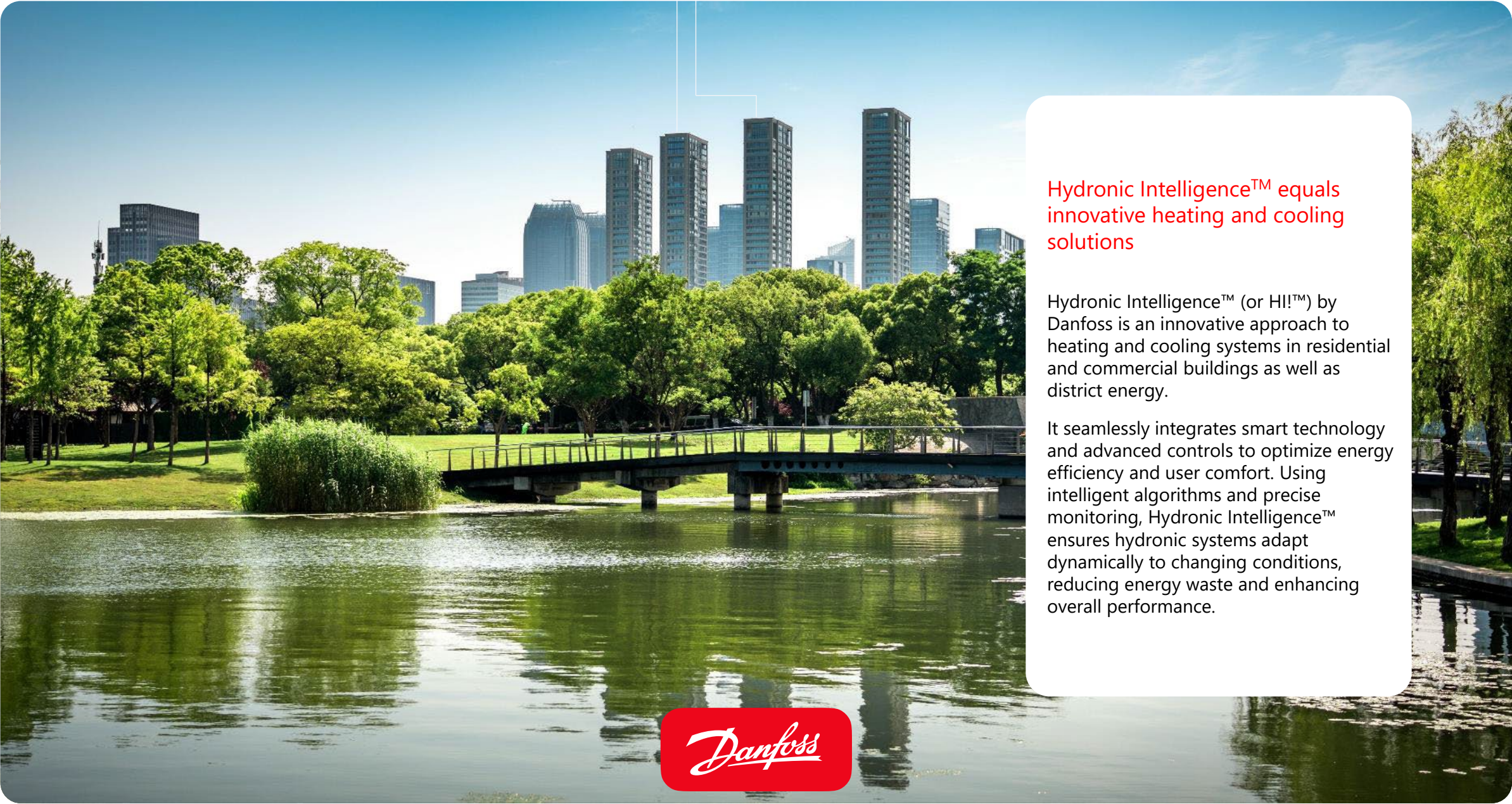


Moldova District Heating 2026-2027: Smart Modernisation Outlook

From rehabilitation to optimisation – Smart IHS/Heating substations, SCADA, and AI-ready operations

The Danfoss logo, featuring the brand name in a white, stylized script font on a red rectangular background.

Cezar Cojoccea



Hydronic Intelligence™ equals innovative heating and cooling solutions

Hydronic Intelligence™ (or HI!™) by Danfoss is an innovative approach to heating and cooling systems in residential and commercial buildings as well as district energy.

It seamlessly integrates smart technology and advanced controls to optimize energy efficiency and user comfort. Using intelligent algorithms and precise monitoring, Hydronic Intelligence™ ensures hydronic systems adapt dynamically to changing conditions, reducing energy waste and enhancing overall performance.

Danfoss

HydronicS:

Our main business areas



Building
Solutions

Sub-systems



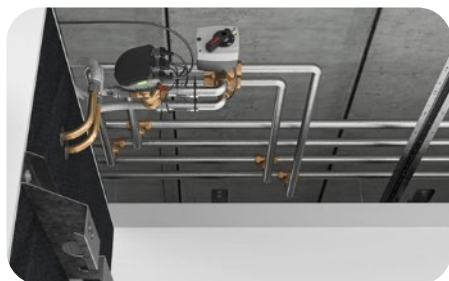
District
Energy

Light Duty Substations



Digital
Services

Balancing & Controls



Thermostats



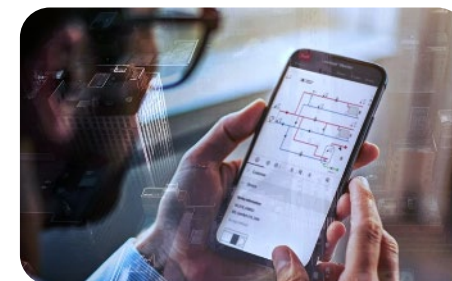
Controls & Metering



Heavy Duty Substations



Leanheat® Software Suite



Our Portfolio



Heat Recovery Units



District Energy Controls



Heavy Duty Stations



Electronic controllers



Light Duty Stations



Domestic Hot Water



Energy Meters



Danfoss Leanheat®



20-30% energy savings with District Energy

Efficient hydronic infrastructure for district heating and cooling to enable renewable and surplus heat integration.

