AALBORG CSP
- Changing Energy

1.9MW$_{TH}$ SOLAR DISTRICT HEATING PLANT

for Solrød Fjernvarme, Denmark

A competitive **SOLAR PLANT**

PROJECT FACTS

CUSTOMER NEED

Solar heat up to 95 °C

FLAT SOLAR-THERMAL PANELS

2,569 m^2 flat panels

1,250 m^3 storage tank

1,226 MWh heat / year

up to 28% solar energy share

END USERS

350 customers

SAVINGS

233 tons CO_2 / year

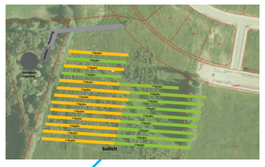
In order to reduce a Danish district heating plant's (Solrød Fjernvarme) natural gas dependency as well as to stabilize its energy prices, Aalborg CSP investigated the potential to use solar heating in the southern part of Denmark. To match the client's energy requirements at the lowest possible cost, Aalborg CSP's technology selection favored a 2,569m^2 flat panel system along with a 1,250m^3 heat storage accumulation tank, thereby providing 350 households with sustainable heating.

The solar energy system in Havdrup is one of the most competitive flat panel fields in the country as it consists of a technology that has shown the highest performance among all known mass-produced large-scale collectors on various performance tests. For Solrød Fjernvarme, this efficiency contributes to the reduction of the plant's natural gas dependency as well as the citizens' heating bills.

"So far we have used natural gas to provide heating for the inhabitants of Havdrup, but with our new solar field, 28% of the town's heat demand is supplied in a sustainable way. The solar energy system not only provides us with a more sustainable solution but also with a more economical one as we have managed to lower the heating bills" - explains Kaj Holm Rasmussen, Operations Manager of Solrød Fjernvarme a.m.b.a.

Since the plant began to harvest the sunrays in Spring 2017, it has been performing beyond expectations. Besides offering a cost competitive solution for heat production, the solar plant also avoids the emission of at least 233 tons of CO_2 annually.

FROM IDEA
to reality



Summer 2016
Feasibility study

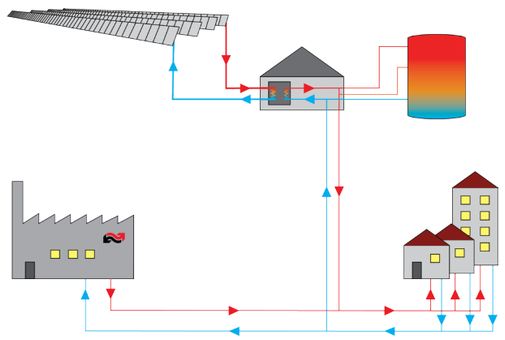
Autumn 2016
Construction

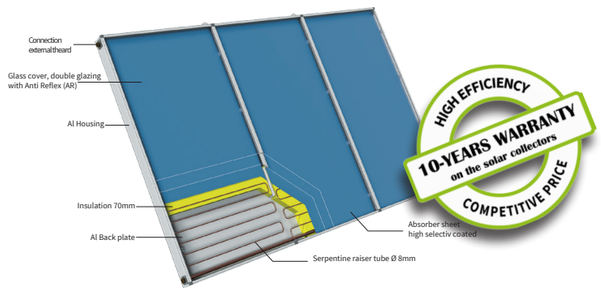
Winter 2016
Commissioning

End of 2016
Harvest of the first sunrays

Summer 2017
First solar season with excellent performance

Harvesting the sun ***IN THE MOST EFFICIENT WAY***

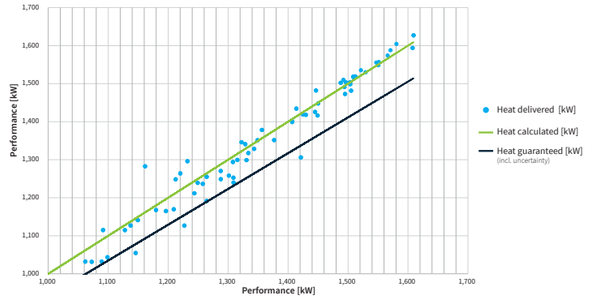




Strucuture of the flat solar-thermal panel

The solar plant consists of 13 rows of flat solar-thermal panels with up to 20 collectors in each row. The 13,3m^2 optimized panels have shown the highest performance among all known mass-produced large-scale collectors on the market. They also come with a 10-year warranty setting a new standard on the long-term quality and reliability of solar systems.

Operational data from the first solar season have shown excellence in performance. The solar system have so far performed above the guaranteed level, and quite often exceeding optimistic preliminary calculations.



Solar field performance (measured vs. calculated vs. guaranteed) based on plant monitoring between 11 May - 20 June, 2017

CHANGING ENERGY
around the world

Aalborg CSP is a leading developer and supplier of innovative renewable technologies aiming to change the way energy is produced today. Relying on extensive experience from some of the most efficient concentrated solar power (CSP) projects around the world, the company designs and delivers green technologies and integrated energy systems to lower the cost of energy for industries and power plants worldwide.

Aalborg CSP places strong focus on R&D activities and partners with knowledge-based companies and institutions to create leading-edge technologies. As a result, the Aalborg CSP engineering design is centred on a value-adding concept providing solutions that excel in operation, increase plant revenue and contribute to a greener future.

Headquartered in Aalborg (Denmark) and with sales & service offices in Spain, the US, Australia and Indonesia, Aalborg CSP has realised more than 1,700MWth cost effective green energy solutions to a variety of industries worldwide.

5 sales & service locations
more than 1,700 MWth solar installations

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