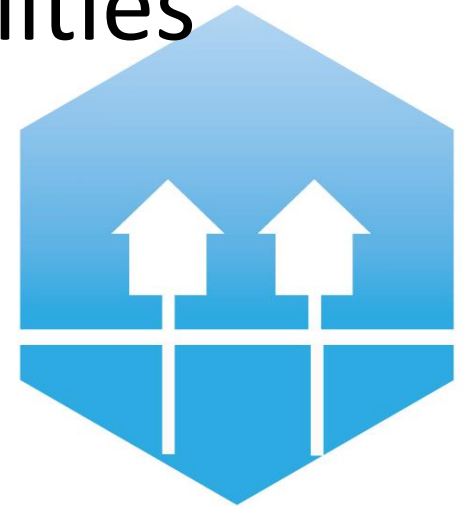


International Conference on Smart Energy Systems and 4th Generation District Heating  
Copenhagen, 25-26 August 2015

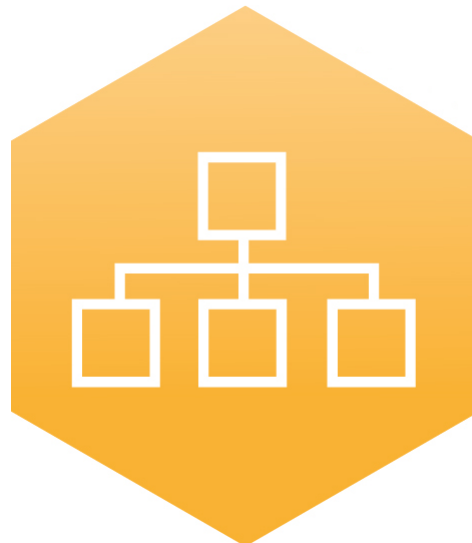
# Prosumers in District Heating networks - problems and possibilities



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DENMARK



# 4DH

4th Generation District Heating  
Technologies and Systems

# Producer+Consumer=Prosumer

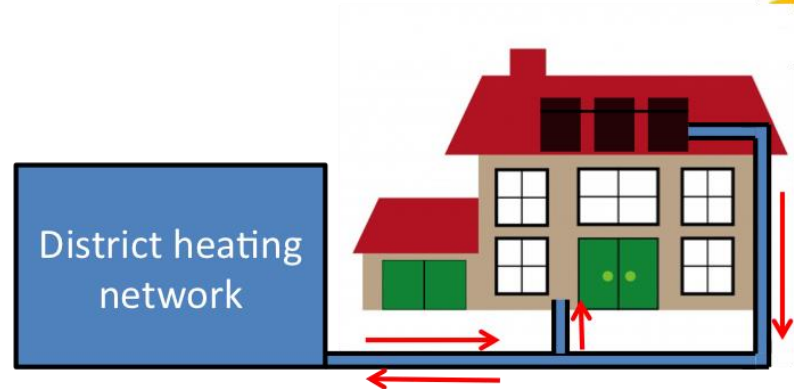


- **Small scale**
- **Decentralised**
- **Solar collectors**
- **Excess heat from cooling machines**

