

Decentralised SDH Systems – Swedish Experience



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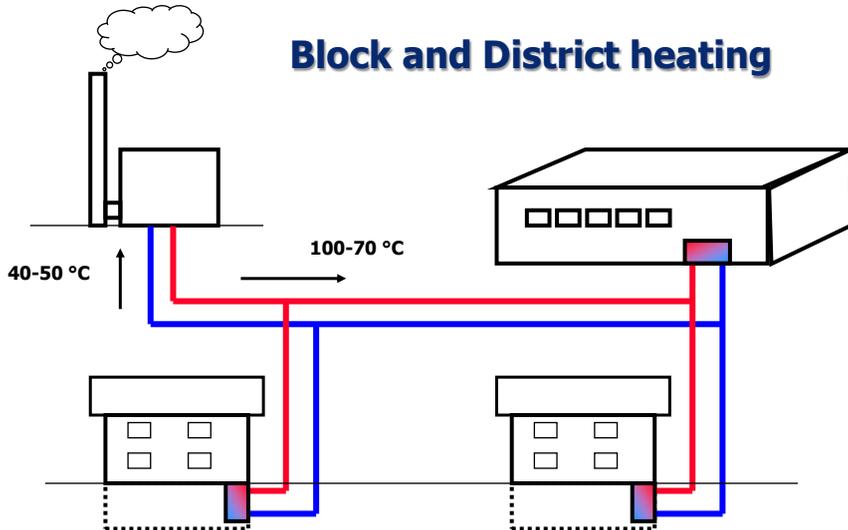
SDH .. Operators .. Applications ..

DH operators make their own SDH plants .. and
sell solar boosted heat ..

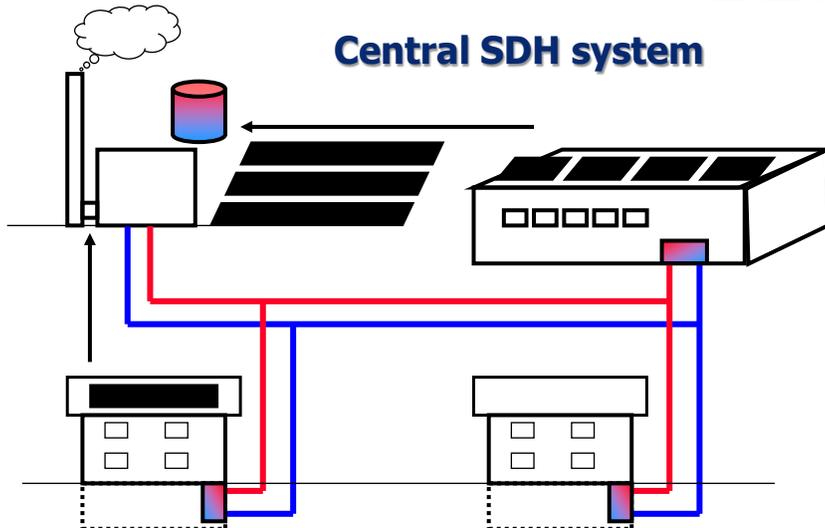
ESCO's / Building owners / build solar heating
plants connected to DH systems ..

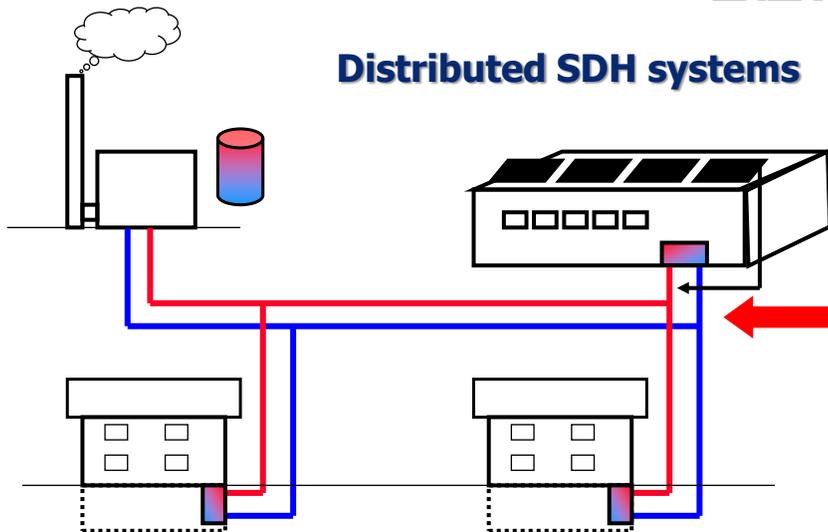
"Contract between plant owner and DH provider!"

