# Data and Digitalisation as Keys to German Energy Efficiency – Danish Solutions in Play

**August 27th, 2025**
**Green Energy Export Day**

SYNERGI

# Agenda

**Welcome and Introduction**
*Anders Gerhard Jørgensen, Senior Policy Advisor, SYNERGI*

**Insights from Berlin**
*Johann Maximilian Voss, Energy Policy Advisor, Danish Embassy in Berlin*

**Company Case: Kamstrup**
*Bjarne Halkjær, Head of Growth Product Management*

**Company Case: Danfoss**
*Leif Jakobsen, Senior Business Development Manager*

**Open Discussion**
*Interactive session*

UDENRIGSMINISTERIET

# ENERGY EFFICIENCY & DIGITALISATION IN GERMANY

## OUTLOOK UNDER A NEW GOVERNMENT

JOHANN MAXIMILIAN VOSS - ENERGY POLICY ADVISOR - BERLIN EMBASSY - 27. AUGUST 2025

ROYAL DANISH EMBASSY
*Berlin*

Johann Maximilian Voss
Policy Officer: Energy Efficiency

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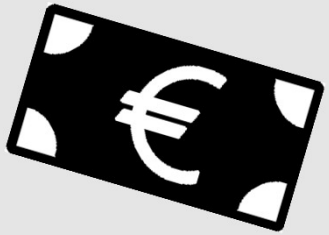
# Coalition treaty promises

- lower **energy prices**
- reform of **heating law**
- new programme to promote **fast construction** (‘Bauturbo’)
- tax deductions for **energy-efficient renovations** of inherited properties
- increase share of **renewable energy**

# €500 BILLION SPECIAL FUNDS



Special fund worth €500 billion for the upcoming 12 years

- €300 billion for **infrastructure projects** (roads, bridges, railways, public transport)
- €100 billion to a **Climate and Transformation Fund** (construction, renewable energy, energy efficiency)
- minor shares go to **digitalisation** and high-tech projects and hospital and education infrastructure

- → allocation of large shares yet to be defined

# Special funds for energy-Efficient Buildings

Total budget of €1.22 billion until 2032

- largest pools to come in the next two years: **€500 mio in 2026** and **€280 mio in 2027**
- **€300 million** for energy-efficient **new constructions**
- funding schemes to be simplified

Continuation of funding for

- new construction or individual renovation purposes (e.g. insulation)
- residential buildings (e.g. owner-occupied flats, apartment blocks)
- commercial buildings (e.g. municipal buildings, hospitals)

# bauturbo

Cost reductions worth €2,5 billion

- €1,7 billion in cost reductions due to **faster permissions**
- allow limited **constructions without zoning plan**
- simplified change of function for properties (e.g. commercial to housing)

→ 1 / 4 construction projects could benefit

# Digitalisation & Grid

- digitalisation in buildings and heating sector yet behind expectations
- only 2% of households have smart meters
- new conservative Minister for Energy and Economics Katherina Reiche supports fast smart meter roll-out

→ need for national digital grid standards

→ Political framework to be set by new government

# Political outlook

→ record-high budget for Federal Ministry for Construction worth €23,5 billion until 2029

→ new Federal Ministry for Digitalisation with a budget worth €6,5 billion under development

ROYAL DANISH EMBASSY
*Berlin*

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kamstrup

August 27, 2025

# Data and Digitalization

*Keys to German Energy Efficiency*

Bjarne Sig Halkjær
*BSHA@kamstrup.com*

kamstrup

# Kamstrup in short

**1,700** employees +400 R&D engineers

**+75** years of curiosity and innovation

**484** mill. EUR turnover 2023

**21** offices, more than 80 partners and active in +80 countries

**150** robots

***IT'S TIME TO KNOW***

**26,000,000** meters installed around the world

Up to **11.2%** of turnover invested in R&D

# Smart Heating Solutions | H/C product portfolio vision

kamstrup

Delivering value to our customers

Building a data foundation

# Smart Heating Solutions | H/C product portfolio vision

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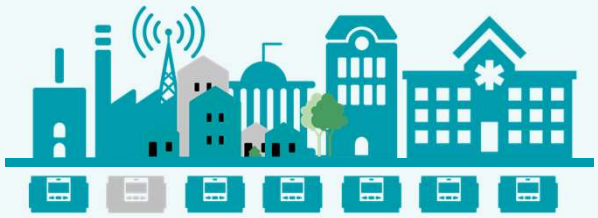
Delivering value to our customers