With our stations and controls, we distribute heating and cooling to buildings in cities which typically save 20-30% energy in district energy networks and benefit the end-consumption.

In commercial and non-commercial buildings, we create the best possible balance, flow, and temperature control within water-based heating, cooling, HVAC, and district energy systems.

Offering: End-to-end digital optimization



Danfoss end-to-end offerings



Production

Ensure reliable, optimized, and efficient heat production with:

- ✓ Controls
- ✓ Software
- ✓ Heat exchangers
- ✓ Valves



Network

Save energy, time, and money in district energy networks with:

- ✓ Danfoss know-how
- ✓ Substations
- ✓ Heat exchangers
- ✓ Software
- ✓ Controls



Consumption

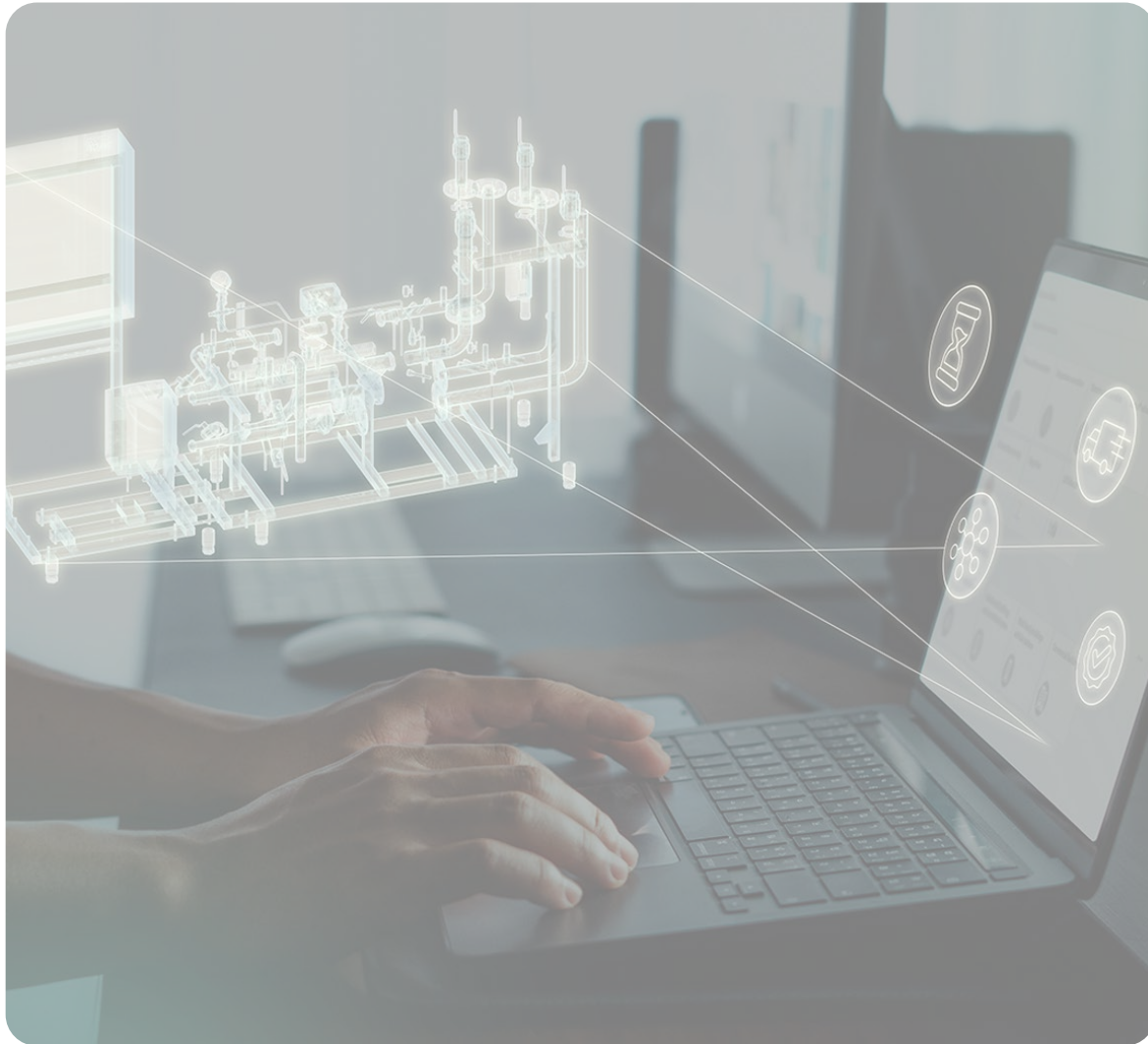
Peak shaving, reliable stations, and full transparency with:

- ✓ Software
- ✓ Substations
- ✓ Controls

Danfoss has the industry's only complete portfolio of proven end-to-end solutions - from innovative technology and components to optimization tools and services.

