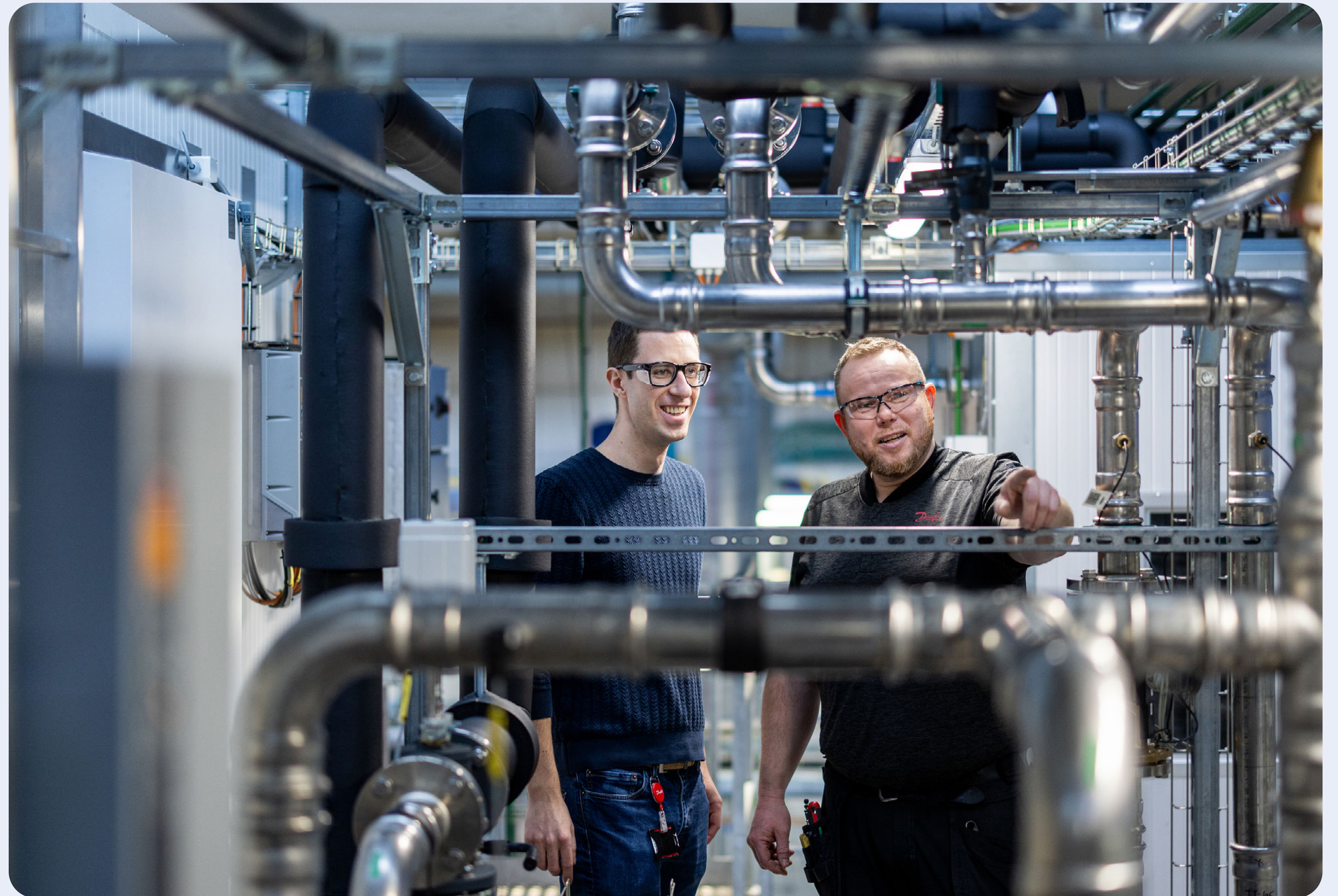


# Let's elevate heat pump potential

Exploring new technologies can unlock significant opportunities for innovation and efficiency. At Danfoss, we offer advanced components designed for industrial heat pumps, capable of reaching temperatures up to 120°C/248°F now, with advancements towards 150°C/302°F on the horizon.

Discover our portfolio for high-temperature heat pumps.





