

District heating: efficient use of energy

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Agenda



- Introduction to Danfoss
- Basics about District heating
- Opportunities within district heating
- Conclusions



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Making modern life possible

- Mads Clausen began with production of cooling expansions valves in 1933 in attic room of family farm
- Today Danfoss has factories, which produce components for refrigeration, heating and motion control throughout the world in Europe, America and China. Our global sales net is represented by more then 120 sales companies and representatives around the world.
- Danfoss has yearly revenues on the level of 2,3 b€ and around 20.000 employees.

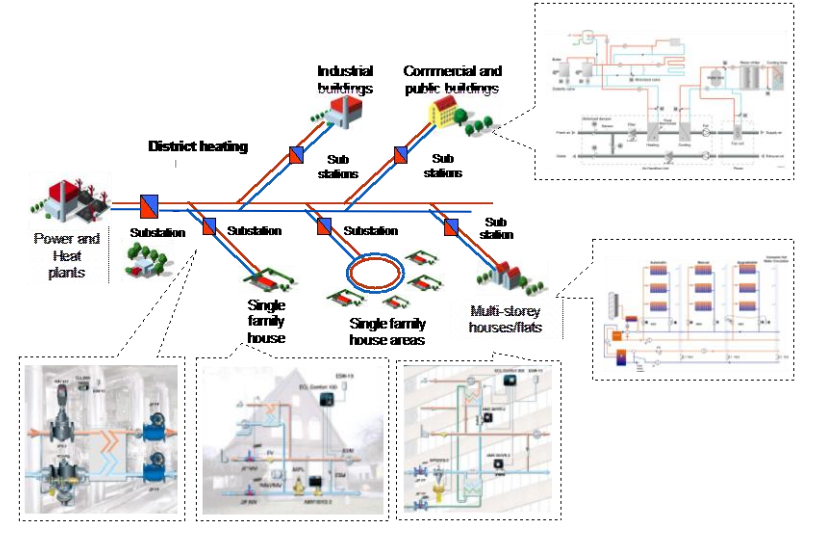


Danfoss production programme



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What is district heating?



Energy supply world is changing



- Climate debate attracts more the attention of the public opinion and world leaders
- Around the world more politicians introduce new initiatives to counter and improve the development
- Sustainable energy is expected to get more usage and penetration due to the increased demands on CO2 neutral usage and less use of fossil fuels
- Since DH use all kinds of energy sources it is expected that District Heating and –Cooling will be an important part of all future energy plans around the world

What role is District Heating (Cooling) expected to have in future?

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Member States shall require local and regional administrative bodies to consider the installation of equipment and systems for the use of heating, cooling and electricity from renewable sources and for district heating and cooling when planning, designing, building and refurbishing industrial or residential areas.

- With the inclusion into the EU RES Directive DH and DC are now accepted as a cornerstone to reach the climate goals
- District heating strongly support 20-20-20 goal
- The “rusty” image of DH is now being replaced with a more modern and crisp perception as the political acceptance increases

Comparison Slovenia vs. Denmark

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■ Slovenia

Area: 20.000 km²
47 DH companies
2 CHP plants
Pipe system: 623 km
Delivered: 2.570 GWh
Share of demand: 12%
Forest: 10.000 km²

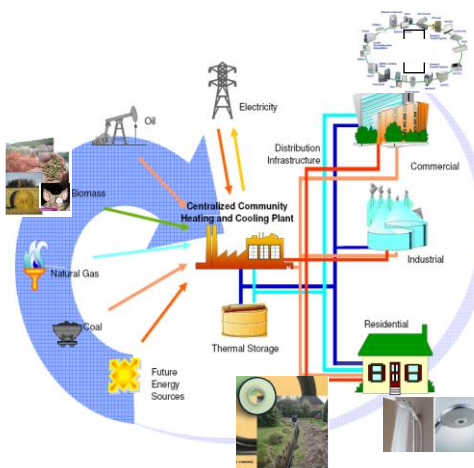
■ Denmark

Area: 43.000 km²
405 DH companies
300 CHP plants
Pipe system: 27.000 km
Delivered: 34.600 GWh
Share of demand: 60%
Forest: 4.900 km²



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District heating efficient use of energy



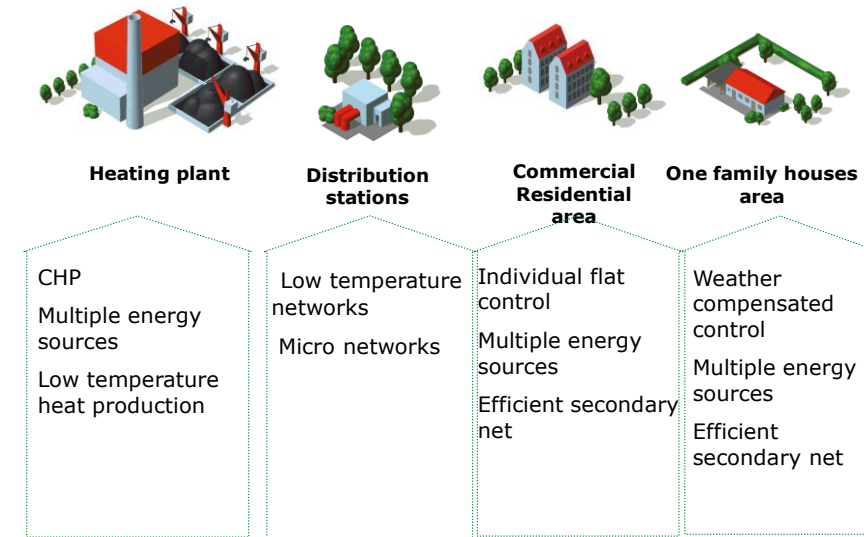
The idea of district energy is to have a effective and often a large production of heat and cooling from one central DHU.