Combined with our extensive hardware as well as knowledge and years of experience, we can help utilities to:

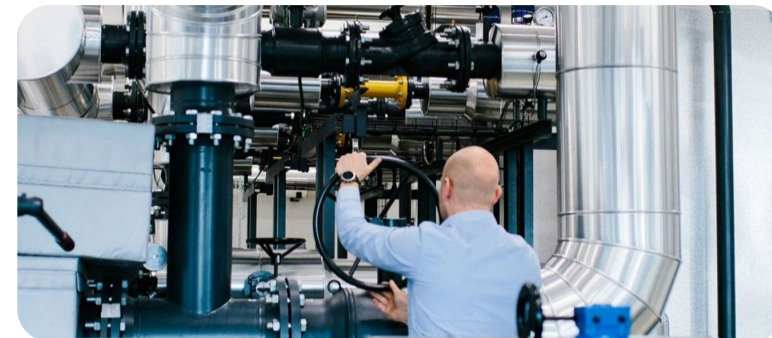
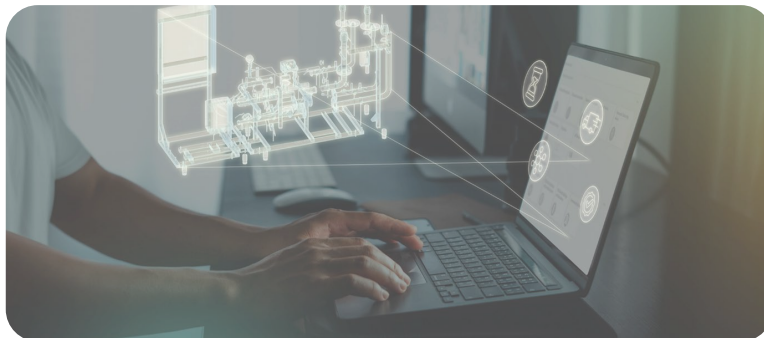
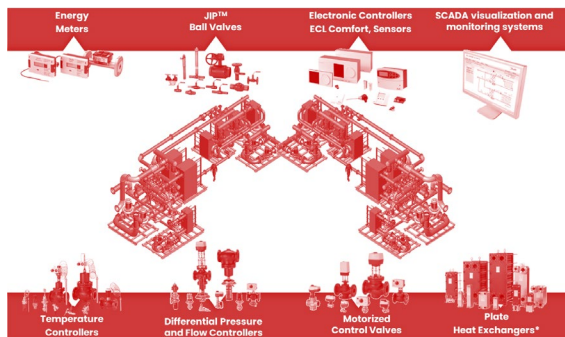
- Optimize their supply
- Decarbonization
- Cost-effectiveness
- Energy efficiency
- Resilience



Section 1

Danfoss Smart Heating Substation: Plug-in, Optimised, Future-Proof

Danfoss Smart Heating Substation: Plug-in, Optimised, Future-Proof



- Factory-built, plug-and-play.
- Modular and smart heating substation links Δp + ΔT control.

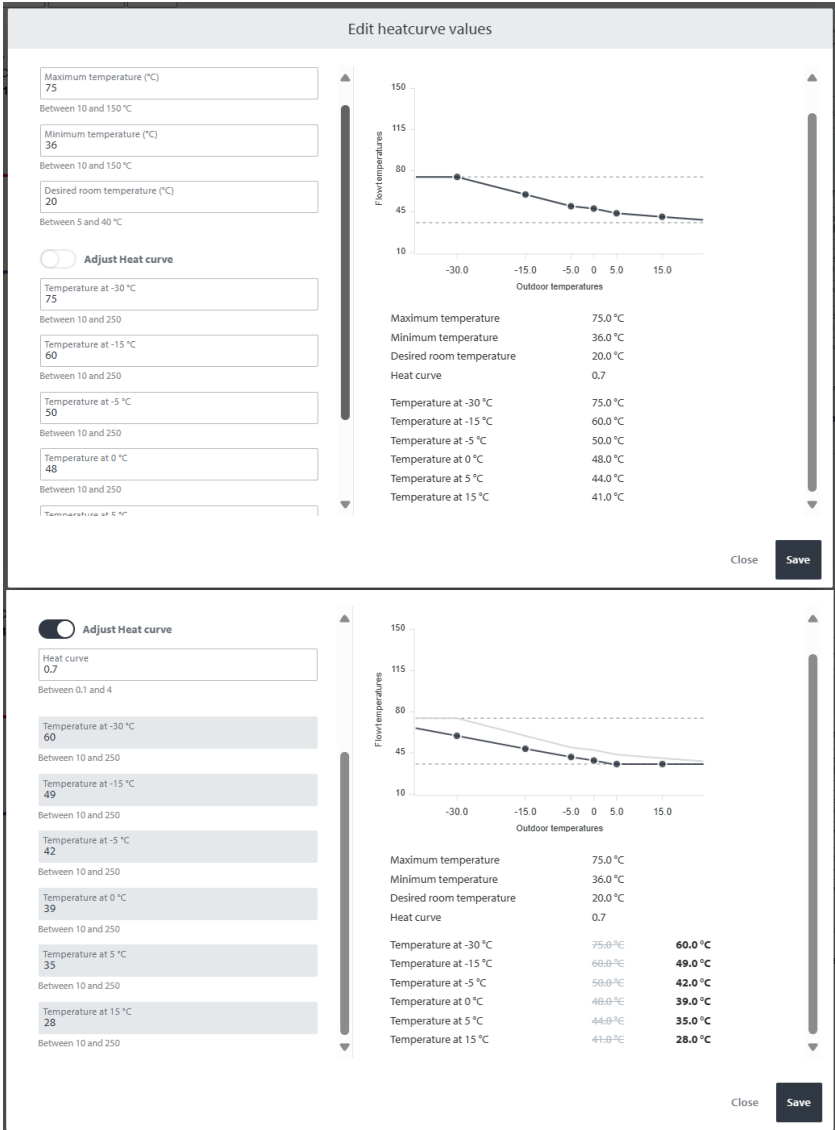
- Key elements include:
 - Autonomous Differential pressure optimisation ensuring hydronic stability at partial load.
 - AI-driven smart weather compensation and ΔT optimisation to maximise efficiency and reduce OPEX.
 - Embedded web-based LeanHeat software for real-time operation, and open interfaces for cloud-native integration with digital twin applications enabling commissioning, seasonal health checks, and full asset mapping.
 - Digitised smart heat meters providing continuous data acquisition for operations, billing, and ESG reporting.