Common data platform to ensure smooth customer experience across analytics and service offerings (with standardized data integrations from 3rd party sources)

Building a data foundation

READy

2-way communication technologies



Third party MDM (Diehl IZAR etc.)

Third party communication technologies

# Smart Heating Solutions | H/C product portfolio vision

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## Delivering value to our customers

### Creating value through ANALYTICS

- Meter data visualization **Discovery**
- Advanced analysis **Intelligence**

### Creating value through SERVICES

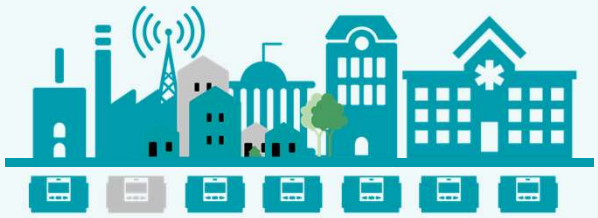
- Delivering connectivity & data availability **Network as a Service**
- Enabling low-temperature district heating **Return Temperature Optimizer**
- Ensuring continuous meter compliance **PDO (DK) // superviseur (FR)**
- Optimizing pipeline renovation and asset efficiency **Pipe Management** (ongoing co-creation)
- Increasing capacity and reducing production requirements **Demand Side Management**
- Next challenge… **Next Service…**

Common **data platform** to ensure smooth customer experience across analytics and service offerings (with standardized data integrations from 3rd party sources)

## Building a data foundation

READy

2-way communication technologies



Third party MDM (Diehl IZAR etc.)

Third party communication technologies

# Digitalization DH
## Germany in-short

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| BEFORE | Now | FUTURE |
| --- | --- | --- |
| • Manual readings resulting in faults and discussions<br>• Drive-by readings increasing data validity but limited data and high latency | • Transition to Fixed Network resulting in valid and relevant data<br>• Trend toward P2P with LORA representing ~ 50% of the market | • > 75% Fixed Networks by End 2026 due to Energy Efficiency Directive<br>• Communication technologies with higher capacity for amount and frequency of data |
| ↓ | ↓ | ↓ |
| Billing | Optimization | Advanced analytics |

# Digitalization, a real-life example:
## Return Temperature Optimizer (RTO)

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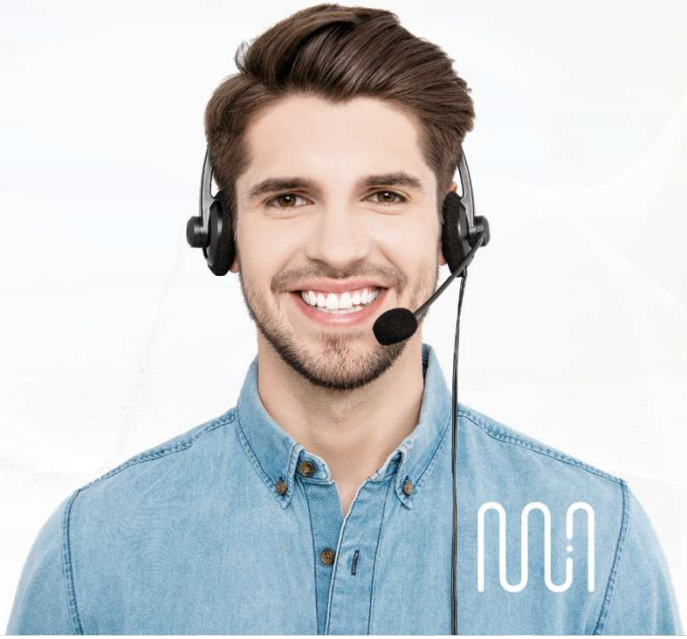
| On top of **accurate** consumption **data** | RTO **identifies inefficient** heat installations at consumers | RTO team **notifies the owner** & persistently follows-up on actions & impact |
|---|---|---|