Block and District heating

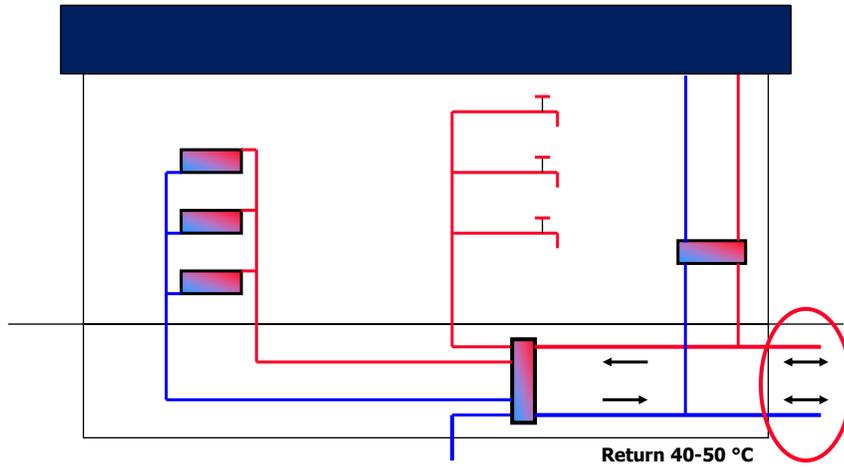


Central SDH system





Distributed SDH systems ..



Distributed SDH Plant in Graz



Distributed SDH systems ..

- Rather simple .. HX ..
- Designed based on available area and DH pipe dimensions ..
- Should meet basic requirements for pressure and temperature ..
- Possible with different ownerships ..
- O&M is a key issue ..

Grid-connected solar heat .. ?!

- DH system – an infrastructure used to buy and sell heat .. Why not solar heat ?
- Solar and DH system - different voltage !?
- Requires an agreement between the plant owner and the DH provider ..
- Nearby invented in EPBD ..!?
- Possible to develop new business models for DH operators ..?

Background

- 1st system in Skive, DK – 1994 ?
- Several systems Bo01 in Malmö, 2001 ..
- A number of systems in Graz, AT
 - Operated by ESCO's ..
- Several new small systems in SE, 2002- ..
 - **Operated by building owners ..**
 - Majority of systems in DH by E.ON ..?