- "Install once, optimise forever. Start smart, stay efficient."

AI-Powered Building / Heating substations Optimisation



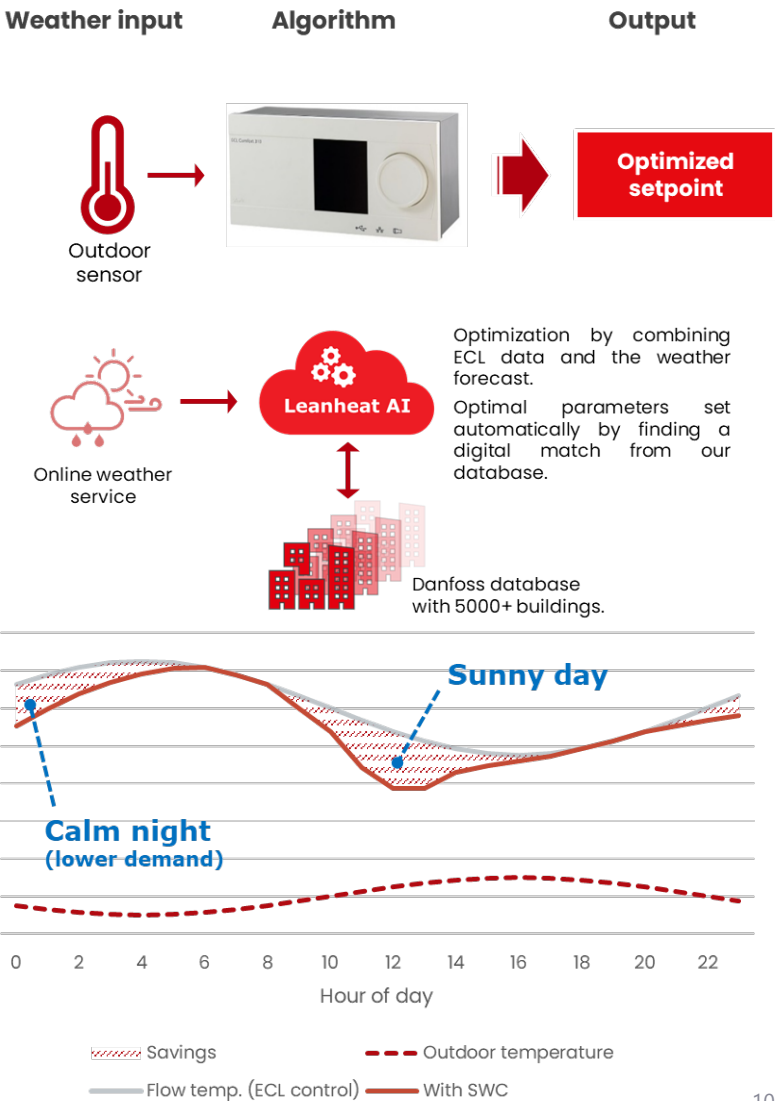
ECL control **with Smart Weather Compensation**
(outdoor temperature, solar and wind compensation):



> District heating system managers, mostly due to a lack of qualified personnel, are unable to devote sufficient attention and time to fine-tuning heating curves in heating substations, especially due to the different types of facilities and their purpose.

> SWC is fully **automated solution** to utilize advanced weather forecasts in ECL installations.

At least 5% of heat consumption savings.





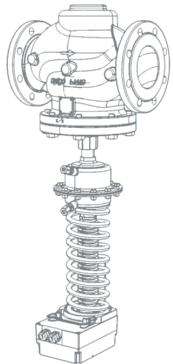
Section 2

VIRTUS Danfoss Heavy Duty Pressure and Flow Controllers



Dynamic Control, Fine-tuned
with Digital Precision

What we propose?



- Optimizing pressure and flow even in the largest and most demanding district heating/cooling systems.

- A staged dynamic-balancing package/solution that marries advanced Δp and ΔT valve control (plant to network to Heating substation) with a lightweight, web-based SCADA layer for real-time optimisation, alarms, and remote setpoint management enables following:
 1. Required Δp across the network (avoiding additional pumps across the network or huge investment in replacement of the pipes), resulting heat is distributed evenly and proportionally across all connected users, regardless of their location in the network.
 2. Efficient starting of different heat sources and their inclusion in the system in terms of current needs/demands for heat and electricity.
 3. Optimisation of power consumption of the main pumps.
 4. Optimisation of power consumption of the booster pump stations if any, or even or complete shutdown of them.
 5. Dynamic balancing of the network, resulting optimal flow rates, minimal required Δp across the network and lowering return temperature enabling response to demand management.

