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MINISTRY OF FOREIGN AFFAIRS OF DENMARK
The Trade Council

Digital Seminar – Heidelberg, Germany

Wednesday 18th November 09.00 – 11.30

09:00 – 09:10 Welcome / Lars Hummelmose, DBDH

09:10 – 09:20 Short intro to the participating Danish companies

Introduction

09:20 – 09:35 District Heating in Heidelberg including general challenges
/Philipp Heiß, Stadtwerke Heidelberg

Expert Panel Answers:

09:35 - 10:35 Theme 1: Optimization of the hydraulic situation in the district heating network

- Valve position in the district heating network
- Integration of a new heat source

1. Intro to the topic /Stadswerke Heidelberg (7 min)
2. Peer Andersen, Fjernvarme Fyn District Heating Utility (7 min)
3. Thomas Østergaard, COWI (7 min)
4. Dmitry Bochkalov, Danfoss (7 min)
5. Stephen Hardt, Frese (7 min)
6. Klaus Allgaier, ABB (7 min)
7. Charles Winther Hansen, Grundfos (7 min)
8. Theme 1 Q&A (11 min)

10:35 –11:10 Theme 2: Dimensioning district heating pipes

1. Intro to the topic /Stadtwerke Heidelberg (7 min)
2. Peer Andersen, Fjernvarme Fyn District Heating Utility (7 min)
3. Daniel Worth-Lindorfer, Logstor (7 min)
4. Thomas Østergaard, COWI (7 min)
5. Theme 2 Q&A (7 min)

11:10 – 11:15 Summary

11:15 – 11:30 Open discussion

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Stadtwerke Heidelberg – background

As a modern energy supplier with tradition, Stadtwerke Heidelberg has been supplying the city of Heidelberg and its partner communities with energy, water and services - for more than 100 years. Stadtwerke Heidelberg has been offering district heating in Heidelberg since 1934. The supply network now stretches over 215 km.
Stadtwerke Heidelberg formulated its goals for the energy transition and climate protection in the 2020/2030 energy concept.
For district heating, they are: From 2020, all district heating customers will receive heat that is 50% CO2-free.
By 2025, Stadtwerke Heidelberg will generate a third of this district heating itself, and by 2030 it should be largely CO2-neutral.

Topic 1	**Optimization of the hydraulic situation in the district heating network**
Details	**Questions**
Valve position in the district heating network The district heating network of Heidelberg is a historically grown network that has been expanded for around 80 years. During this time, many existing stub pipelines could be connected to one another. As a result, the security of supply could be increased through redundant supply and a star-shaped network increasingly became a meshed network. In order to avoid stagnation points and pressure surges, these ring pipelines are closed at one end by valves, which also ensures a defined supply direction. As the network grows, so does the number of sliders, and with it the slider position that has to be monitored.	Is it necessary to specify the direction of supply in each ring pipeline? How does the optimal valve positions would look like in the whole network? Is it suitable that the valves in ring pipelines just remain open and the water will *find its way*? Are there possible solutions in which the valve positions are dynamically driven according to the flow?
Integration of a new heat source With the task of making the district heating supply climate-neutral in the next few years, it must be assumed that there will not be one large heat source in the future, but many small ones. Due to municipal regulations or technical reasons it can of course happen that two heat sources are at the opposite ends of the district heating network and the supplied heat sink between them. Furthermore, it can happen that the pumps of the two heating plants work hydraulically against each other and there is a stagnation point in the network, or it is not clear which heating plant supplies which area.	In such cases, is it necessary to divide the network area hydraulically and assign a defined supply area to each heat source? Or is it possible to regulate the pumps in such a way that the two heat sources share the network area dynamically?

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Topic 2	**Dimensioning district heating piping**
Details	**Questions**
Adjusting of pipe dimensions due to decreasing flow temperatures during summer times and through integrating renewable heat sources like solar thermal plants or waste heat sources like date centres: During summer times, the district heating system used to operate with a reduced flow temperature in comparison to the winter months. (around 85°C during summer and between 120 - 130°C during winter) Due to better thermal insulation, the difference in heat loads between the winter and summer months is decreasing. So, the critical design case is shifting from winter months, with high loads and high flow temperatures, to summer months, with lower loads and significantly lower flow temperatures. The integration of renewable or waste heat sources also requires a reduction of flow temperatures in district heating systems.	Could you say how much the design case is shifting from winter to summer and if this is a problem, you are dealing with in the Danish district heating systems? Do you have a target flow temperature as a compromise between maximum heat transfer and efficient integration of renewable heat sources in existing district heating systems?

Attendees

Names:	**Position:**	**Company**
Philipp Heiß	Group leader asset management	Stadtwerke Heidelberg Netze GmbH
Adam Zietak	Project engineer asset management	Stadtwerke Heidelberg Netze GmbH
Vanessa Hagedorn	Project engineer energy conception and innovative supply systems	Stadtwerke Heidelberg Energie GmbH