Innovative piping system in COOL DH

Senior Product Manager:
Klaus Grønnegaard Lauridsen
klgl@logstor.com
Low temperature District Heating can be the next “Mega trends” within heating.

AS-IS: Standard pipe systems today is preinsulated steel pipes.

› Steel service pipe, minimum 30 years service life, continuous operation 120 °C and peak temperature of 140 °C.

› Minimum requirements to the preinsulated components and system is defined in the European standards.

TO-BE: With a low temperature system running between 55 -85 °C the calculated lifetime of the pipe system is far beyond 1000 years.

› For a low temperature 4th generation District Heating system this is over engineered and too expensive. We need to start pushing for updated standards to fit the real needs.
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

- New service pipe material on flexible pipes - PE-RT
- New connection methods on flexible pipes - welding
- Better insulation properties
- Alarm wires for leak detection together with plastic service pipes
- Collect and reuse heat loss from straight pipes – multi pipe system
- Higher pressure and lower temperature systems using flexible pipe systems

"The project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement n° 767709-COOL DH-H2020-EE-2016-2017/H2020-EE-2017-RIA-W"
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

Aim:

- Flexible pipes that can be **welded together** in 100 m length as well in 12 m length.
- With oxygen and water **vapour barrier**.
- Can be in **different pressure classes** – here 10 bar, max. 65 °C.
- Service pipe dimensions **up to D110 mm**.
- Improved lambda – average around **0.0020 W/mK**.
- D32 mm and below: a **multilayer AluPERT pipe** – within the flexible standard **EN15632**.
- Above D32 mm: a **mono layer AluPERT pipe**. Fully tested according to the flexible standard – but outside anyway.
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

Aim:
- Pipes that can be welded together.
  - Butt/mirror welding
  - Electrofusion welding
- Usage of existing press and compression couplings available on marked today.
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

Aim:
• Improve the heat loss by new insulation properties with lambda reduction of 0.001 - 0.002 W/mK
  • We have reached this – equal to an average heat loss reduction on 8-10 % compared to today.
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

Aim:
• Offer leakage **alarm system** for pipes with composite service pipes.
• Insure performance and **minimum heat loss** for the full lifetime.
“Bubbles/new ideas” that is being evaluated and proven/tested by field test under the COOL DH umbrella

Aim:
• New pipe system using multi-media pipes to regain heat-loss from the District Heating pipes.
• Different alternatives and positions have been simulated by COWI.
• In final design the simulation show a **positive energy recovery balance** together with heat recovery from surrounding soil.

---

*The project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement n° 767709-COOL DH-H2020-EE-2016-2017/H2020-EE-2017-RIA-W*
Low temperature District Heating can be the next “Mega trends” within heating.

How far are we to a real alternative to preinsulated steel pipes?

Main challenge here is the existing EN Standards/Norms!