# Typical system configurations (Chiller/HP)

**Scrolls:** up to 6 compressors in 2 circuits (3 compressors per circuit)

**BOCK® semis:** up to 5 compressors in single circuit

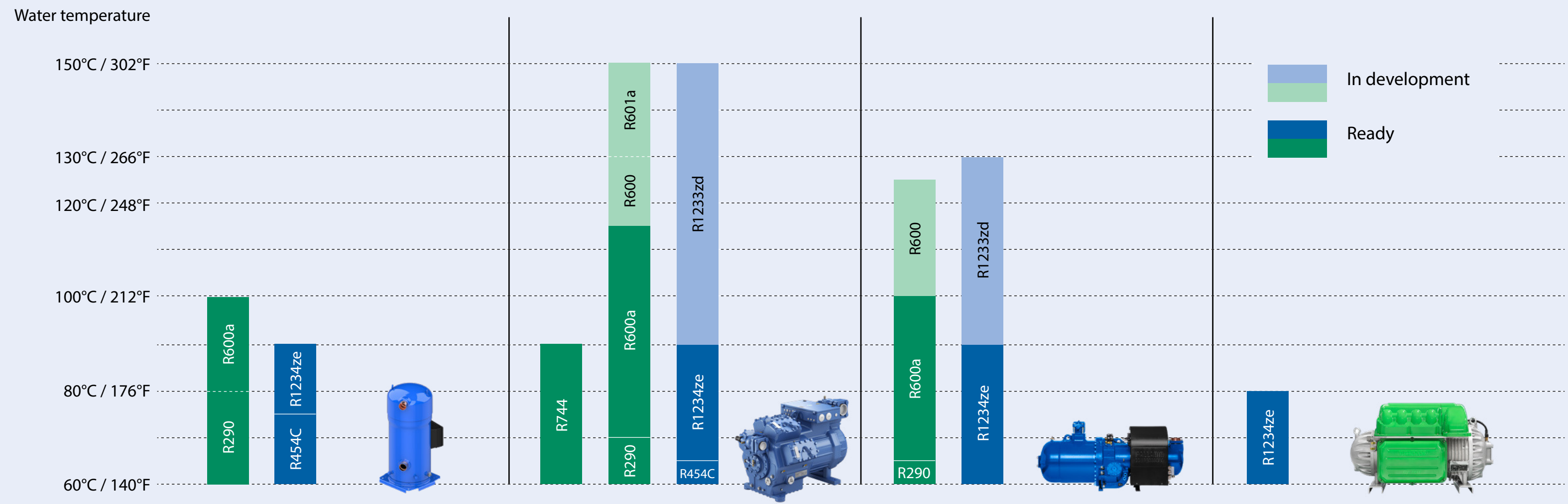
**Turbocor® centrifugals:** up to 4 compressors in single circuit

**Screws:** up to 2 compressors in 2 circuits (1 compressor per circuit)

## Reference operating conditions

Water temperature	SST	SDT	SH	SC	Possible refrigerants
Up to 80°C / 176°F	20°C / 68°F	85°C / 185°F or max**	10 or 0*	5	R134a / R1234ze / R515B / R454C / R290 / R744***
Up to 90°C / 194°F	20°C / 68°F	95°C / 203°F or max**	10 or 0*	5	R1234ze / R515B / R600a / R744***
Up to 100°C / 212°F	20°C / 68°F	105°C / 221°F or max**	10 or 0*	5	R600a
Up to 120°C / 248°F	40°C / 104°F	125°C / 257°F or max**	10 or 0*	5	R1233zd / R600a
Up to 130°C / 266°F	40°C / 104°F	135°C / 275°F or max**	10 or 0*	5	R1233zd / R600
Up to 150°C / 302°F	40°C / 104°F	155°C / 311°F or max**	10 or 0*	5	R1233zd / R601a

- \* If Turbocor®
- \*\* If the compressor cannot reach the required SDT, use the max available SDT
- \*\*\* For CO<sub>2</sub> always use the condition: SST: 5°C/41°F – GC: 40°C/104°F – Trans: 100 bar/10K





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## Compressors

BOCK® CO<sub>2</sub> transcritical  
compressor range

Swept volume  
at 50 Hz:

- 1.7 m<sup>3</sup>/h to 59.1 m<sup>3</sup>/h
- Up to 97.7 m<sup>3</sup>/h (2026)

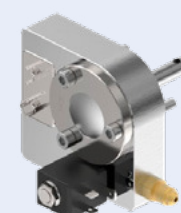
at 60 Hz:

- 73 Ft<sup>3</sup>/h to 2506 Ft<sup>3</sup>/h (2-116 HP)
- Up to 4139 Ft<sup>3</sup>/h



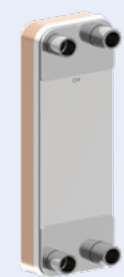
## Compressor oil management

COM



## Heat exchangers

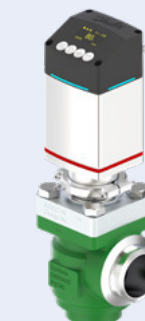
BPHE: H48T CH



## High pressure, gas by-pass and expansion valves

CCMT

ICMTS



## Controllers

Alsmart®



## Variable frequency drives

VLT



## Pressure transmitters and switches

AKS 2050

CKB CO<sub>2</sub>



## Gas detection

DGS



## Line components

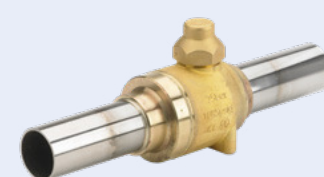
NRVT, CHV 140B,  
FIA 140B



GBC

SVA 140B

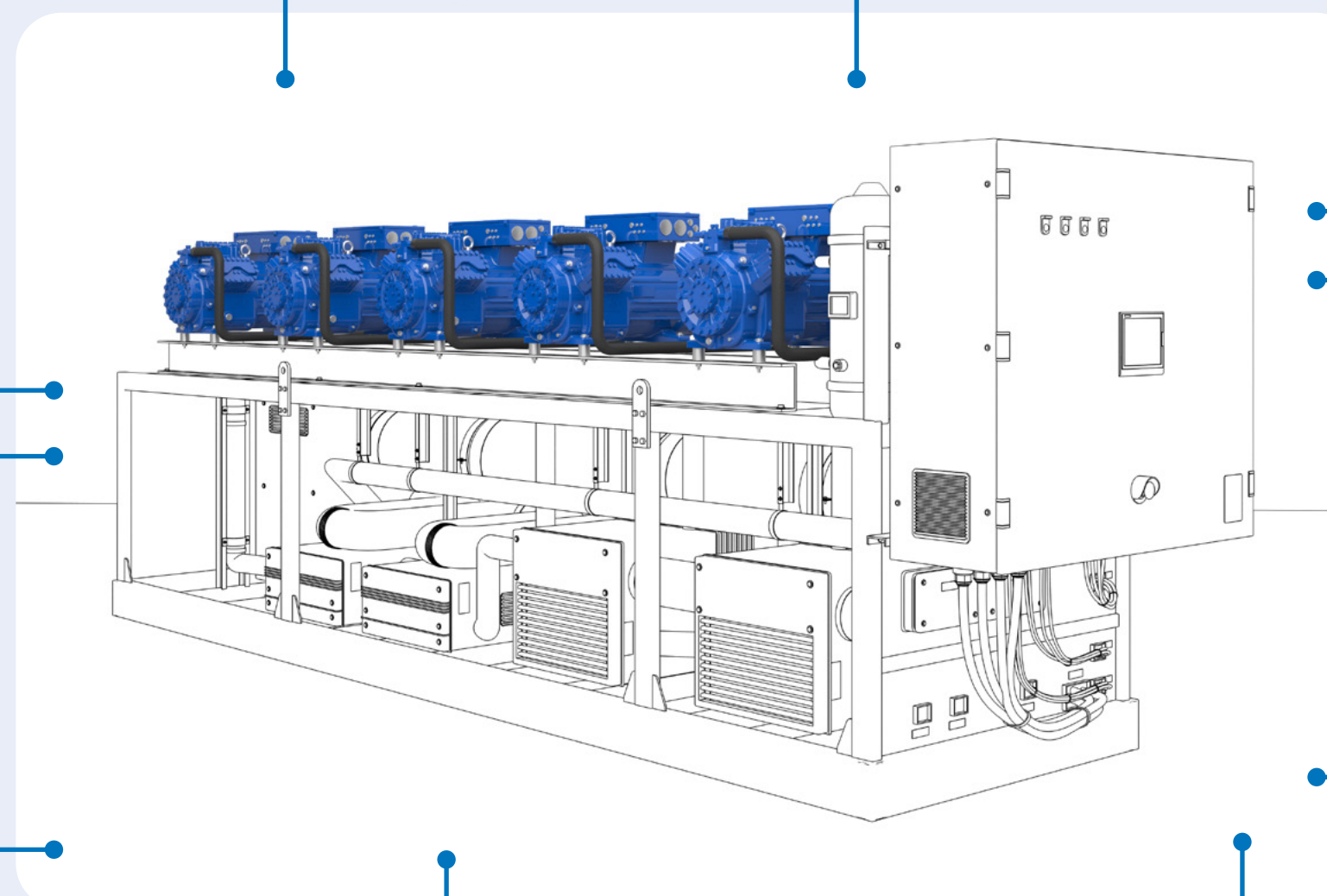
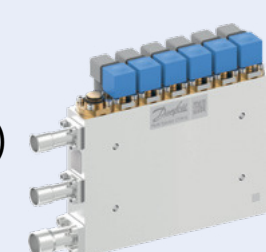
DCR CO<sub>2</sub>