### Key results – at Sæby District Heating

- 88% of notified owners reacted
- 12,1 °C average drop in return temperature at notified households
- 4,9 °C decrease in total network return temperature
- 180 tons $CO_2$ emission savings per year



# Digitalization DH
## Barriers & complications

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### Business Models

- **Tarif's** are currently only little in used, with knowledge / best practice being at a low level
- **Customer engagement** is difficult to achieve without incentive and / or reward schemes

### Security & GDPR

- **System Security** increasingly important topic involving both communication infrastructure and devices. Can be additionally complicated if Utilities have own and variating security policies
- **GDPR** may complicate use of data, e.g. for optimisation

### Future Use-case

- **Utilities** are on very different levels in relation to key pain points, i.e. perceived value of data vary significantly – "it is hard to predict the future"

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# *Thank You !*



Internal

ENGINEERING TOMORROW

# Danfoss - Your partner in DH energy optimization


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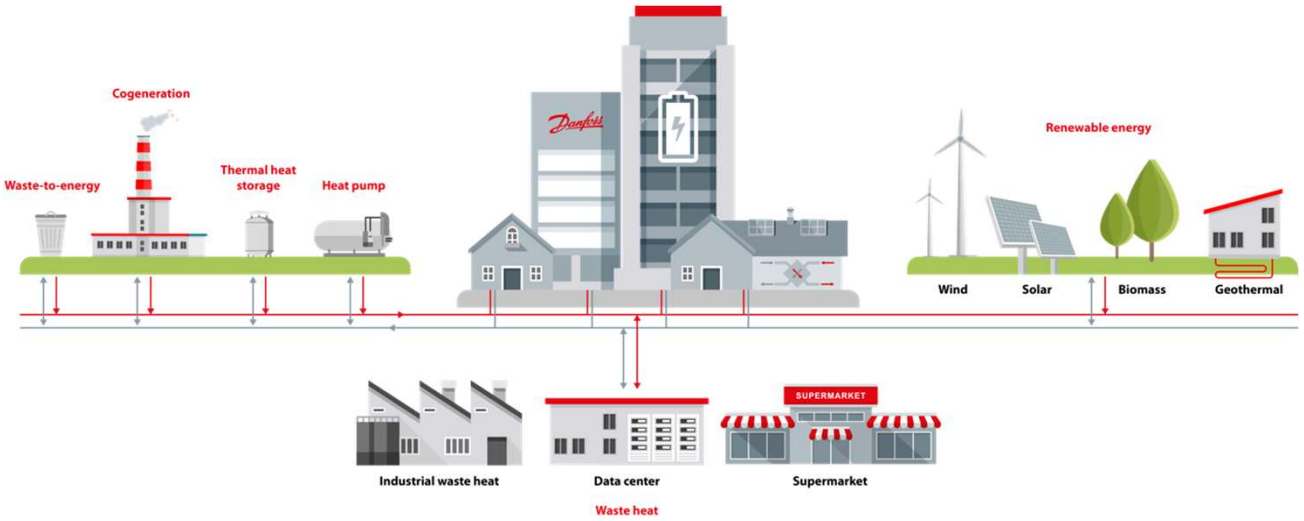
*Green Energy Export Day 2025*

# **Trends** driving the district energy evolution




From single source to…

**MULTI-SOURCE**

From fossil to…

**RENEWABLES & SURPLUS ENERGY**

From high temperature to…

**LOW TEMPERATURE DISTRICT HEATING**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# Increase operational efficiency and reduce cost with smart, **end-to-end optimization**

- At Danfoss, we have a complete portfolio of **hardware** and **software solutions** backed by our frontline expertise to support your entire process.
- **Danfoss Leanheat®** is an innovative suite of **end-to-end optimization solutions** that harness the power of digitalization to help users in the entire district energy network increase operational efficiencies, decrease costs, and accelerate the green transition.

