Domestic biomass in District Heating – the Purmerend case

Purmerend District Heating (SVP Holding B.V.)
The Netherlands

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Presentation outline

- Introduction
- Energy transition
- Production
- New challenge
District Heating Company Purmerend (SVP):

- Established in 1980
- Privatised in 2007
- Locally owned & operated
- Compact organisation: 46 FTE
- ~25,000 customers: 75% of city
Introduction

Grid:

- 550/275 km of piping
- No heat exchangers in distribution
- Fixed temperature curve:
  - 95°C supply temp. at $T_a=-10°C$
  - 75°C supply temp. at $T_a=15°C$
- Supply pressures:
  - Primary network: 7.2 bars
  - Secondary network: 4.3 bars
Energy transition: DH 2.0

Perspectives of 2007 forced SVP in new business plan

Heat demand 2009

Fossil fuels

Energy Efficiency

Customers

Climate

Heat demand 2024

Efficiency

SlimNet

Geothermal & Biomass

Energy Transition: DH 2.0

- Reduction of 50,000 ton CO₂
- Reduction of 30 million m³ gas

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Production

- ~1.2 million GJ/a
- Heat production:
  - Biomass heating installation (44 MWth)
  - Natural gas fired auxiliary boilers (125 MWth)
Biomass heating installation

Auxiliary boiler + buffer

Production

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Covering 80% of annual heat demand by sustainable fuel:

- Reduction of 50,000 ton CO2
- Reduction of 30 million m³ natural gas
Production: Base load - Bio Heat

44 MWth Biomass Heat Installation

- Heat only ~936,000 GJ/a
- Wood chips: sourcing from forestry by the Dutch forest authority
- Boiler system: Weiss (Denmark)
- >99% efficiency (LHV)
Production: Base load - Bio Heat
Production: Base load - Bio Heat
Production: Peak load - Natural gas

90 MWth Auxiliary boiler
- 6 x 15MWth

35 MWth Auxiliary boiler
- 1 x 35MWth, mostly used as 25 MWth

~320,000 GJ/a
Efficiency > 93%
New Challenge: Peak load from fossil to renewable

- **Preconditions:**
  - maintain operational performance of gas fired boilers
  - positive overall business case

- **Specific demands:**
  - limited production (~320,000 GJ)
  - dynamic character
New Challenge: Peak load from fossil to renewable

- Certificates
- Biogas installation
- Additional heat buffers
- Heat pumps
- Pyrolysis
- Wind to heat
- Combinations of the above
- .....

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