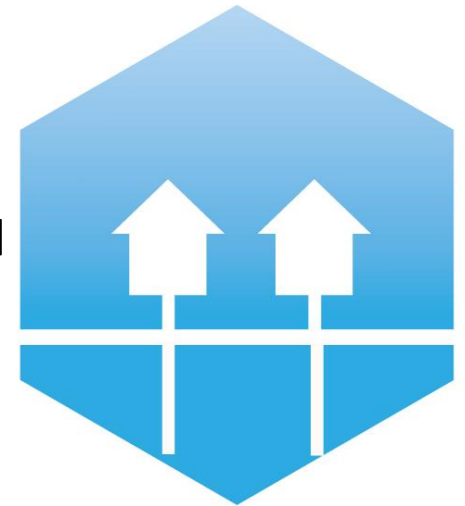
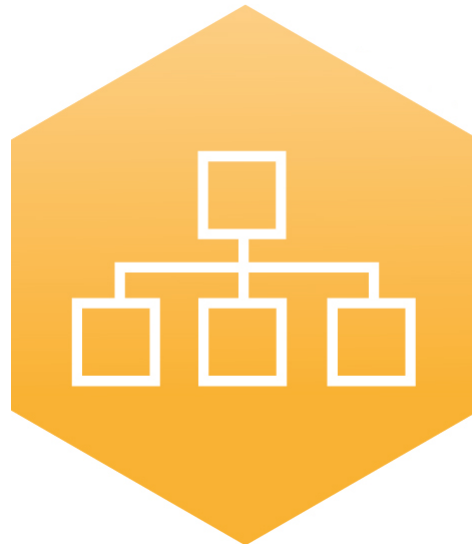


Barriers and solutions for implementing 4th generation district heating

Christian Engel



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DENMARK

4DH
4th Generation District Heating
Technologies and Systems

Experiences with 4DH



- ❖ **Presenting this concept since 2 years**
- ❖ **Introducing it to District Energy companies**
- ❖ **Proposing it for projects**



Experienced Barriers:



- ❖ **conservative engineers**
- ❖ **existing building stock demand higher temperatures**
- ❖ **low energy houses with individual solutions**



Proposed Solutions:

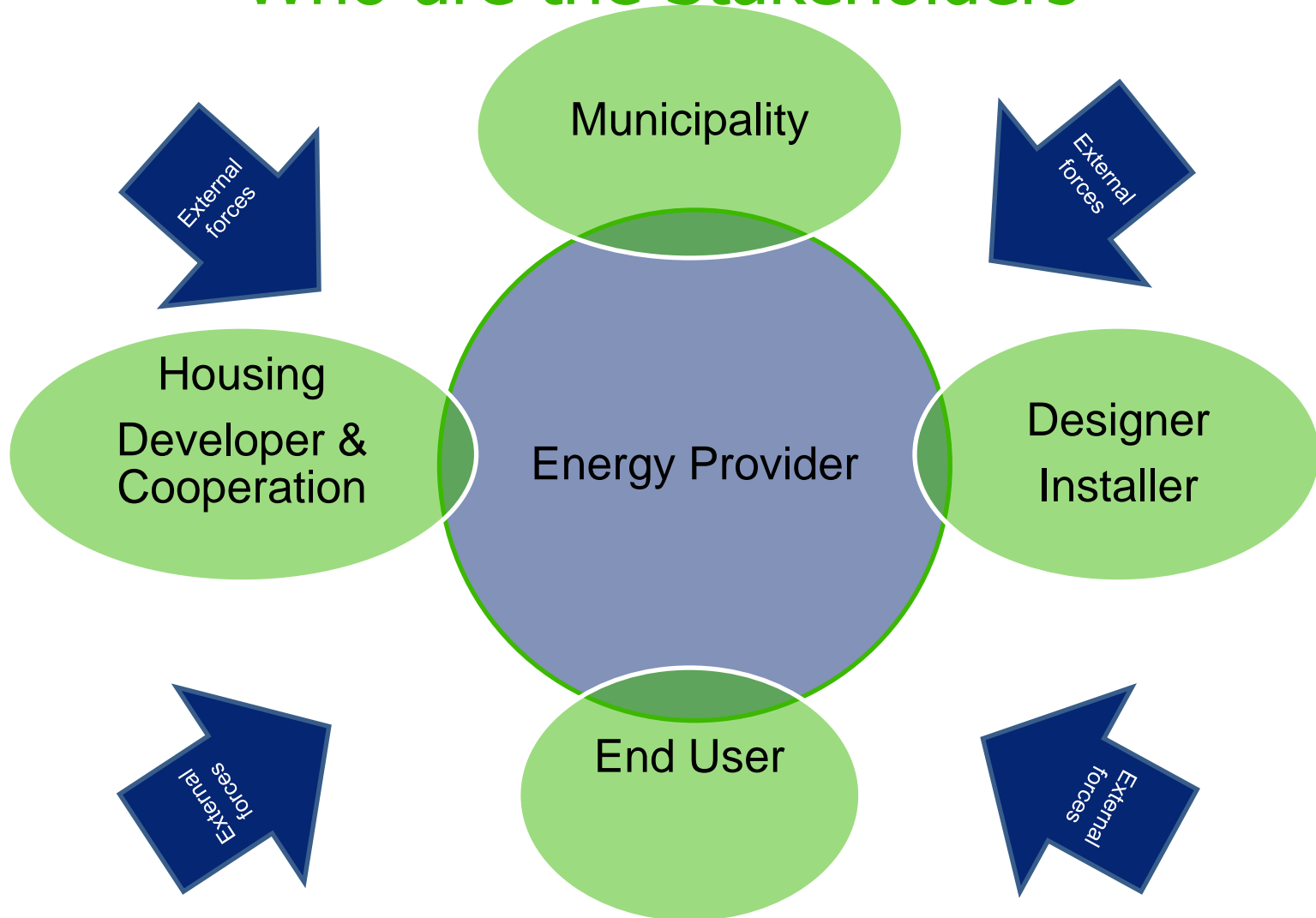


- ❖ **Wider stakeholder involvement**
- ❖ **Focus on areas, where new solutions can be planned from the very beginning**



DHC District Heating Cooling

Who are the Stakeholders



What are your stakeholder expecting ?



Do you know their wishes & challenges ?

Stakeholder	Wishes & challenges
Municipality	
End Customer DH	
Housing Developer & Co-operations	
Installer/contractor	
Designer	
Energy Provider	

We have made some analysis...

Stakeholder	Wishes & challenges from our experience
Municipality	Reliable operator for the DH system, keeping money in the region, Sustainable solution, saving trees, plants and infrastructure, Fast realization with minimum disruption
End Customer DH	Reliable and good “value for money” heating and hot water Minimum disturbance during installation
Housing Developer & Co-operations	Cost efficient and “green energy”, affordable houses for young families, meeting green building standards
Installer/contractor	Easy to install system, simple to adapt to ground conditions, certificates for system installation, meeting deadlines
Designer	Keeping all regulations, optimized system with high energy efficiency
Energy Provider	Security on long-term operation, high connection rate, fair heat/cool price, low operation/maintenance cost

Key points for the Municipality:



- ❖ **Driving towards fossil free heating and cooling systems,**
- ❖ **Helping that 70% and more of the heating/cooling bills stays in the region.**
- ❖ **Supporting the implementation of thermal networks**

“Networks are the environmental capital for the community when it comes to renewable energy.”



