ABSOLICON
SOLAR COLLECTORS

SOLAR DISTRICT HEATING STUDY VISIT

INVITATION TO STUDY VISIT TO DANISH DISTRICT HEATING NETWORKS

10/10 - 12/10 2022

Dear colleagues, you are warmly welcome to participate in a study trip to Denmark to visit large-scale solar heating plants. You will meet successful companies of Danish solar heating sector and learn about advantages of solar thermal as a source of energy for district heating.

STUDY VISIT

Dronninglund - seasonal storage of heat
Solar heating field of 37,000 m^2 30 km northeast of Ålborg with associated seasonal storage of 62,000 m^3 which supplies the village of Dronninglund with 1350 households with 40% of their heating needs. Built in 2014 and is estimated to annually produce about 18 GWh of hot water at about 75°C.

Tårs - flat solar thermal panels and concentrators
At Tårs Värmeverk, 80 km north of Ålborg, there is a solar field where a combined flat and concentrating solar collector, producing about 6 GWh of energy in the form of 98-degree water every year. The total area amounts to 10,000 m^2, where about 40% consists of concentrating solar collectors from Aalborg CSP and 60% of flat solar collectors from Arcon Sunmark. The field covers about 31% of the 840 households' annual energy needs.

Brønderslev - heat and power from concentrators
The district heating plant in Brønderslev was nominated for its globally unique green energy facility. The system is the first of its kind in the world to demonstrate how CSP (concentrated solar power) with an integrated energy system design can optimize efficiency of ORC even in less sunny areas.

Ørum Varmeværk – heat pump and solar thermal covering 93% of heat
The installation that combines 6,376 m^2 solar heating plant and hot water accumulation tank and heat pump, produces 10,000MWh heat annually to 93% of the district heating heat consumption.

The program and study visits are free of charge. Absolicon will cover the costs of transportation in Denmark and the participants only pay for hotel and restaurants.

For questions about the trip, contact project managers:
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REGISTRATION
shorturl.at/dGQRS

AGENDA

Mon 10/10	**Departure from Sweden**:		
	(Stockholm)	15:30	Arrival to Aalborg at 18:25
	(Malmo)	08:55	Arrival to Aalborg at 17:15
	(Gothenburg)	15:25	Arrival to Aalborg at 18:15
Hotel night in Aalborg			
Tue 11/10	**Study visit to Tårs**		Field combined solar heating system consisting of flat solar-thermal collectors and CSP parabolic trough collectors. This combination ensures a high performance throughout the day and a large solar heat production, which leads to a significant reduction in the gas consumption. The system consists of a 4,039 m^2 CSP plant and a 5,972 m^2 flat panel field capable of producing 6,082 MWh annually and covers approx. 31% of the annual district heating plant's energy demand, without the use of seasonal storage. https://www.youtube.com/watch?v=SwsWtyrVxfs&ab_channel=AalborgCSP
	Study visit to Dronninglund		The solar thermal plant consists of 2,982 solar panels or 37,573 m^2 . The panels are divided into fields, each connected to a heat exchanger in the technique building. Maximum power from the collector fields is 26 MW. At the opening in May 2014, the solar collector field was the largest in the world.
	Study visit to Bronderslev		The CSP plant consists of 40 rows of 125m parabolic trough loops with an aperture area of 26,929 m^2. The suns' rays are collected and reflected onto a receiver pipe wherein a fluid is heated up to 330°C. This high temperature is able to drive an electric turbine to produce electricity, but the flexibility of the system also allows production of lower temperatures for district heating purposes.
Hotel night in Aalborg			
Wed 12/10	**Study visit to Ørum**		In Ørum, the establishment of a 2.5 MW heat pump system and the integration with an existing solar heating system have made it possible for the local district heating plant to lower their gas consumption, add flexibility to the heat production and thus reduce energy costs. Combined, the heat pump and the solar heating system produce approx. 10,000 MWh heat annually and cover up to 93% of the heat consumption of the plant's customers.
	Departure from Danmark:		
	(Aalborg)	15:30	Arrival to Stockholm 18:20
	(Aalborg)	17:45	Arrival to Malmo 22:25
	(Aalborg)	18:45	Arrival to Gothenburg 21:50