VIRTUS: iSET & iNET



2 innovative optimization functions implemented in one product



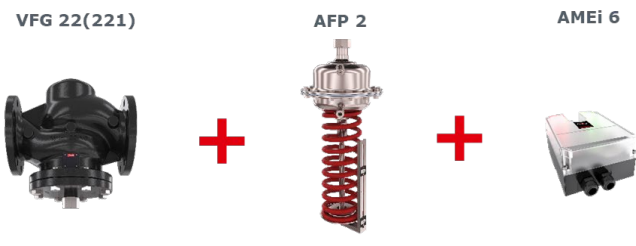
iSET Autonomous

optimization of the differential pressure in the substation



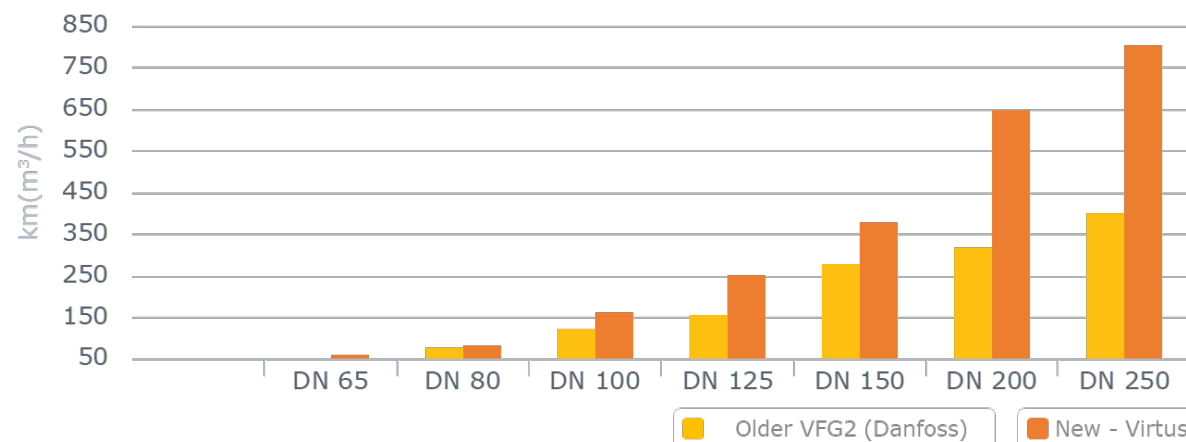
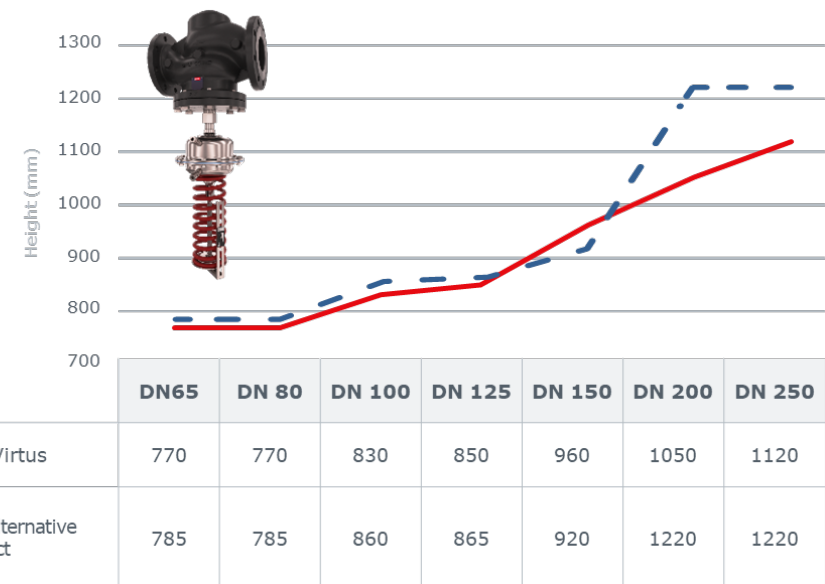
iNET Remote

adjustment of the differential pressure in the district energy network



High flow - up to 100% increase
Compact size - up to 20% reduced height

- > Smaller nominal diameters (DN) with "XXL" flows.
- > Reduced investment up to 17% compared to traditional design.



