New type of substation to meet the requirement of LTDH

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Emanuele Zilio, COWI Denmark
Known as:
› District heating units (DHU)
› Individual substations/heat exchangers
› Flat stations
› Heat interface units (HIU)

Single HEX units – Directly supplied
Double HEX units – Indirectly supplied

› Østerby district – Terraced houses (Høje Taastrup, Denmark) 55°C supply
› Xplorion – Apartment building (Lund, Sweden) 60°C supply

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Technology
New type of substation to meet the requirement of LTDH

**Type of installations**

1) **Main substation (and water tank on the secondary side)**
   - Legionella/high temperature supply
   - Water circulation pipe

2) **Main substation and district heating units**
   - Low-temperature supply – low water volume
   - No water circulation required – less pipes

3) **Only district heating units**
   - Low-temperature supply – low water volume
   - No water circulation required – less pipes
   - DH water in the pipes to the apartment

**Figures:** Alfa Laval/Cetetherm
District heating units

Important parameters

- Pressure [bar]
  - 10-16 bar

- Supply/return temperature [°C]
  - optimized for low-temperature supply
  - 55-65 °C supply
  - 20-30 °C return

- Power capacity [kW]
  - 1-2 apartments

- Supply flow [l/h]
District heating units

Important features

› High efficiency heat exchangers for low-temperature supply
› EPP insulation cover
› Meter connections in each unit
› Easy installation (ready to install unit) with all the pipes well arranged
› Top/bottom connections (flexible use)
› Flow control valve/Idle load function (bypass)
› Control system/Weather compensator
› Low return temperature
› Legionella safe/Limited water volume (German regulation)
› Expansion vessel/High efficiency pump
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**Østerby - COOL DH**

**Høje-Taastrup - Østerby (Denmark)**

159 terraced houses district

District heating network:

- +30 years old
- One main heat exchanger/substation
- High heat losses after building renovation

- New LTDH network (55/30°C) with new PE-RT pipes
- Use of renewable energy sources and low-temperature supply - supplied by City2 shopping center’s cooling system
Østerby - Dated installations

Costumers in the district - 6 groups

- Different organizations (4 ownership models)
- Payed for the supply and the internal heat losses
- Different installations in each group
- Not optimized installation/meters not working
- Different ways to measure consumption and pay the bills not based on real consumption
Østerby – New installation

New network and pipes to the buildings

› Reduced heat losses in the network
› DH to the house, limiting pipe length inside the house
› Outdoor temperature sensor
› Remote meters reading – antenna installed on the roof
Østerby – New installation

District heating unit

› Staircase/depot – small space required
› Easy installation

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Xplorion (Lund)

Demo site in Sweden

New apartment building in New LTDH network (55/30°C) with new PE-RT pipes

› 3 pipes system (lower heat loss)
› Meters inside the unit
› Located in the installation depot

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Conclusion

District heating units

› Allow a safe transition to LTDH
› Can reduce the heat loss from the circulation pipe
› Complete and certified (quality DH connection)
› Easy to install – pre-built unit
› Heat loss: around 20 W average – up to 35 W during the heating season (2-3 times lower than old installations)

› Connections outside the cover (valves, meters, pipes…) can cause heat loss (insulations required)
› Priority control to DHW – use the energy flexibility of the building
› Can be financed on the bill (period)
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Thank you for your attention!

Emanuele Zilio
EMZI@cowi.com