

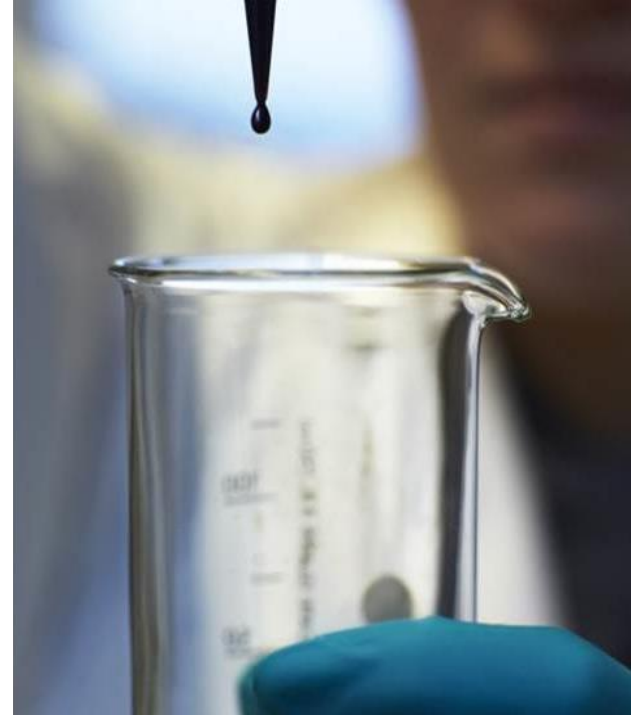


REGIONAL DH

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RISE Research Institutes of Sweden



Three have become one – RISE

The RISE institutes Innventia, SP and Swedish ICT have merged to create a stronger research and innovation partner for businesses and society.



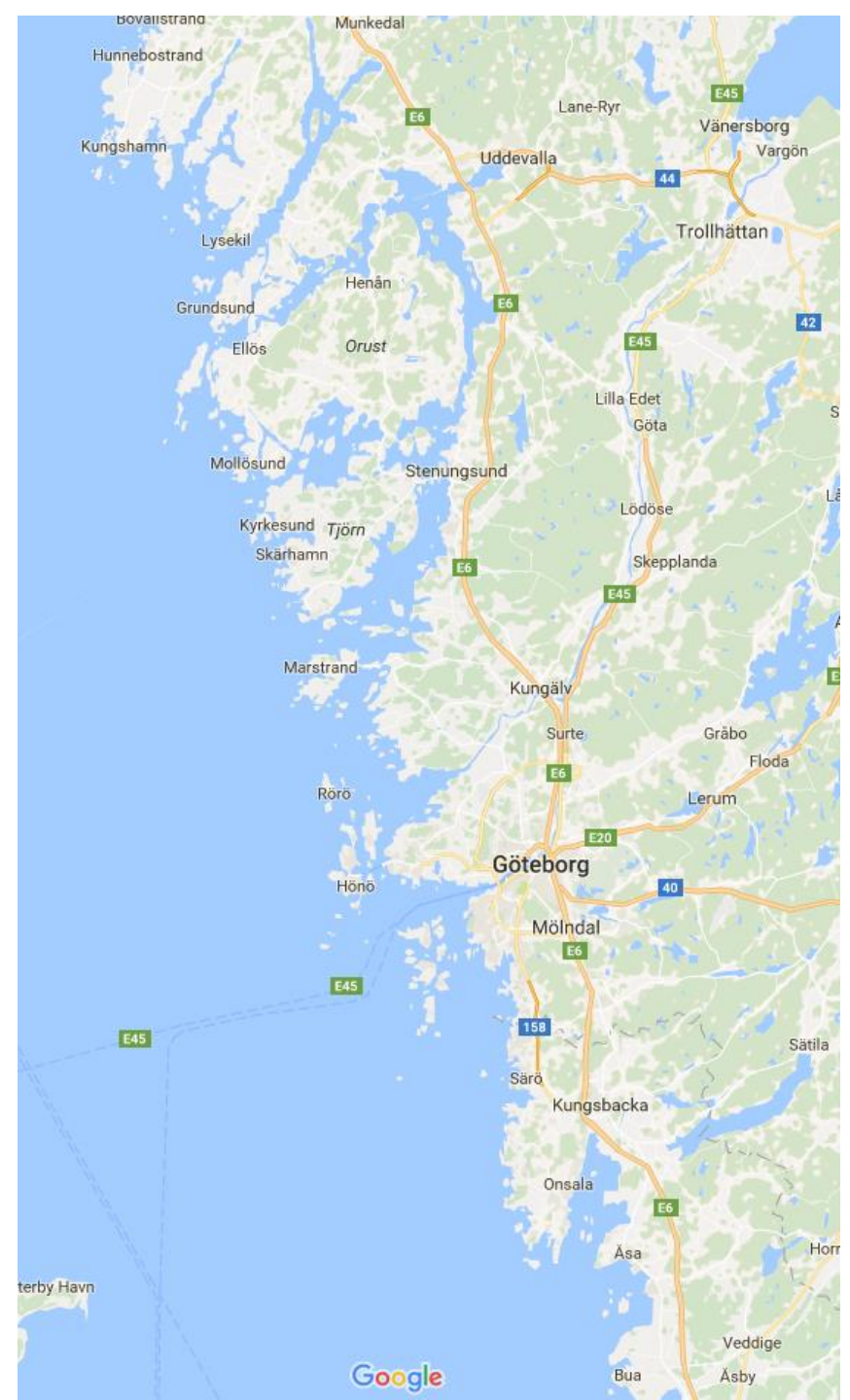
RISE in brief

- Present across the whole of Sweden. And beyond.
- 2,200 employees, 30 % with a PhD.
- Turnover approx. SEK 2.5 billion (2016).
- A large proportion of customers are SME clients, accounting for approx. 30 % industry turnover.
- Runs 100s of test and demonstration facilities, open for industry, SMEs, universities and institutes (RISE is owner and partner in 60 % of all Sweden's T&D facilities).



Regional District Heating (&C)

- Sweden, waste heat supplies of 3 - 4 TWh / year to mainly metallurgical industry, chemical industry, paper and pulp industry and to oil refineries
- The total potential of waste heat is not fully known
- Only 5% of industrial waste heat is used in the district heating system
- A region consists of several municipalities
- Simplified, there are better conditions for using waste heat in a larger DH networks
- Different types of waste heat producers can be combined with more users over time



Problems

- A number of conditions must be met
- Low temperature DH network is probably required:
- Heat will be transported over longer distances and more losses will occur - lower temperature means lower losses
- Regional DH is distributed over a larger area than conventional DH, which usually does not extend beyond the municipal boundary
- Installation costs and pipeline costs must be reduced compared to day prices to achieve profitability
- Some kind of thermal storage must be integrated in a system to match supply and demand differences
- ... dampen the impact of fluctuating temperatures and varying flow
- In a regional DH network dependent on waste heat, more operators will have access to the district heating network, so called third party access
- The backside with third-party access is the complex situation

Challenges

- In regional DH systems, much higher requirements will be imposed on measurement and monitoring
- - Having accurate data on the network continuously is vital
- How can a regional DH network based on waste heat handle "prosumers"?
- How to integrate or co-exist with existing DH networks?

- Is of interest in Sweden – elsewhere?
- Cross border regions?
- Includes energy companies, suppliers etc. but also other players such as cities, industry etc.



THANK YOU

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