Low Energy Buildings: Wörgl/Austria



60/40°C

**Green Energy (Biomass/
Industrial waste heat)**

20 houses connected

FlexaNet Solution



Hengelo, NL – a dynamic city



Industrial waste heat for
5.000 new apartments

Example: Park Veldwijk

70°C/40°C



Source: <http://www.parkveldwijkhengelo.nl/>



Milano City Life



Sustainable District Heating & Cooling networks



Protectube
Universal ducting



Pre-insulated Pipes
Sustainable thermal networks
for decades of service



Customized connections
Safer pipes for safer buildings



Flexalink
Revolutionizing connection
technology

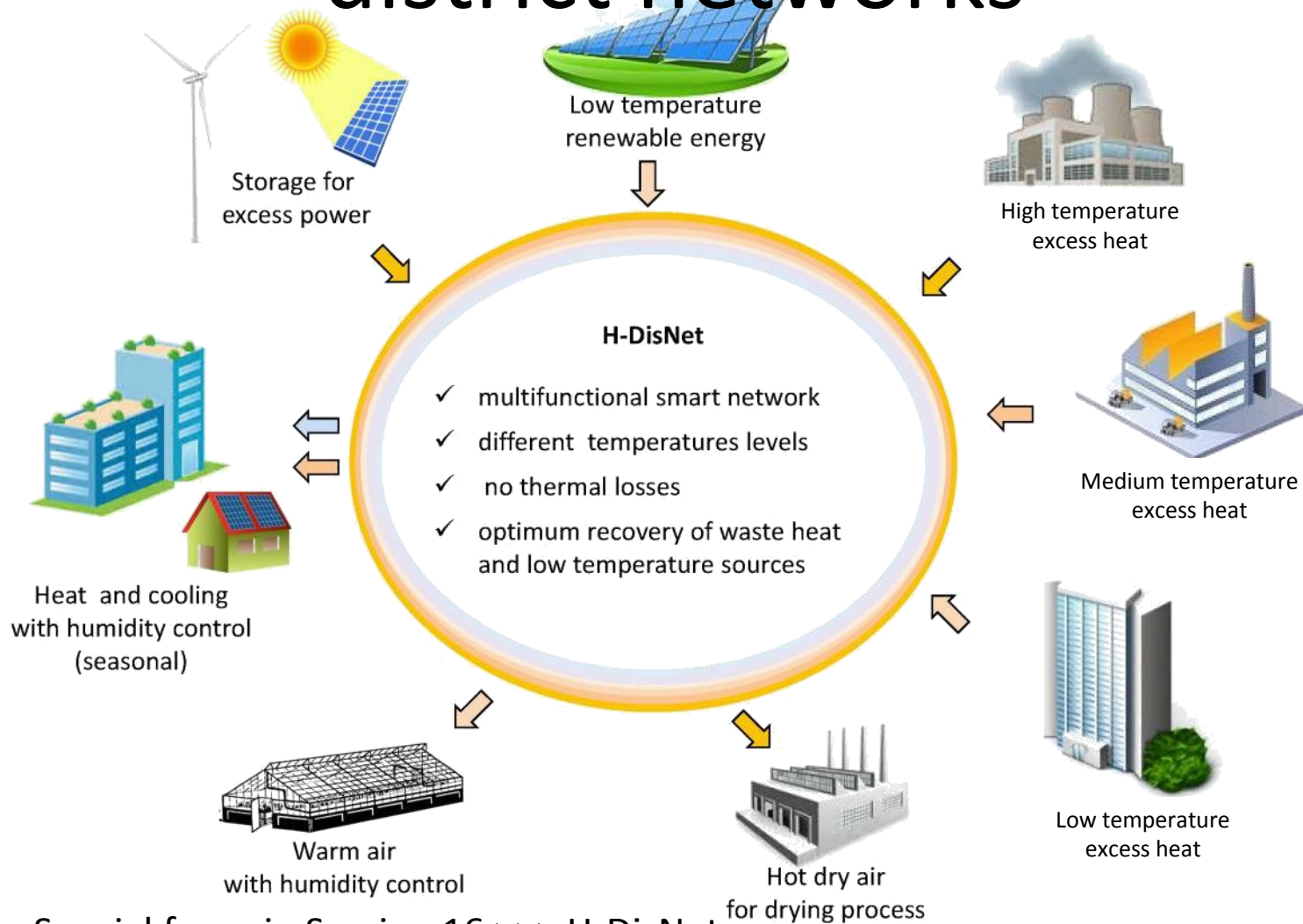


Joining Technology
Sustainable thermal networks
for decades of service

Connection with the future



Innovation: Thermo-chemical district networks



Special focus in Session 16 >>> H-DisNet

Conclusion



- ❖ **4th DH is realized today**
- ❖ **Let's spread the word about successful examples**
- ❖ **Have all key stakeholder involved**
- ❖ **New developments eg H-DisNet will give an extra boost**



**Thanks and please
share your
comments.**



Lets connect!

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