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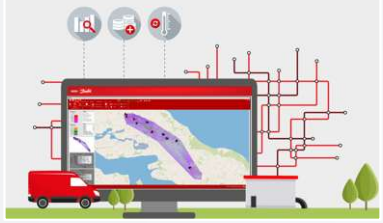
# Danfoss Leanheat® **is leading the green energy transformation**

A complete portfolio of products, components, and software for end-to-end optimization.

**Leanheat® Production**

**Leanheat® Network**



**Leanheat® Monitor**

**Leanheat® Building**

**Heat exchangers, line components**

**Motorized valves**

iNET

**Self acting diff. pressure controls**

iSET

**Substations**

**Intelligent controllers**

**Heat meters**

**eTRV**

**ASV**

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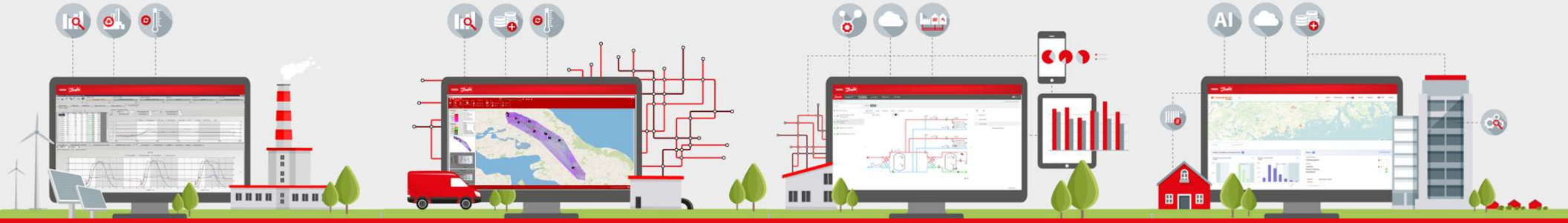
# **Danfoss Leanheat®** software suite & services
## End-to-end energy optimization solutions



| **Leanheat® Production** (LHP) | **Leanheat® Network** (LHN) | **Leanheat® Monitor** (LHM) | **Leanheat® Building** (LHB) | |
|---|---|---|---|---|
| Load forecasting | Network design | Monitoring and control | Peak load optimization | Customer engagement |
| Data Driven temperature optimization | Online visualization of network operation | Easy data integration, extraction and interpretation | Energy optimization | Return temperature optimization |
| Production optimization | Hydraulic supply temperature optimization | Integrate devices with different protocols | | |
| Production planning | Pressure optimization | | | |

Data API HUB

AI Engine

**Primary Side**
(Planning, Network operation, Production)

**Secondary Side**
(Buildings)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# Leanheat® Network - **what it consists of?**

## OFF-LINE

### LHN Designer

Network Design
+
Hydraulic Analysis

## OPTIMIZATION

### LHN Online

Visualization of the temperature, flow and pressure at any point in the network

Real time measurements from SCADA
+
Load forecast (Weather Forecast)