Bo01- Malmö

SDH - Malmö - April 9, 2013

13

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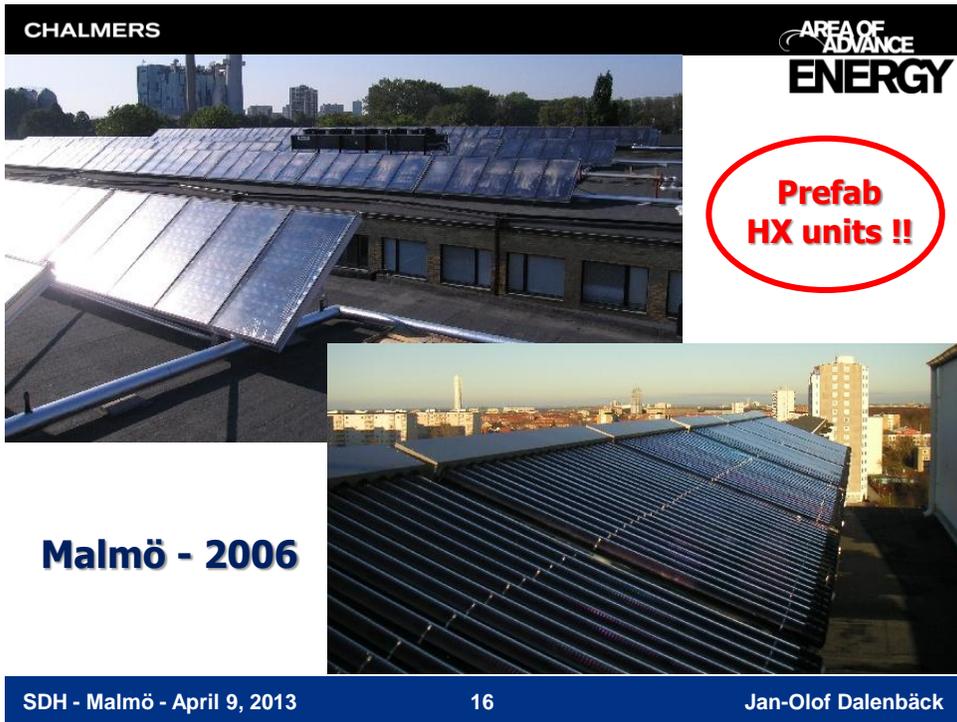
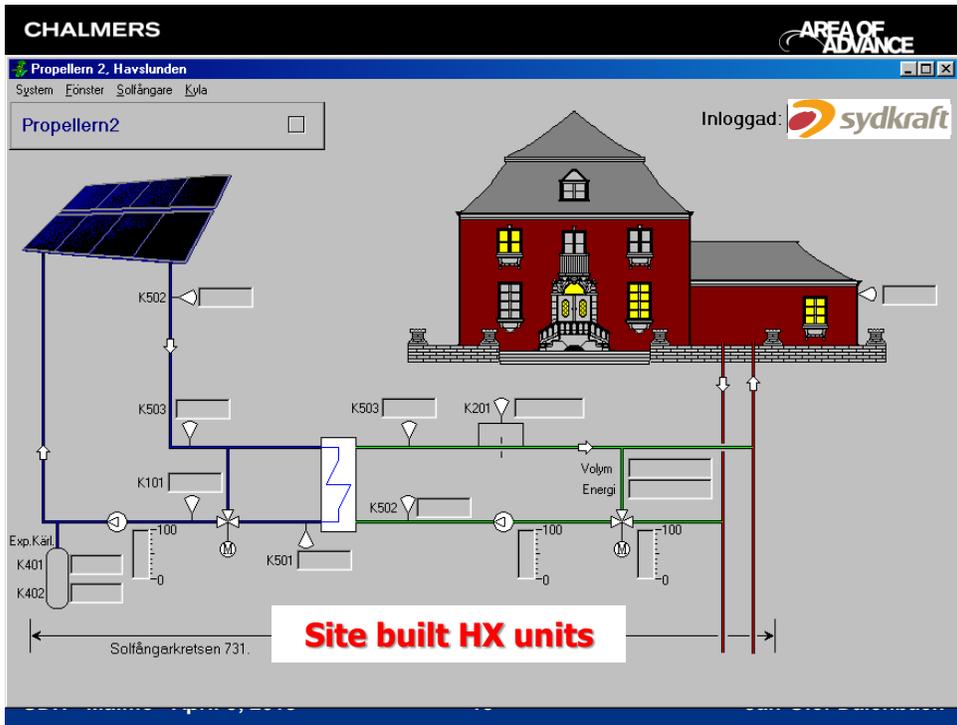
Kockum Fritid – Malmö - 2001