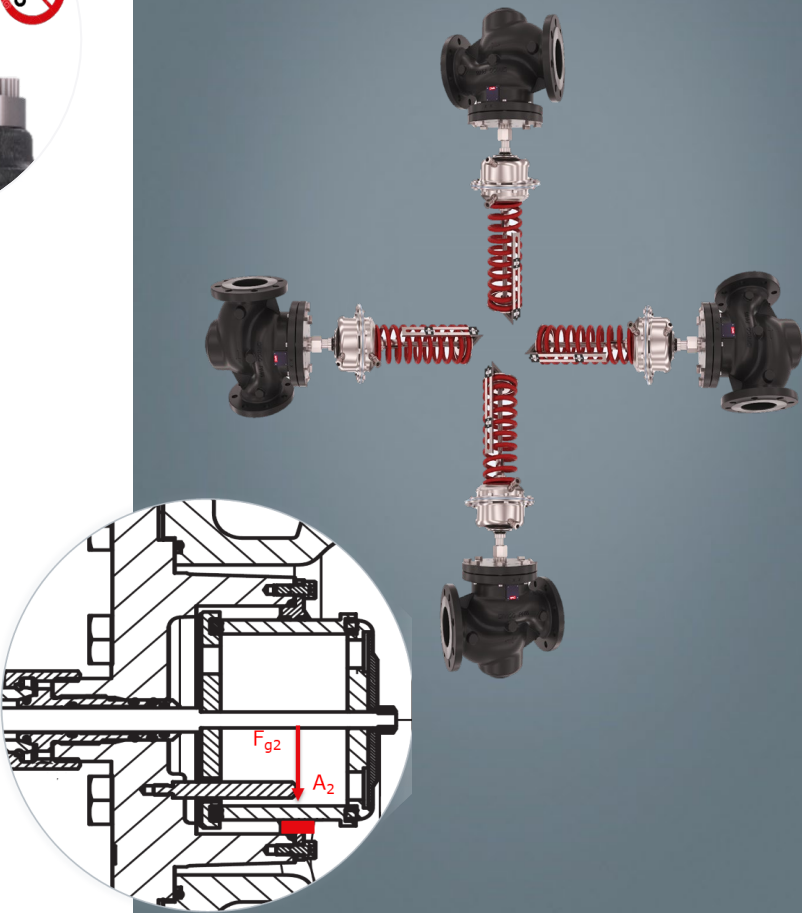
Easy installation & commissioning features



Setting and position indication



All installation positions



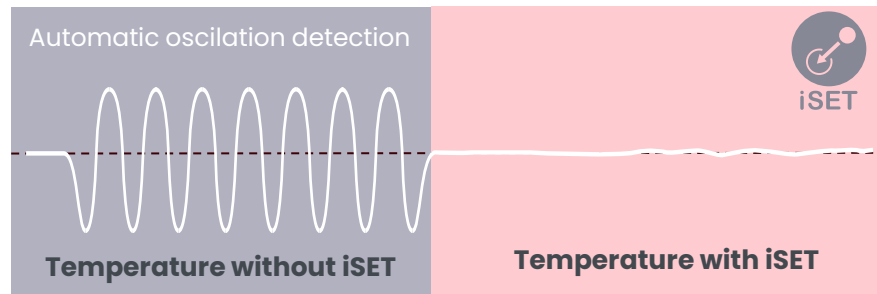
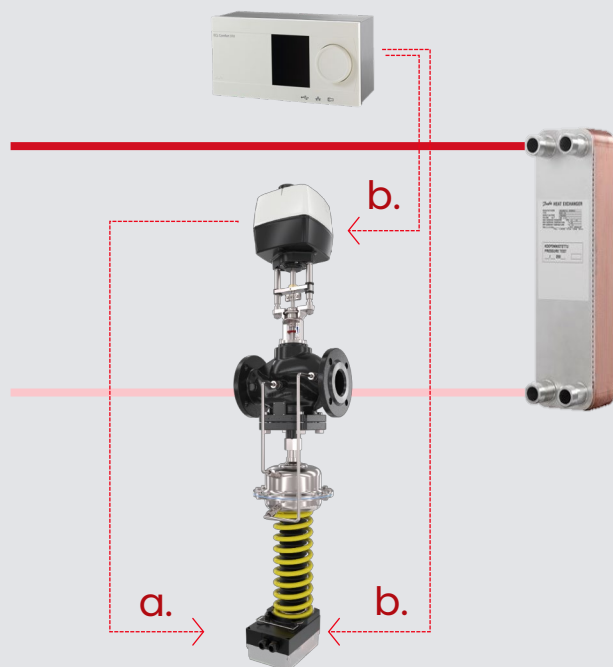
Adjustable Δp indicators



Intelligent **substation optimization** with **iSET**



iSET Autonomous
optimization of the differential
pressure in substation

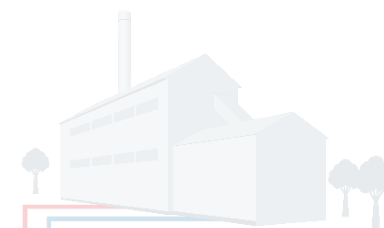


Temperature fluctuations caused by low control valve opening require **change of differential pressure set point** to stabilize flow.

Autonomous logic of iSET decreases set point and ensures bigger control valve opening :

- a. The actuator sends a signal to iSET; iSET adapts differential set point
- b. The ECL signal is sent simultaneously to the actuator and iSET

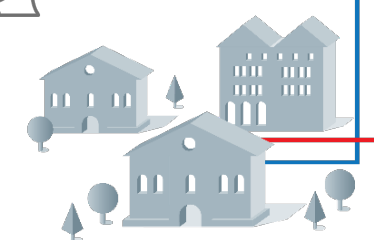
ENERGY **SOURCE**
AND TRANSPORTATION
NETWORK

