Tackling key challenges of Austrian district heating networks within the STRATEGO project


Ralf-Roman Schmidt, Roman Geyer (AIT), Petra Schöfmann (Tina Vianna), John Johnsson (Profu i Göteborg AB), Erik Larsson (Svensk Fjärrvärme AB)
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  - Status quo
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- The STRATEGO project
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In Austria, more than 2,400 heat networks are existing (among them a large number of small biomass networks). DH market share is about 24%. District cooling has only a minor role limited to some cities.

DHC in Austria – Status-Quo

Source: Statistik Austria

Source: Zahlenspiegel Fernwärme 2015
DHC in Austria – Potentials and challenges

Potential of additional DH networks in Austria

- The (little) additional DH potential in Austria is competitive only for high connection rates (>90%) 

Challenges to the existing systems in general

- Dominant role of fossil based CHP + unpredictable fuel prices
- Increasing prices for biomass
- Decreasing specific heat demand

Challenges to the integration of alternative heat sources

- High system temperatures
- Incentives and regulatory conditions are not sufficient
DHC in Austria: **temperature level** in the networks

![Graph showing temperature levels in various locations in Austria](image)

Quelle: OPTIMIERUNG UND AUSBAUMÖGLICHKEITEN VON FERNWÄRMESYSTEMEN; Siegmund Böhmer, Michael Gössl, REPORT REP-0074, Umweltbundesamt GmbH, Wien, 2009 and other sources
STRATEGO: Multi-level actions for enhanced Heating & Cooling plans

- **European IEE Project** (no research)
- **runtime:** 4/2014 – 11/2016
- **partner:** Associations, universities, research centres and consultants from 16 different countries
- **coordination:** Euroheat & Power
  - 8 targeted countries (BE, AT, CZ, HR, RO, DE, IT, UK)
  - 2 « supporting » countries (DK and SE)
  - 2 « roll-out » countries (PL and SP)
STRATEGO: 2 focus areas

1. Mapping:
   - detailed assessment of the energy efficiency potentials for 5 target regions (CZ, HR, IT, RO, UK) → Austria is not involved

2. Coaching:
   - 23 cities/regions are coached for the assessment of their energy efficiency potential and identification of priority areas
   - AIT has a double role:
     - Coaching of 4 target regions in Austria (in cooperation with Swedish project partners)
     - Coaching of target regions in Croatia (not part of this presentation)
4 representative target regions in Austria

- **The 2 largest cities** (about 25% of the Austrian population)
  - **Vienna**: largest population growth in Austria, aiming to increase the share of renewables
  - **Graz**: is looking for alternatives to the main CHP plant

- **2 small biomass based rural DH networks** (representative for about 2000 similar networks in Austria)
  - **Großschönau and Maria Laach am Jauerling**: Inefficient operation due to part load operation in summer times and high return temperatures

http://www.austrian-heatmap.gv.at
Method within the STRATEGO project

- **Stakeholder processes** with the national target regions
  - Workshops and meetings, Know-How transfer
  - TelCos and interviews
  - Discussions with national authorities and a national advisory group

- **Support from Swedish partners**
  - Partner within the STRATEGO consortium (Profu and SDHA)
  - Additional national coaching parties (Gävle, Gävle Energi, Gävle Kraftvärme, Fortum)
  - Workshops and side visits in Sweden

→ **Customized solutions** has been developed within the STRATEGO project
Identification of one common key challenge: the „high temperature vicious circle“

- Small or unknown advantages of low system temp.
- Low motivation for reducing building side temp.
- Dominating share of high temp. supply systems in the network
- High system temp., low potential for alternative heat supply sources

Source: URBANcascade final report
Approaches for „breaking“ the vicious circle developed within STRATEGO*

*also solution for other challenges has been developed (e.g. technical options for decentralised supply, utilization of the waste heat from data centres)
Vienna

- **Identification of two main barriers:**
  - existing customer contracts signed for an indefinite period request high supply Temp. (approx. 90°C), independent of the real requirements.
  - several customers do not follow the stipulated maximum return temperatures and the network operator cannot directly influence them.

- **Solutions developed:**
  - approach customer directly to change customer contracts (if possible) from 90/60°C → 63/40°C and reduce the installed capacity.
  - Encourage the cooperation between building developers, DH operators and national authorities → use the opportunity of refurbishment projects.
Graz

- **Identification of the main barrier:**
  - Missing financial benefits and incentives for reducing the return temp.

- **Solution developed:**
  - A new business model incl.:
    - Special service for the biggest customers, e.g. heat load analysis, measures for reducing return temp. and peak loads, etc.
    - Flexible tariff system (hourly based) and/or higher heat price for the supply from renewables - similar to “ökostrom” (green electricity) tariff
Rural DH networks

- **Identification of the main barrier:**
  - planners and installers are not aware of the secondary side requirements of DH networks

- **Solution developed:**
  - A workshop for planners and installers which addresses following topics:
    - awareness, theoretical background, substations, low temperature heating systems, practical trainings ...
  - Within the framework of STRATEGO, a first “test” workshop has been done with more than 20 participants
Conclusions

- Austria already has a **high maturity** of their DH networks, the economic potential for new networks is very limited
  - Many existing networks are running into economic difficulties due to **unstable energy prices**
  - The current **high system temperatures** are one of the main challenges for the integration of alternative heat sources
- Within the STRATEGO project, different approaches for „breaking“ the **high temperature vicious circle** were developed for representative regions:
  - Including customer relations and contractual conditions, business models and quality assurance measures for planners and operators
- **Outlook:**
  - proposal for a **follow up project** in a national research call: „**transformation of conventional heat networks towards low temperature systems via secondary side measures**“, including a **cost-benefit assessment**. Funding decision expected End 2016
Thanks for your attention!

Ralf-Roman Schmidt
Ralf-Roman.Schmidt@ait.ac.at