### LHN Optimizers

Temperature Optimization
+
Pressure Optimization


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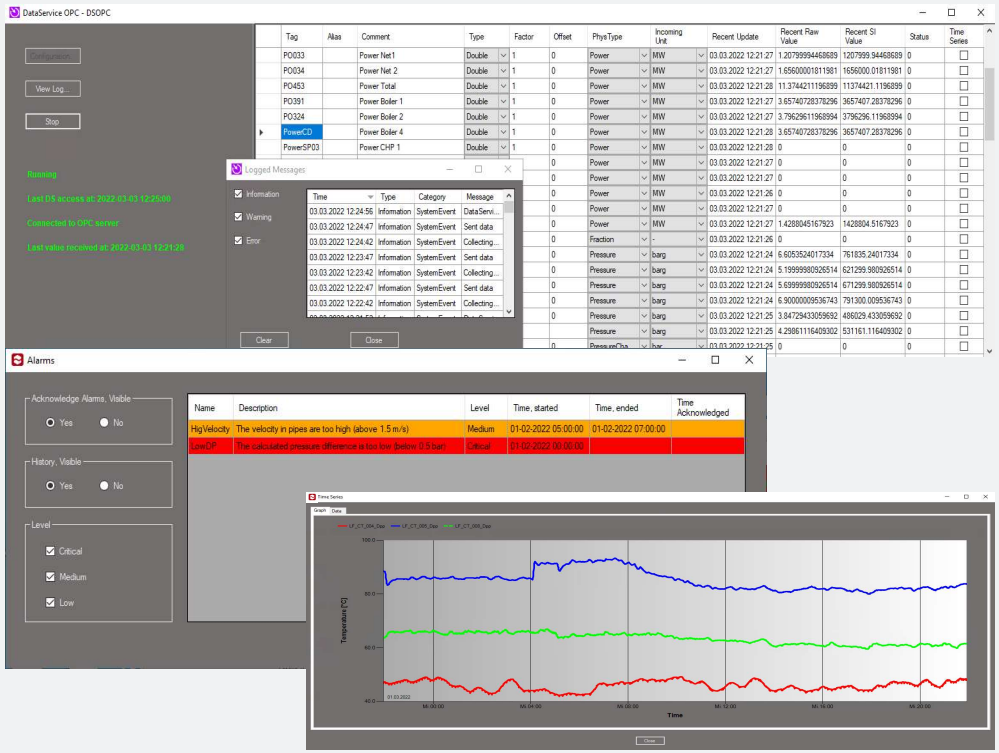
# Leanheat® Network **Online**




- Digital twin
- Overview of dynamic state of pipeline network, e.g. pressure, flow and temperature including state of devices.
- Possibility to follow the operational state back in time, now and in the near future
- Possibility to see the consequences of any interaction into the network, e.g. what happens when a valve is being closed, a pump started, or changes are made in the production
- Unlimited access to real and virtual measuring points throughout the whole network
- Operators will understand what happens in network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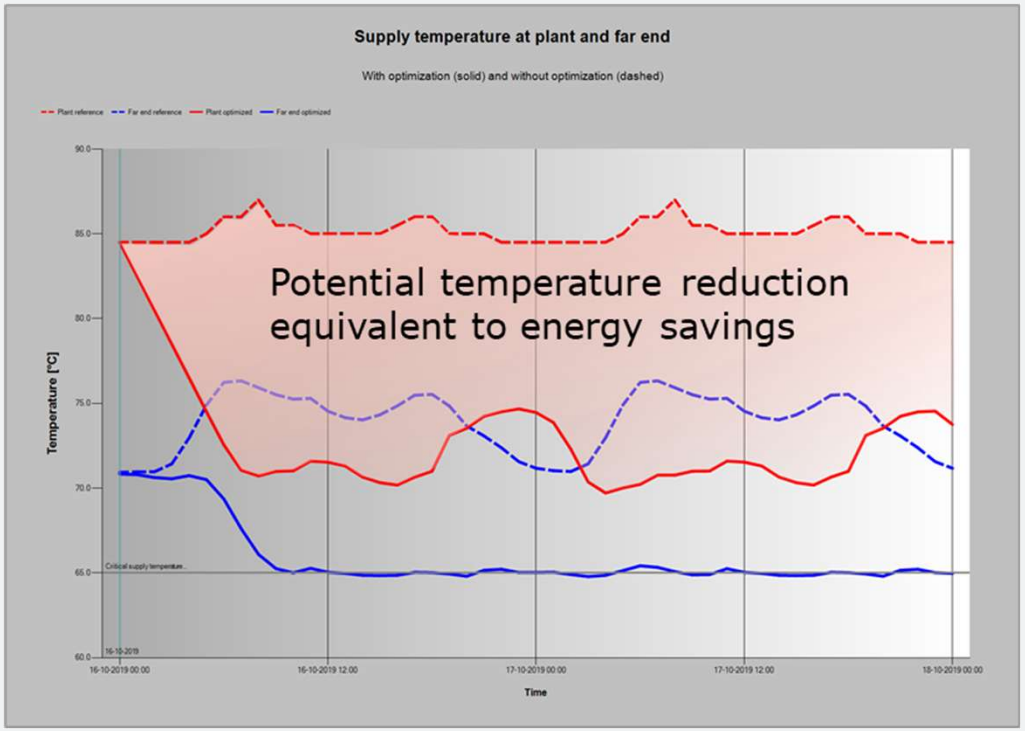
# Leanheat® Network **Temperature Optimization**