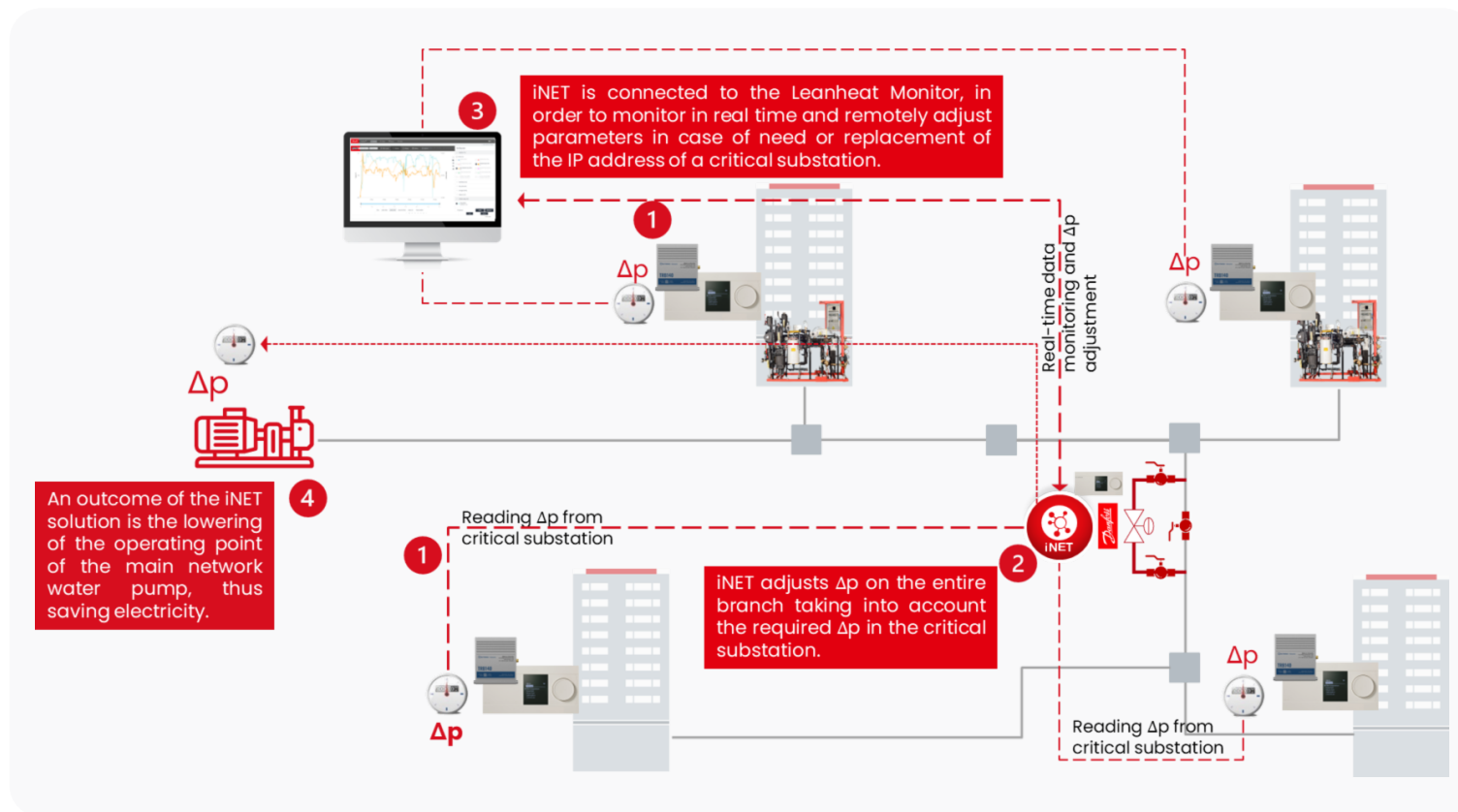


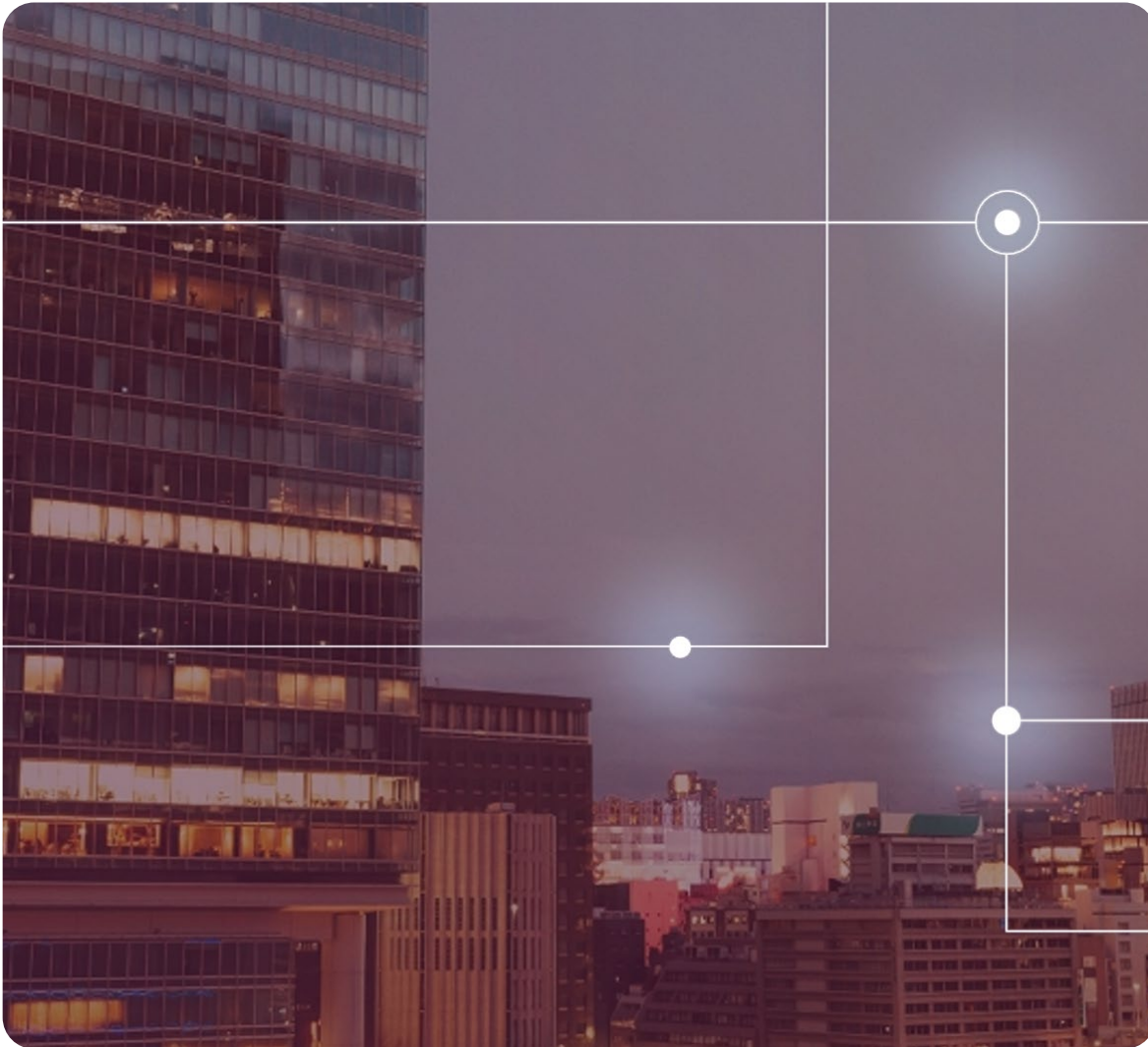
DISTRIBUTION
NETWORK



SUBSCRIBER
SUBSTATION







Section 3

Danfoss Leanheat® software suite and services

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



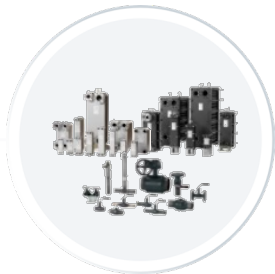
Leanheat® Monitor



Leanheat® Building



Leanheat® Ally



Heat
exchangers, line
components



Motorized
valves



Self acting
diff. pressure controls



Substations



Intelligent
controllers



Heat
meters



eTRV



ASV

Danfoss Leanheat® software suite and services

End-to-end energy optimisation solutions



Leanheat® Production



- > Future focused planning
- > AI powered predictions
- > Optimized production operation
- > AI powered temperature control

Leanheat® Network



- > Digital Twin
- > Budget and investment planning
- > Online operation and visualization
- > AI powered predictions
- > Optimized temperature control

Leanheat® Monitor



- > Remote monitoring
- > Remote control
- > Online Reporting and alarming
- > Smart Weather compensation

Leanheat® Building



- > Heating Optimization
 - > Peak Load optimization
 - > Return temperature optimization
 - > Tariff optimization
 - > SCOP optimization
- > Heating Optimization
 - > Peak Load optimization
 - > Demand side management
 - > Return temperature optimization

Data API HUB

AI Engine

Primary Side

(Planning, Network operation, Production)

Secondary Side

(Buildings)



Section 4

Summary

- **“Digitalisation creates data - optimisation creates value.”**
Moldova can capture **10–20% OPEX** with the assets it’s already buying.
- **“Every degree matters.”**
+1 °C ΔT reliably delivers **~1% fuel saving**, lowers pump kWh, and cuts CO₂ - **at scale**.

The Optimisation Stack - What Creates Value (Moldova DH 2026–2027)

