District Energy – End to end solution

Miha Bobic, VP business development and product portfolio district energy division
Why District Energy with **Danfoss**?

Most sustainable approach  
Mitigation of climate changes  
Optimization solutions & optimal temperature control

**Demand & Supply**

"We believe that District Energy is the most sustainable approach for mitigation of climate changes & improving energy efficiency by providing optimization solutions & optimal temperature control for both demand & supply side."
**Trends** in District Energy sector - 4G

- **MULTI-SOURCE**
- **RENEWABLES & SURPLUS ENERGY**
- **LOW TEMPERATURE DISTRICT HEATING**
Trends in District Energy sector - 4G

**Commercial implications**
- Source optimization
- Competitiveness
- Sustainability
- Demand planning
- Cost optimization

**Technical implications**
- ΔT optimization
- Pump optimization
- Peak load management
- Digitalization

**RENEWABLES & LOW TEMPERATURE**
**TOTAL COST OF OWNERSHIP**

**MULTI-SOURCE**
Main Challenges in District Energy

ΔT Optimization
- Economical balance between temperature and flow

Optimal Network Design
- With new connections and new buildings

Decentralization - Increased fuel complexity
- In production: more heat sources including renewables

Energy saving obligation
- EU legislation

Peak energy demand
- Drives up overall cost (OPEX as well CAPEX)

Legacy SCADA
- Make data integration difficult and time consuming

Increase focus on customer service
- Existing and new

Focus on new business areas
- Core business outlook less attractive
Digitalization enables smart energy systems

**Smart and efficient buildings**
- Collect data from sensors and energy meters to predict demand (load forecasting)
- Collect indoor climate data and utilize building thermal capacity for demand response and peak load shaving (Leanheat)

**Optimal distribution of energy**
- Enhance control of temperatures, pressures and flows – real-time and remote control
- Learn about transport times, heat loss etc. → Optimize distribution of energy
- Optimal network design, simulation
- Predictive maintenance; reduce operation and maintenance cost and extend the service life of valuable assets

**Intelligent management of energy sources**
- Optimize production sources and supply temperatures, ensure most cost-efficient operation
- Switching between energy sources, management of volatile renewable and waste heat sources
- Optimal use of storage
How technology is developing?

- **1G**: Temperatures
- **2G**: Efficiency
- **3G**: Heat sources
- **4G**: Direct connections
- **5G**: Mixing loops

- **Thermal and hydraulic separation by ETS**
- **Monitoring systems**
- **System optimisation**
- **Thermal boost**
- **Trading system**
Complete operational management and optimization solution

Plant
Production and temperature optimization

Secure Connectivity

Monitor
Monitoring and meter readings

Network
Network optimisation & simulation

Advanced Components

Building
Demand & peak load optimization

Complete operational management and optimization solution
Danfoss Heating, your partner for...

- Optimal plant operation
- Optimal network operation
- Delivering perfect service to your customers

- Optimization tools
- Monitoring system
- Energy transfer units - stations
- Advanced control components