- Minimizing the costs of pumping and production of heat
- Reduce the annual supply temperature up to 6°C (in case price of electricity is low)
- Reduce existing pipeline network loss up to 8%
- Reduce the primary fuel costs up to 1%
- Minimize pressure and temperature fluctuations in the network
- Minimize carbon emission and protect environment
- Reduce maintenance and support of pipeline network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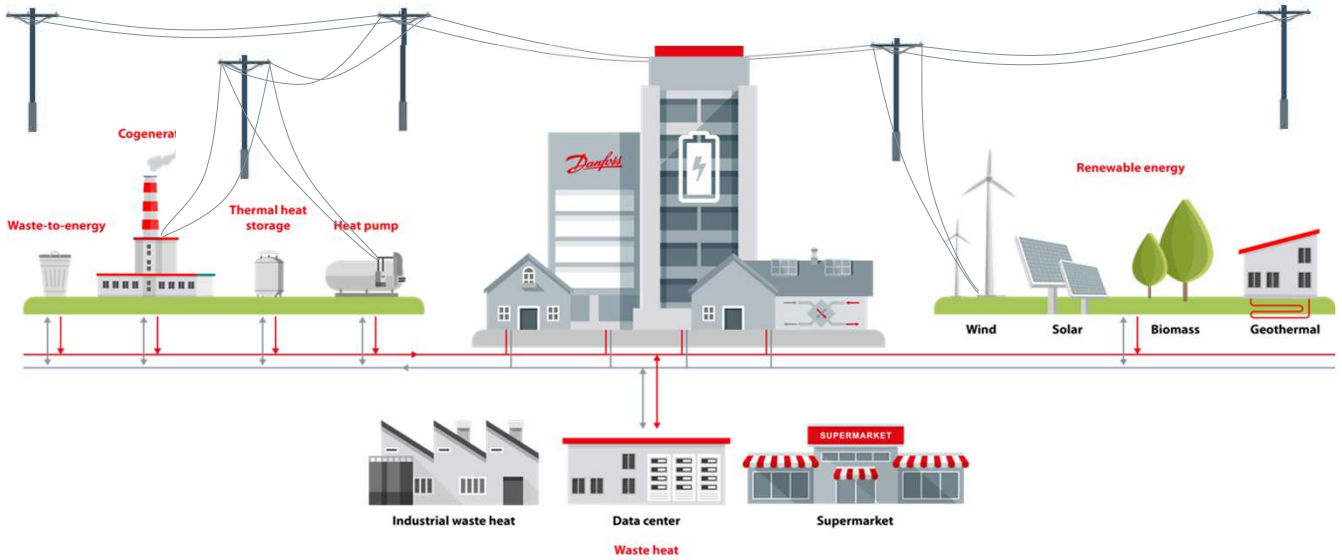
# Leanheat® Production **optimization**




Calculation of most economical heat schedule

**HEAT PRODUCTION SCHEDULING**

+

Electricity market planning and reporting

**ELECTRICITY PRODUCTION SCHEDULING**

=

Overall production optimization

**COMBINED OPTIMIZATION OF HEAT AND ELECTRICITY PRODUCTION**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# Leanheat® Production **challenges/requirements**

- For smooth operation and flexibility heat storage capacity is required
- Electricity traders API´s change frequently thus requiring fast adaption to other SW solution. Trader mainly work with the "day ahead" market
- Frequent demands for faster regulation of the electricity markets. Now changing from 1 hour to 15 min. regulation.
- New EU requirements to stabilize the frequency of the electricity market – aFFR and mFRR. Danfoss will comply with this

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Danfoss Heating, **your partner**
for district energy solutions

Thank you for your attention

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