

Energy Efficient Pumping Solutions for Solar District Heating

A key component in solar district heating is obviously the solar panels, but energy efficient pumps are another area that should be in focus, and this is where DESMI comes into the picture.

DESMI e.g. supplied energy efficient, in-line, vertical NSL centrifugal pumps for one of the world's largest solar heating plants: The Dronninglund Solar Thermal (District Heating) Plant in the northern part of Denmark.

This particular solar district heating plant has a water thermal storage reservoir of **60,000 m³**, **2,982 solar panels with a total surface area of 37,275 m²**, which is equal to more than 5 football pitches.

DESMI pumps are used for circulation applications in primary as well as secondary areas, and we also supply shunt pumps.



The Dronninglund Thermal Storage Reservoir

CASE STORY



Typically these types of pumps have energy efficiency levels well above 80%. With proper use and maintenance it is not unusual that these pumps can perform over the entire lifespan of such a solar plant (25 years) and this obviously contributes to the sound economy of the project.

Furthermore, our vertical pumps **save around 50% floor space** compared to horizontal pump installations, which means that the plant can be more compact - which again helps to save costs.

District heating in Denmark (and in several other countries) involves distribution of hot water below 100° C. For such applications DESMI has developed the so-called "Spacer Design", which results in very easy maintenance since the design allows the motor to stay onto the pump during service - and the pump can remain installed in the pipework, while it is being serviced. **This design can be supplied for both vertical and horizontal, in-line as well as end-suction executions, flow capacities up to 4,000 m³/h and with pressure ratings up to PN25.** For

applications with temperatures above 100 degrees C a different design is required and in this way the DESMI compact version pumps can manage media temperatures up to 140°C .

Besides the pump installations at Dronninglund Solar District Heating Plant, DESMI has e.g. supplied energy efficient pump solutions for the following other solar district heating plants in Denmark:

- Aulum - 16,000 m² surface area of solar panels.
- Hundested- 14,465 m² surface area of solar panels.
- Asaa - 5,200 m² surface area of solar panels.
- Flaunskjold - 5,700 m² surface area of solar panels.
- Hvide Sande - 10,000 m² surface areas of solar panels.
- Sæby - <10,000 m² surface area of solar panels.
- Sources used for input to this article origins from Arcon-Sunmark A/S, Danish District Heating Association (Dansk Fjernvarme), Rambøll, Dronninglund Fjernvarme, and DESMI.

PROVEN TECHNOLOGY

DESMI