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

## Green transition

**Drive green transition** by integrating multiple renewable heat sources

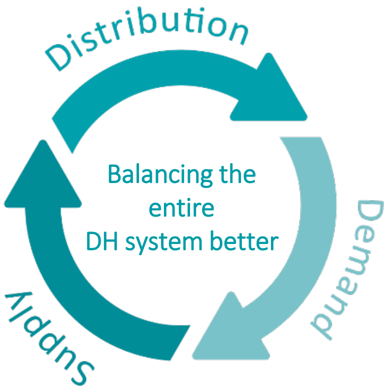
## Security of supply

**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

# The economical drivers for low-temperature district heating

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

| Chapter section and heat supply technology (either the technology itself or as the dominant component of a system) | Cost reduction gradient (CRG) in euro/(MWh·°C) | |
|---|---|---|
| | Investment cases where investment costs are reduced | Existing cases where operation costs are reduced |
| 2.1 Low-temperature geothermal heat | 0.45–0.74 | 0.67–0.68 |
| 2.2 Heat pump | 0.41 | 0.63–0.67 |
| 2.3 Low-temperature waste heat | 0.65 | 0.51 |
| 2.4 Solar thermal – flat plate collectors | 0.35–0.75 | Not available |
| 2.4 Solar thermal – evacuated tube collectors | 0.26 | Not available |
| 2.6 Biomass-CHP with back-pressure turbine | Not available | 0.10-0.16 |
| 2.6 Biomass-CHP with extraction turbine | Not available | 0.09 |
| 2.6 Waste-CHP with flue gas condensation | Not available | 0.07 |
| 2.7 Daily storage as tank thermal storage | 0.01 | 0.07 |
| 2.7 Seasonal storage as pit thermal storage | 0.07 | 0.07 |
| 2.8 Heat distribution loss | Not available | 0–0.13 |

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

IEA DHC, Annex TS2: Implementation of Low Temperature District Heating Systems, in: iea-dhc.org [online]
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 **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