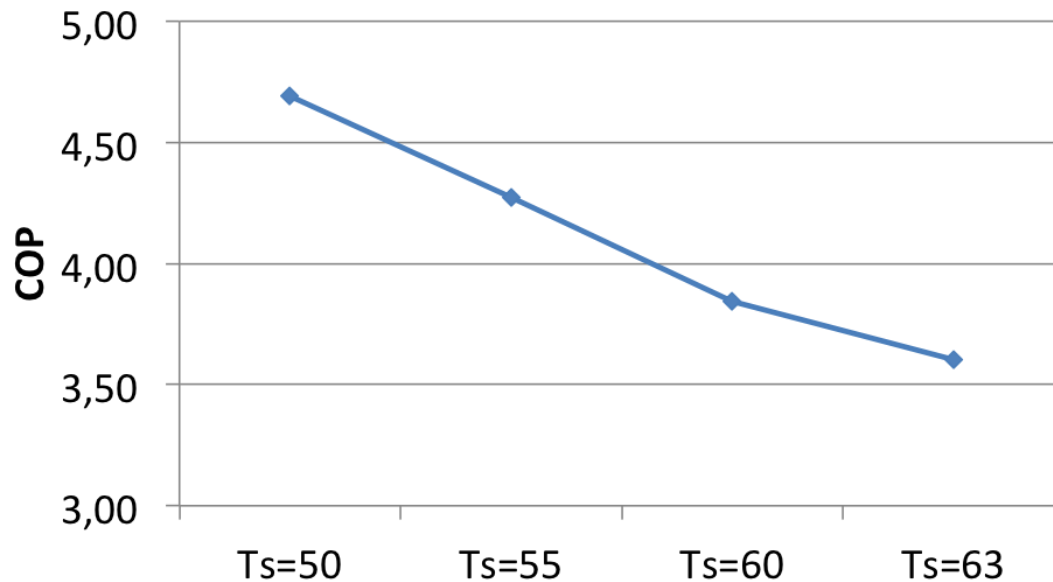


# Aim

- Prosumers in the DH network
- Environmental outcome
- Technical issues
- Environmental requirements
- Energy independence among customers



# Background



- **Low(er) temperature DH**
- **Hyllie in Malmö, Sweden**



# Method (short)

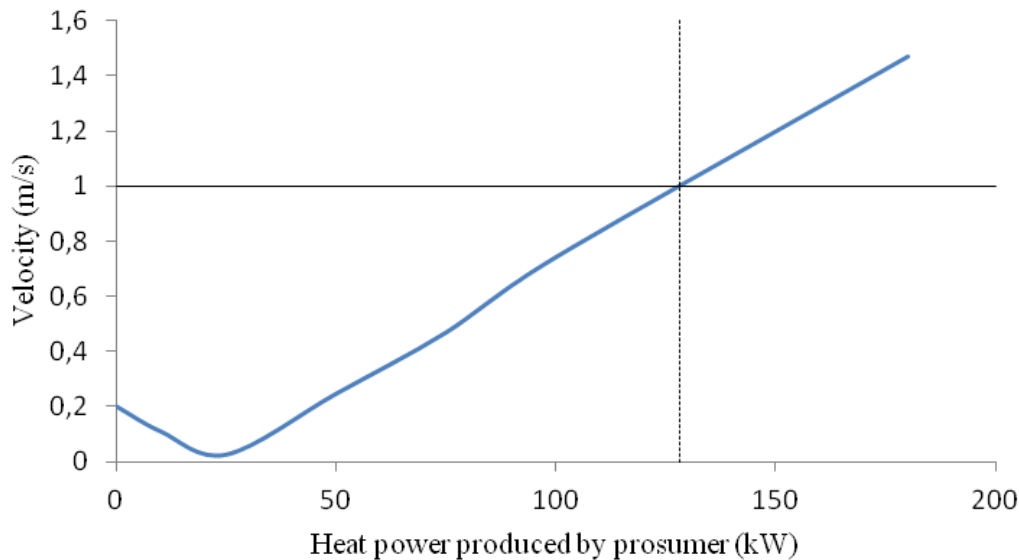


- **Information from prospectors in Hyllie**
- **Energy data from E.on**
- **Model of Hyllie (intern, extern)**
- **NetSim - Commercial DH simulation programme**
- **Static simulations**
- **Environmental calculations (original+no DHW)**
- **Temperature data from 10 years**
- **Marginal electricity, nordic residual mix, wind energy**
- **Calculations on artificial network in NetSim**



