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Danish concentrated solar power system

Overview

Solar heat plants are widespread in Denmark, with a combined heating capacity of 1.1 GW in 2019. A large solar-thermal district heating plant 55% of the year-round heating needs of the town of . This is after an expansion of the original plant which supplied one-third of the heating needs, The plant uses (STES) in the form of a large lined pits t.

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Project FSSE aims to develop a concentrated solar capture (CSP) system with storage and a high temperature Organic Rankine Cycle Unit (ORC) that can be utilized on demand to produce carbon neutral power and heat. The FSSE technology converts the energy captured from the sun into heat and power and.

However, combining several renewable energy technologies for heat and power has recently led to the realization of an ambitious green energy project in the town of Brønderslev – the world's first combined heat and power (CHP) plant to integrate concentrated solar power (CSP) and a biomass boiler.

Aalborg CSP was selected to design and deliver a CSP system to be integrated with a biomass-organic rankine cycle (ORC) plant for combined heat and power generation in Denmark. The system is the world’s first CSP system combined with a biomass-ORC plant. Aalborg CSP and the Danish district heating.

Solar power in Denmark amounts to 4,832 MW of grid-connected PV capacity at the end of September 2025, [1] and contributes to a government target to use 100% renewable electricity by 2030 and 100% renewable energy by 2050. [2][3] Solar power produced 11.2% of Danish electricity generation in 2024.

The CSP system, developed by Danish renewable energy specialist, Aalborg CSP, has been operational since the end of 2016, but it was not until the sun appeared high on the sky that it reached full capacity. For now, the 16.6 MWth solar energy system supplies heat to the district heating network.

Denmark’s largest energy community is now under construction, featuring more than 30,000 sqm of solar rooftops with a total capacity of about 4 MW. The project will use building-integrated photovoltaics (BIPV) on pitched roofs and building-attached photovoltaics (BAPV) on flat roofs from Danish.

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