SDH - Malmö - April 9, 2013

14

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Malmö - 2008

Vislanda - 2009



Timrå - 2009



SDH - Malmö - April 9, 2013

Karlstad – 2009



SDH - Malmö - April 9, 2013

Göteborg – 2010



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21

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Stockholm – 2010



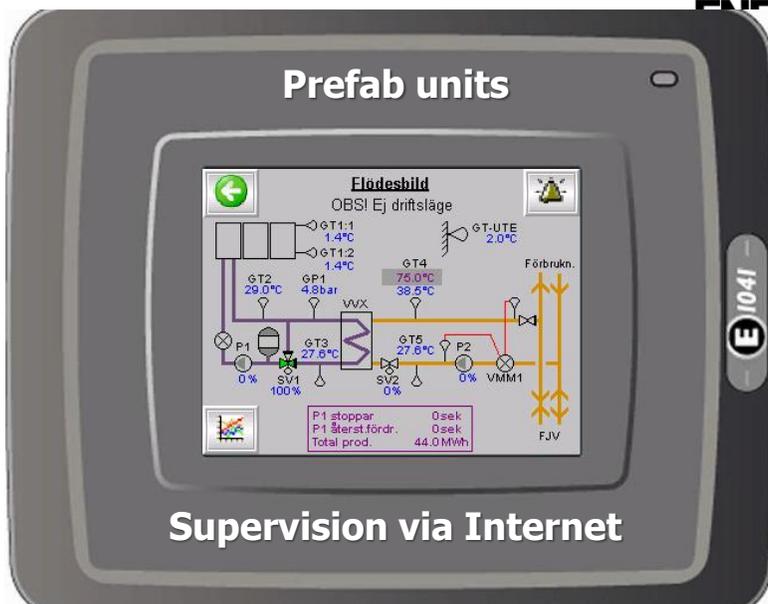
SDH - Malmö - April 9, 2013

22

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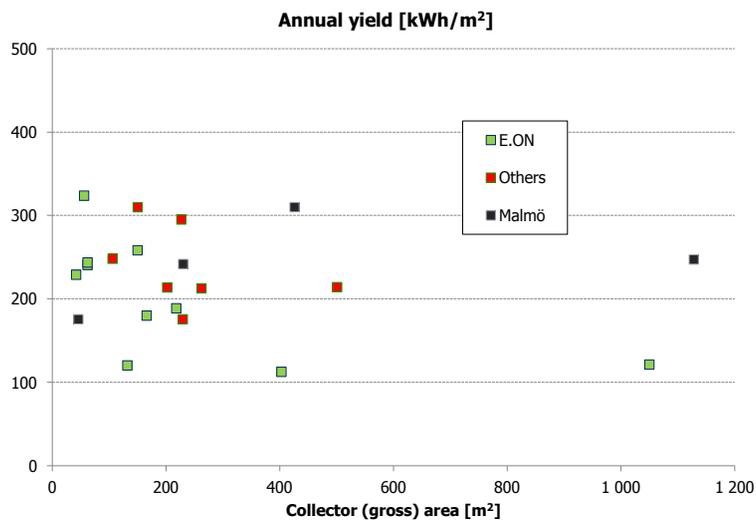


Karlstad – 2011



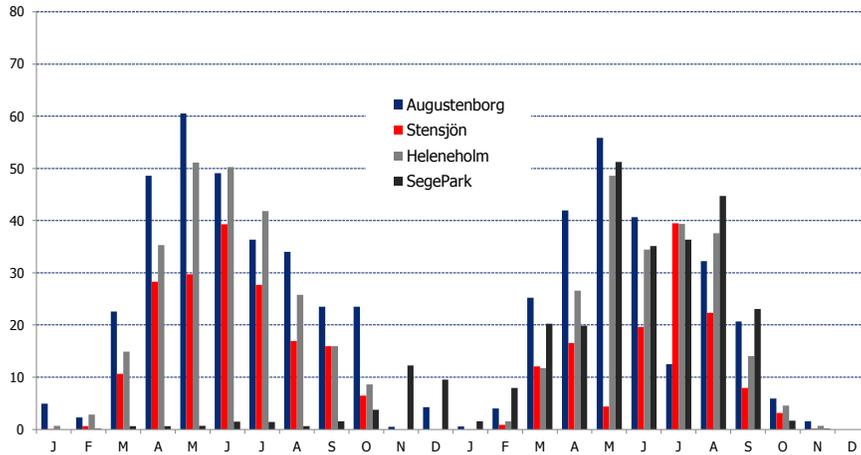
Evaluation of 22 plants

- Misc. background, different contracts, different O&M ..
- Different orientations .. shadowing ?
- Different collectors & tilt ..
- Different DH return temperatures ..
- Rather small ..
- **Results in different yields ..!**
- **But .. 100-300 kWh/a.m²**



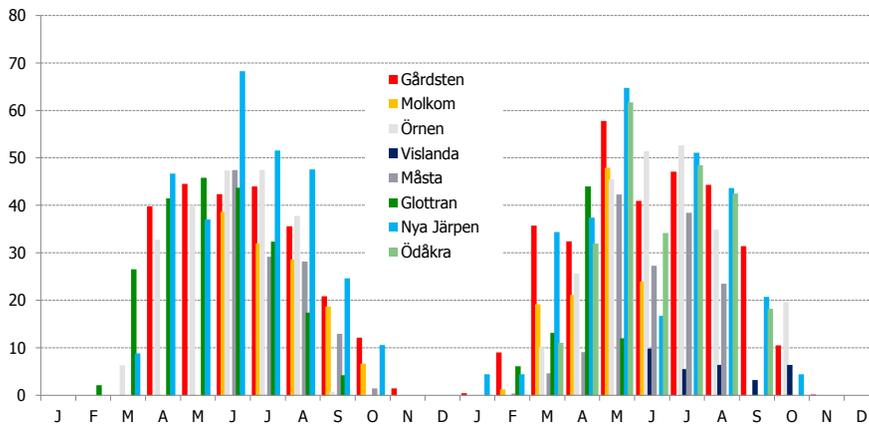
Malmö

Monthly yield [kWh/m²] 2011-2012



Other plants - Misc. sites

Annual yield [kWh/m²] - 2011-2012



Experiences !

- **Different conditions .. !**
- Some poor contracts .. ! Low cost !
- Some poor operation .. !
- Some poor O&M .. !
- Misc. problems .. !
- Lack of knowledge .. !
- **Lack of interest .. !**

Recommendations !

- **Better conditions .. !**
- Appropriate contracts .. !
- Improved controls .. !
- Appropriate O&M .. ! (DH provider?)
- **> 300 kWh/a.m² .. !**

Acknowledgement

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(Per Rosén, E.ON)