# Flow and velocity

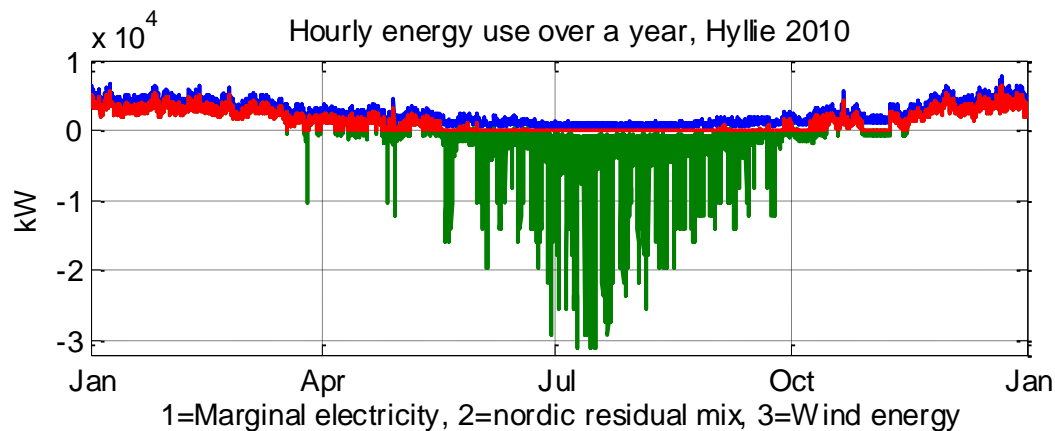
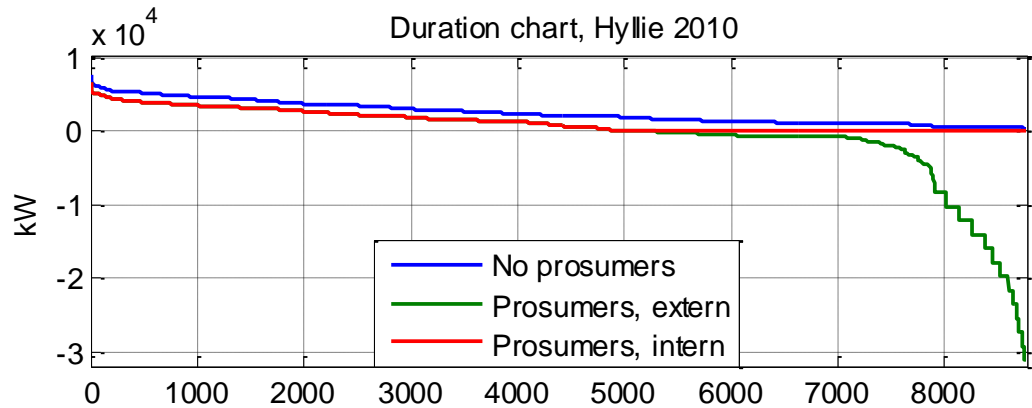
**Velocity in service pipe**



- **Heat zero building**
- **Dimensioning of pipes**



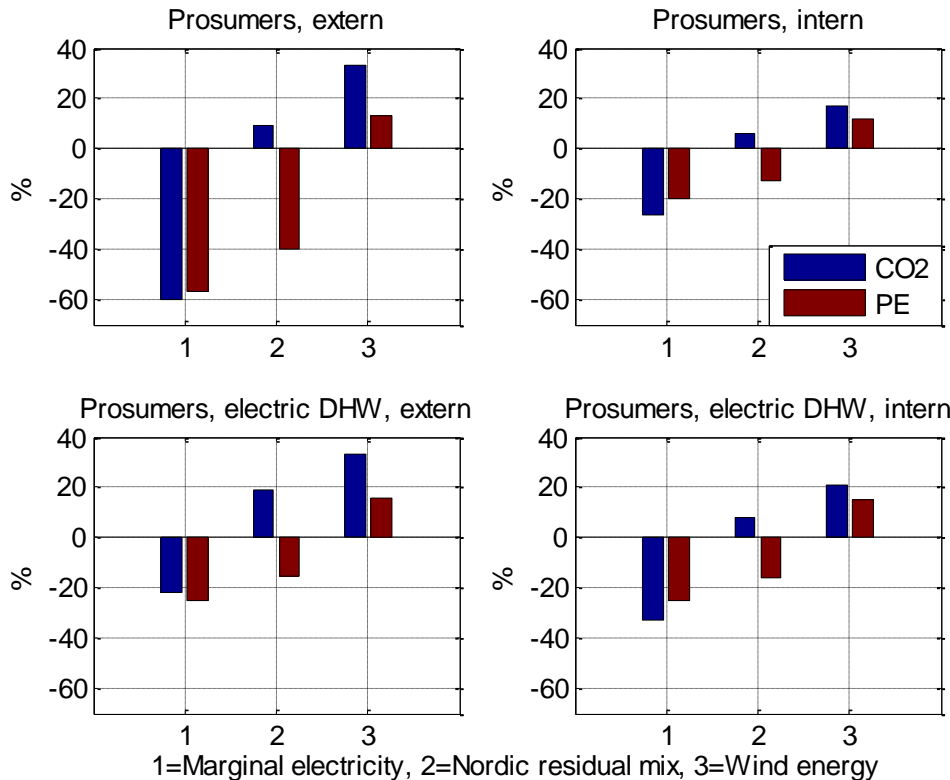
# Model of Hyllie



- **Most excess heat during summer**
- **Noticeable prosumer heat delivery even with the intern case**



# Environmental outcome



- Marginal electricity
- Nordic residual mix
- Wind energy
- COP (electricity share)





# Prosumers – problems and possibilities



## Problems

- Pipe dimensioning
- Most heat in summer
- Supply temperature
- Electricity share

## Possibilities

- Interconnected heat and power networks
- More resourceful system
- More customer oriented DH



# Thank you!