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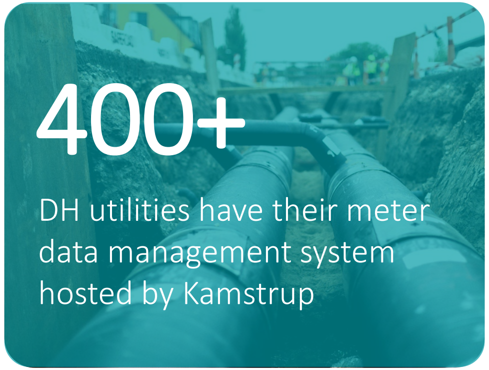
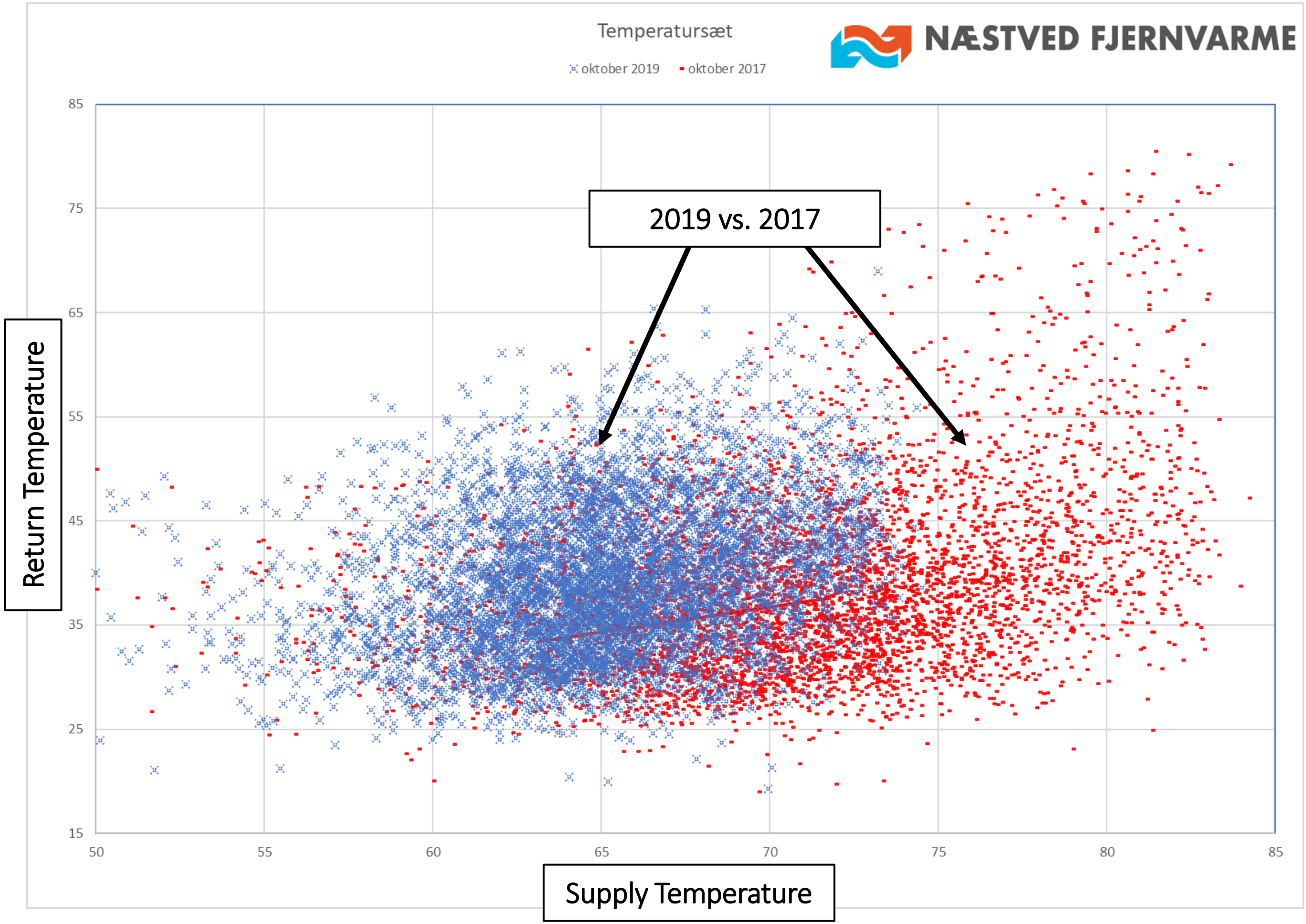
Data is available and can be translated into powerful insights





Temperatursæt
NÆSTVED FJERNVARME
oktober 2019
oktober 2017
2019 vs. 2017
Return Temperature
Supply Temperature
85
75
65
55
45
35
25
15
50
55
60
65
70
75
80
85

# 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

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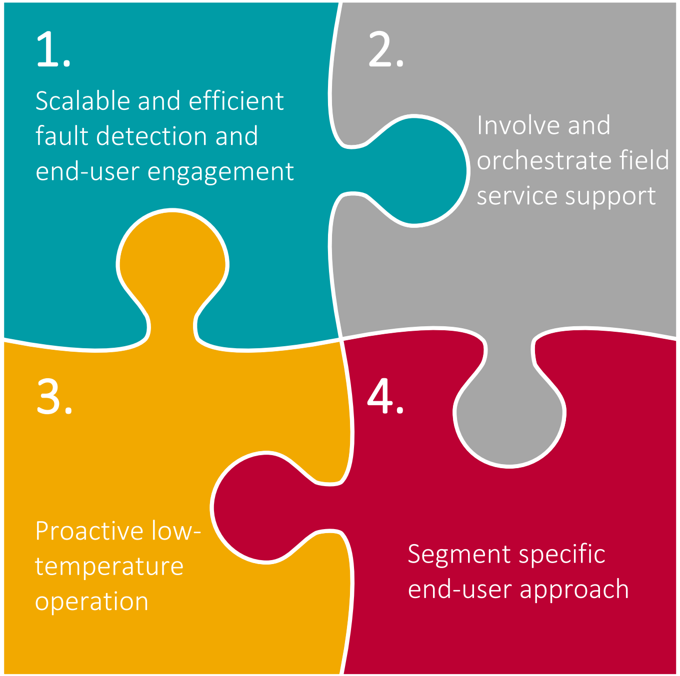
# Digital Low Temperature Assistant –towards proactive low temperature operation

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




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.

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

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