Layer	What it is / Core Function	Operational Impact	Typical Energy / OPEX Savings	CO ₂ Reduction	Role in Overall Optimisation
1. Smart Heating Substation	Modular Heating Substation with ΔT control, meters, IoT gateway, secure comms	Stabilises return temperature; lowers network losses; enables building-level control and accurate billing	5–10 % network loss & delivery reduction	4–8 %	Foundation for ΔT improvement and AI data feed
2. Dynamic Balancing (Δp & ΔT)	Smart Δp control at pumps; sectorised pressure regimes; PICVs; ΔT optimisation kits	Optimised flow distribution; lower pump energy; fewer alarms; improved comfort	2–5 % (pump + fuel)	2–4 %	Stabilises hydraulics; maximises benefit of ETS
3. Digital Twin & SCADA	Real-time thermo-hydraulic model; telemetry; KPI dashboards (ΔT , losses %, pump kWh, CO ₂)	Enables data-driven decisions; visualises inefficiencies; verifies savings	- (enablement layer)	-	"Single source of truth" for AI and KPI tracking
4. AI Forecasting & Production Scheduling	Machine-learning forecast of heat load; optimal boiler/CHP/TES dispatch; part-load optimisation	Fewer peaks; reduced standby losses; smoother plant operation	4–6 % fuel	6–10 %	Optimises generation; integrates TES flexibility
5. AI-Powered Building / Heating Substation Optimisation	Weather-compensated heating curves; adaptive night setback; anomaly detection	Avoids overheating; reduces peaks; improves ΔT and comfort	5–10 % building-level energy	4–8 %	Optimises demand; closes control loop to production

Stacked Potential (without double-counting) - 10–20 % OPEX savings and 8–15 % CO₂ reduction when all layers are implemented sequentially (ETS → $\Delta p/\Delta T$ → Digital Twin → AI Scheduling → AI Building Control).

Thank you



Cezar Cojoccea
cezarc@danfoss.com