In most cases heat and cooling is generated together with Electrical power, which gives a large and effective usage of the energy.

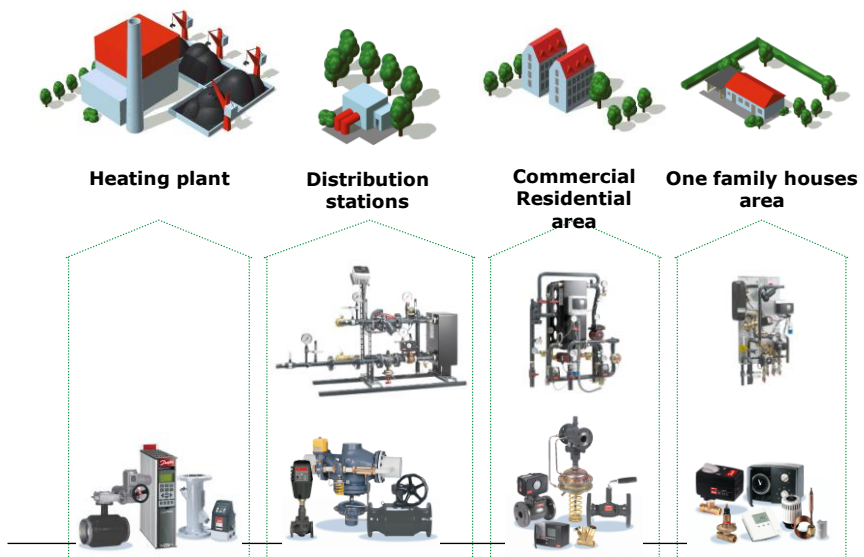
District Energy is unique the way it can be used together with multiple energy sources.

Any energy source, - sustainable, present or future energy source - can be used in a district energy system

Future of district heating



Danfoss – Total supplier from primary net to individual zone control



Step forward is suitable networks management

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- Use of multiple energy sources and their optimal use is a step forward for district energy management

- Remote control over users and local final energy preparation for residential heating /cooling and domestic hot water production enables optimal comfort at the highest efficiency of the system

- Precondition for that are suitable control / management system and distributed local substations at final users.

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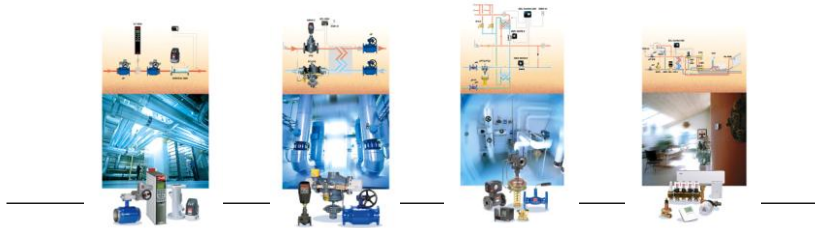


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Measures for improved energy management I



Trend	Solution	Danfoss solution	Impact



Measures for improved energy management II



Trend	Solution	Danfoss offer	Impact



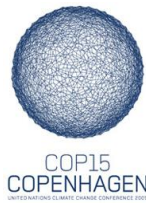
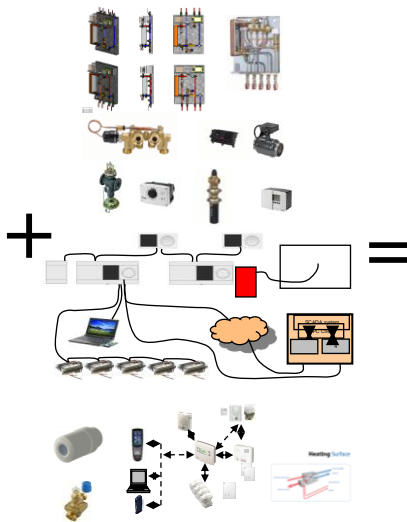
Measures for improved energy management III



Trend	Solution	Danfoss offer	Impact

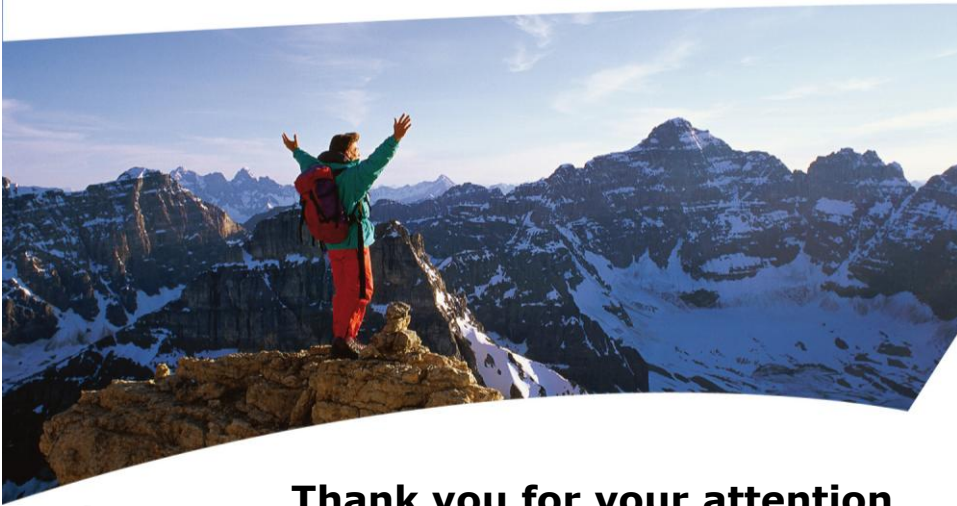


Equation for conclusion



MAKING MODERN LIVING POSSIBLE

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Thank you for your attention

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