the world, producing heat up to 160°C. This makes it suitable for industrial process heat and district heating. Industrial process heat below 150°C constitutes roughly 7 % of the total energy demand, making it an immense market.



Figure 1. Field installation of the Absolicon T160.

Absolicon's business plan is however not to sell solar collector fields across the globe. It is rather to sell production lines for licensed mass production of our solar collectors. The production line is robotized and capable of producing 50 MW (100 000 m<sup>2</sup>) solar collectors per year. For a short introduction of the production line, see the link below.

<https://vimeo.com/absolicon>

### Master thesis projects

Considering that we have developed our products from scratch, it should come as no surprise that we put a lot of effort into research and development. Our work up until today has given us the best solar collector in the world, and we strongly believe that continued efforts in this area is the key to staying one step ahead of our competitors. As a result, we have many active or planned R&D projects in which a master thesis project could be conducted.

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<sup>1</sup> <https://www.iea.org/renewables2018/heat/>

As we are expanding our sales and marketing department rapidly, we also offer projects towards marketing and market analysis. We have a long history of supervising master thesis projects and have found that the best way of defining a project is in discussion with the student.

Proposed subjects for a Master thesis project:

- **Material science:** The three key components of the collector (glass, reflector & receiver) all have surface treatments (coatings) to give them suitable optical properties. We are currently conducting projects in collaboration with research institutes and manufactures to develop our own surfaces for each of the components, as well as testing the properties of commercially available alternatives. This area is close to basic research making it suitable for projects in collaboration with an institution, making it possible to acquire both industrial and academic contacts during your master thesis project.
- **Marketing:** Moving from a pure R&D company to selling your product means new challenges. As a small company on a global market it is essential to find the right markets and customers to focus your efforts on, and an essential part of this is making reliable market analyses. After pinpointing potential customers comes communicating why our product is the way to go, making good illustrations, key figures and understanding for the customer's needs.
- **Design and construction:** We have several projects in pipeline for improvement of the collector, production line and tracking system. This involves, among other things, geometrical changes to the collector, efficiency and cost improvements to the tracking system and increasing flexibility in the production line.
- **Simulation and optimization:** Every customer have different demands and therefore an initial step in each customer interaction involves simulation and optimization base upon their need, solar irradiation, application, system configuration etc. We work mainly with Matlab/Octave for this simulation, and we a continuously adapting and improving the models and methods used.
- **Programming & automation:** There are several areas where projects focused on programming and automation is possible. This includes our self-developed tracking system, handling of and presentation of production data and our optical validation system in the production line.
- **Financing:** All the new infrastructure and the solar collectors need to be financed. Today, pensions funds and asset managers devote trillions of dollars towards "green" investments. We need to learn how Absolicon can join hands with financiers to obtain low cost capital for our customers.

For more information, don't hesitate to contact me!

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