



Presenter

Per Skov

Product manager, Heat pumps Industrial Refrigeration EMEA Denmark



Johnson Controls



more than 8,700 Active Patents

Named in 40+ leading sustainability indicies

We have delivered over **26M** Metric tonnes of CO₂ reduction

Over \$3.9 5 Energy savings and more than \$2.1 5 Operational savings

100,000+ Experts globally

90%

of the world's most

iconic buildings

4+million



\$78 E States in charitable contributions in the past 5 years

Delivering outcomes in Airports Campuses Data Centers Healthcare Hotels Life Sciences Schools Sports & Entertainment



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Sabroe; Smart, safe and sustainable for generations

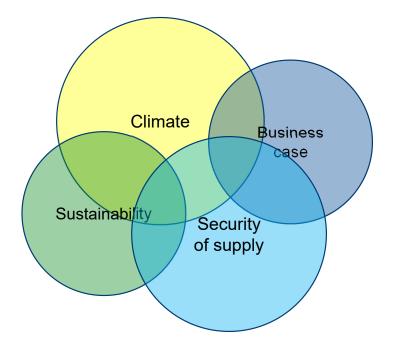
- 125 years of new ideas and better green technology
- Scandinavian high-quality proven design for solutions within refrigeration and heating



Security of supply – Dependency on fossil fuels

We must ensure a reliable, secure and affordable supply of energy to European consumers







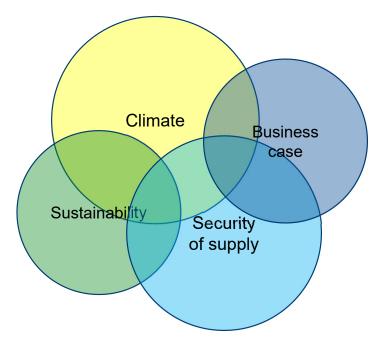


Security of supply – Departure from fossil fuels

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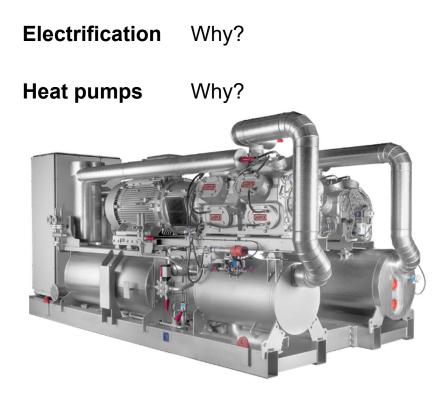
Doubling of the rate of deployment of heat pumps, and measures to integrate geothermal and solar thermal energy in modernised district- and communal heating systems.





Electrification of energy systems

The carbon neutral future is electric









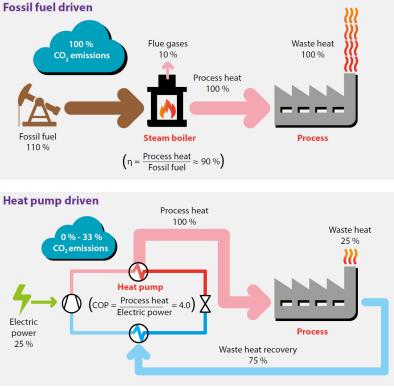
Increase efficiency and decrease energy consumption

The greenest and cheapest energy is the one you don't use

More waste heat available than the building heating demand in Europe



Heat pumps can be used to utilize waste heat or other sources at various temperature levels!



Source: Strengthening Industrial Heat Pump Innovation - Decarbonizing Industrial Heat



Increase efficiency and decrease energy consumption

The greenest and cheapest energy is the one you don't use

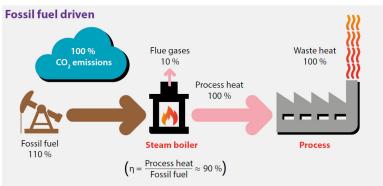
Waste heat

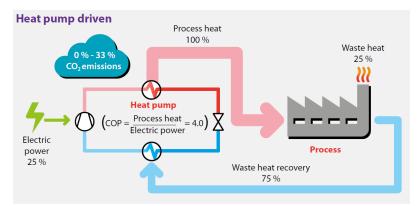
Increasing source temperature with a fixed heat demand, resulting in:

- Lower CAPEX
- Lower OPEX
- Higher efficiency

Heat pumps utilizing waste heat has multiple benefits on the road to Net Zero.

- Reducing energy need
- Utilizing waste heat
- Enabling electrification





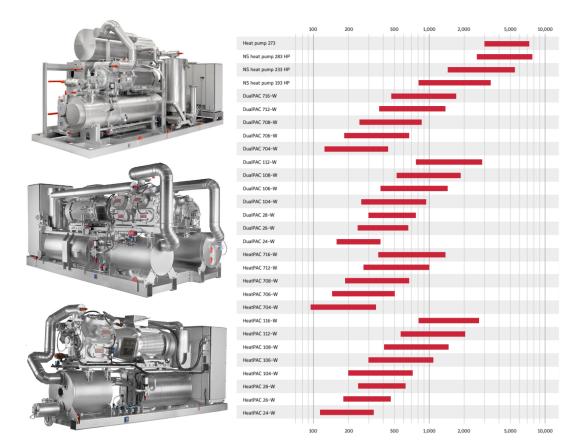
Source: Strengthening Industrial Heat Pump Innovation - Decarbonizing Industrial Heat



Heat pump portfolio

Sabroe heat pumps

Large installed base with +400 heat pumps +30 different models Capacity from 300kW to 7MW Temperature to 95°C Natural refrigerant, Ammonia





Heat pump portfolio – Keeps getting better

Sabroe heat pumps

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Future is looking even greener

Investing heavily to support market

- Capability with regards to R&D testing and development
- New products for even higher capacity and temperature
 - Visit us in Hall 7, booth 329 for SAB 407 on display

