Central Solar (District) Heating Plants

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Heat pumps are utilized for half of the year in winter periods with no seasonal storage, or low temperature in storage. Denmark has a leading tradition for large-scale solar heating connected to district heating, short CSHP. Such plants can include any type and size of seasonal storage, whereas the pit water storage seems to be the cheapest and most promising thermal storage technology for large-scale applications.

In 2012 a first full scale demonstration was presented in Marstal, Denmark. Today the plant is grown to over 33,000 m² of solar collector and a storage capacity of over 85,000 m³ pit water storage.

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Further Information
A European Cooperation with web site: http://www.solar-district-heating.eu
Project Sunstore 4: http://sunstore4.eu/newsroom/events-presentations/
Web Blog: http://centralsolarheating.wordpress.com/

Energy balance for the year 2013 monitored. The solar share is 34% even with a large-scale seasonal storage. Flexibility opportunities are very large.

World largest pit water storage is present at the Marstal:
• Built 2011-12
• Size: 75,000 m³ water
• Price 2.65 mio. € excl. transmission pipe or 35.5 €/m³ or 0.38 €/kWh
• Temperatures 10 – 90°C
• Capacity: 6,960 MWh
• Charge and discharge capacity: 10.5 MW
• Calculated heat loss: 2,475 MWh/year

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The Floating Lid Construction
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