



Abstract

This report describes the work carried out in connection with the development of a hybrid cooler prototype with a performance up to 400 kW. The prototype consists of a radiator element, a fan, a spray system and a control. The prototype is installed at Danish Crown A/S in Ringsted, Denmark, where it has been in operation for six months.

The aim of the project is to develop a hybrid cooler that functions as a dry cooler during the winter and as a cooling tower during the summer in that the annual savings potential is 243 GWh of electricity when substituting the dry coolers with the hybrid cooler in Denmark.

The hybrid cooler will have an annual energy consumption that is 10% lower than the energy consumption of a dry cooler, and the water consumption can be reduced with up to 50% compared to a cooling tower. It is also possible to use rainwater as supplementary water for the hybrid cooler.

Different types of surface treatments have been tested and evaluated during the project. The surface treatments are going to prevent a blocking of the air intake side of the heat exchanger.

During the period of operation, a measurement programme has been carried out. These measurements form the basis for a comparison between the hybrid cooler and the dry coolers and the cooling towers, respectively.