
TS2 Annex meeting in Nottingham

20181023

International Energy Agency

Implementing Agreement on District Heating and Cooling
including Combined Heat and Power



Who is Kristina Lygnerud



Associate professor at Halmstad University (Energy Technology) 2015-
PhD in Industrial and Financial Economics (Göteborg University)

- Active with district heating research since 2004
- Innovation in district heating
- Risk Management in district heating
- Business model innovation in district heating

Energy department manager at IVL, The Swedish Environment Institute 2015-

- Coordinator of H2020 project on urban waste heat recovery (Reuseheat) 4ME
- Coordinator of IEA project on 4GDH implementation 3 ME
- Chair at DHC+ (Euroheat and Power's technology platform)



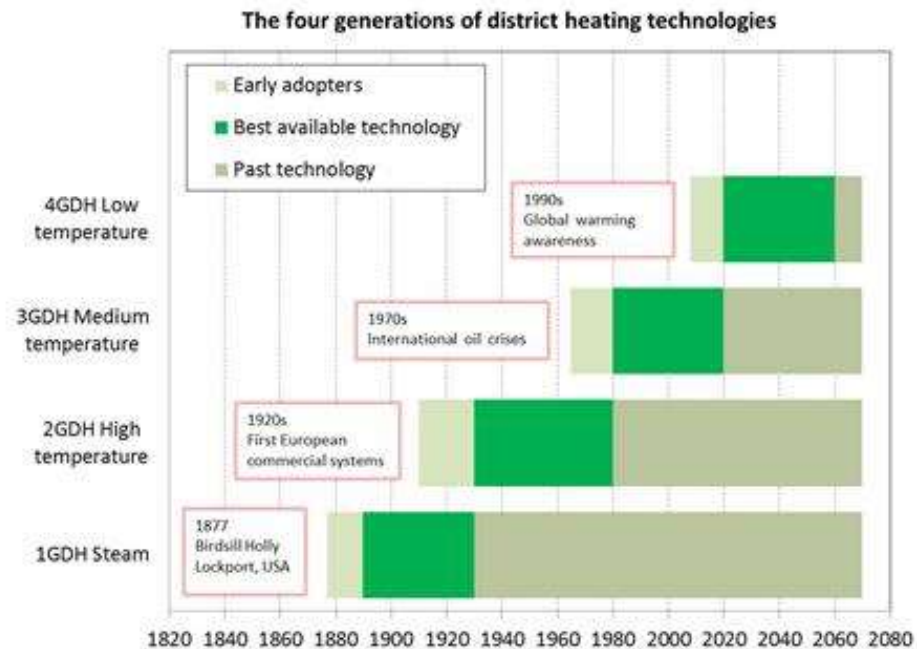
IEA DHC+ CHP

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Different generations



2018-10-15
Source Professor Sven Werner

18



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Why 4GDH?

- Lower production costs
(from lower temperatures)
- Lower distribution losses
- Usage of low temperature heat sources
(wasted today)

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TS2

- Predecessor in TS1: What is known about 4GDH?
-but how is 4GDH IMPLEMENTED....TS2

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The TS2 Vision is....

Network

- adjustments
(pumps, heat exchangers...)

Building

- new
- old (conversion) and new
- old (conversion)
- private (building scale)
- commercial (building scale)
- private and commercial

**IMPLEMENT LOWER SUPPLY
AND RETURN TEMPERATURES**

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Members

1. Halmstad University (SWE)
2. Fraunhofer (GER)
3. Kassel University (GER)
4. Darmstadt University (GER)
5. University of Stuttgart (GER)
6. Austrian University of Technology (AUT)
7. Danish Technical University (DEN)
8. Norwegian Technical University (NOR)
9. Chalmers Technical University (SWE)
10. Energiforsk (SWE)
11. University of Leeds (UK)
12. Nottingham Trent University
13. Thermaflex (NE)
14. Danfoss (DEN)
15. Aquatherm (GER)
16. Vito (BE)

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TS2 focus areas:

- Inside the building
- System adjustments
- Democases
- Competitiveness
- Handbook on 4GDH implementation

Knowledge is shared between the participants in the project and new knowledge is generated from new projects

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Time plan

- April 2018- April 2021
- Open for new partners until 20181231
- Project meeting in Nottingham (20181024), in Halmstad (201904), in Trondheim (201909)

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One example- Marstal



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Some first insights (comparing 3rd to 4th)

Temperatures drop
from 73-53 to 52-20

Plastic pipes are
cheaper- but what
is their lifetime?

The steel core has
larger CO2 impact

No need to consider
Legionella

Increased
maintenance of
apartment heat
substations

Ownership of the
heat loss in building
changes

Heat losses in
ground are similar

Heat losses in
buildings is lower
(151kWh per
apartment: 1 MWh
per year)

Number of flats is
limited (10-15)



IEA DHC|CHP

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