District heating needs to change to meet the demands of the future

Green transition

Drive green transition by integrating multiple renewable heat sources

Security of supply

Keep highest level of security of supply under increased complexity and dynamic conditions

Staying competitive

Ensure competitiveness through optimisation and new and attractive offerings
Connecting data across the district heating value chain

Production Distribution Building End-user

Balancing the entire DH system better
The economical drivers for low-temperature district heating

Every °C counts because cost gradients (cost per °C per MWh) are 6-7 times higher for renewable heat sources and waste heat compared to traditional heat sources.

Table 1. Overview of projected economic effects, according to the cost reduction gradient (CRG) in euro/(MWh·°C), of reduced system temperatures.

<table>
<thead>
<tr>
<th>Chapter section and heat supply technology (either the technology itself or as the dominant component of a system)</th>
<th>Cost reduction gradient (CRG) in euro/(MWh·°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment cases where investment costs are reduced</td>
<td>Existing cases where operation costs are reduced</td>
</tr>
<tr>
<td>2.1 Low-temperature geothermal heat</td>
<td>0.45–0.74</td>
</tr>
<tr>
<td>2.2 Heat pump</td>
<td>0.41</td>
</tr>
<tr>
<td>2.3 Low-temperature waste heat</td>
<td>0.65</td>
</tr>
<tr>
<td>2.4 Solar thermal – flat plate collectors</td>
<td>0.35–0.75</td>
</tr>
<tr>
<td>2.4 Solar thermal – evacuated tube collectors</td>
<td>0.26</td>
</tr>
<tr>
<td>2.6 Biomass-CHP with back-pressure turbine</td>
<td>Not available</td>
</tr>
<tr>
<td>2.6 Biomass-CHP with extraction turbine</td>
<td>Not available</td>
</tr>
<tr>
<td>2.6 Waste-CHP with flue gas condensation</td>
<td>Not available</td>
</tr>
<tr>
<td>2.7 Daily storage as tank thermal storage</td>
<td>0.01</td>
</tr>
<tr>
<td>2.7 Seasonal storage as pit thermal storage</td>
<td>0.07</td>
</tr>
<tr>
<td>2.8 Heat distribution loss</td>
<td>Not available</td>
</tr>
</tbody>
</table>

https://www.iea-dhc.org/the-research/annexes/2017-2021-annex-ts2
Data and insights are key to success

Knowledge about how to:

... optimise the **supply side** for actual demand

... eliminate heat loss and inefficiencies in the **network**

... continuously monitor and balance the **demand side**

... meet **consumer demands** for guidance and new attractive business models
New demands New possibilities

2020
October 25, 2020
All meters installed after this date must be able to be read remotely with a reading every 3 months

2022
January 1, 2022
Consumption information to the end-users on a monthly basis

2027
January 1, 2027
Every residence must have a remotely read meter installed - with a monthly reading

...and new possibilities to optimise your business
Data is available and can be translated into powerful insights.

- **400+**
  - DH utilities have their meter data management system hosted by Kamstrup

- **1,3 mill**
  - Heat meters are being read and managed by Kamstrup

- **500,000+**
  - Heat meters provide hourly time series
How to improve demand side focus?

A digital solution can empower utilities that wants to improve heat installations by providing an operational platform ensuring that faults and potential issues are being identified, prioritized and corrected in a scalable and efficient way through engaging and serving all relevant stakeholders.

The situation Today ...

- Best effort approach with the available resources
- Limited overview and scalability. Often only the tip of the iceberg is addressed
- Prioritization criteria are not always clear
- Highly manual process using Excel sheets and yellow post-it notes
- Diagnostics requires expert knowledge to interpret graphs and trends
- Hard to engage end-user and make them aware. Often generic massaging is used across all end-users
- No structured way of involving professionals and handing over
- The cause of error is not tracked for learnings
- Limited tracking of results and impact
- Limited or no proactivity. Fault are addressed when they occur

Digital Low Temperature Assistant

- Structured approach to end-user engagement
- Continuous monitoring of all heat installations at scale
- Automated and data-driven diagnostics that translates to actionable insights
- Prioritized list of most relevant heat installations to address, both existing faults and heat installations that will become a problem tomorrow
- Easy access to notify end-users and to keep track of who has been contacted when
- Higher correction rate through targeted information and suggestions for improvements
- Platform for engaging field service technicians to assist with corrections and feedback
- Full transparency in the progress and results achieved at individual end-user level and at system level
- Deep understanding of behavioral patterns to tailor new offerings and dialogues to specific groups of end-users
Digital Low Temperature Assistant – towards proactive low temperature operation

1. Scalable and efficient fault detection and end-user engagement
   - Digitalize and scale the fault detection process. Continuous monitoring and diagnostics. Prioritize your efforts to where it matters most. Better results through targeted and differentiated end-user engagement. Easy to notify end-users.

2. Involve and orchestrate field service support
   - Include field service technicians in the loop to assist the end-users and make things happen. With the right information at hand, skilled technicians and service partners can efficiently correct any issues.

3. Proactive low-temperature operation
   - Forecast and manage the heat installations that will become a problem tomorrow. From reactive fault detection to proactive low-temperature operation.

4. Segment specific end-user approach
   - Tailored solutions to improve impact. Combine analytics and application knowledge to empower utilities to create dialogues and new service offerings tailored to specific groups of end-users with similar characteristics and behavior.
Thank you for listening