## Ejectors

CTM (multi ejector)

Industrial ejector  
solution



## CO<sub>2</sub> systems up to 3 MW in one rack

- **Advanced CO<sub>2</sub> compressor technology:** BOCK® semi-hermetic reciprocating compressors, providing robust, reliable operation, and serviceability.
- **High-temperature capability:** delivering water temperatures up to 90°C/194°F, ideal for industrial process heat and district heating.
- **Ideal for high temperature lift applications:** in single-stage system or as a booster with a cooling system for efficient industrial heat recovery.
- **High heating density and compact design:** excellent volumetric capacity allows smaller compressors and heat exchangers, reducing system footprint.
- **Danfoss portfolio and application expertise:** complete range of components and system know-how ensures reliable design and optimized performance.





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### Line components and controls

Electric expansion  
valves: ETS C



Controls: EKE 100,  
EKF, EKE 2U



### Filter driers



DMB

DCB

DCR



### Compressors

PSG scrolls  
System capacities  
up to 500 kW



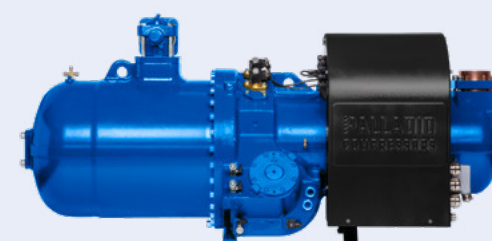
DSN scrolls  
System capacities  
up to 700 kW



BOCK® semi-hermetic pistons  
System capacities  
up to 1.5 MW



Palladio screws  
System capacities  
up to 3 MW



Ball valves  
Check valves  
Sight glasses



### Safety valves

SFA 10



### Heat exchangers

BHPE (up to 500 kW)



### Sensors and gas detectors

DST P110

DST G290

AKS 11



### Variable frequency drives

VLT



### Solenoid valves

EVR



### System controller

Alsmart®



## Hydrocarbon systems up to 3 MW

- **Compressor and application flexibility:** three compressor technologies, providing optimized efficiency and performance across a wide range of capacities, temperature levels, and load conditions.
- **High-temperature capability:** water temperatures up to 115°C/239°F today, and 130°C/266°F in our sights. Suitable for district and process heating, and steam generation.
- **Robust performance under high lift conditions:** low discharge temperatures and stable oil return ensure dependable operation in demanding industrial duty cycles.
- **Integrated heating and cooling flexibility:** can simultaneously deliver process heating and cooling, enabling energy recovery and higher overall system efficiency.
- **Danfoss application expertise and safety compliance:** a complete range of A3-rated components, engineered for safe and efficient operation in large systems.

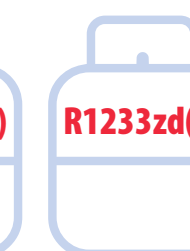
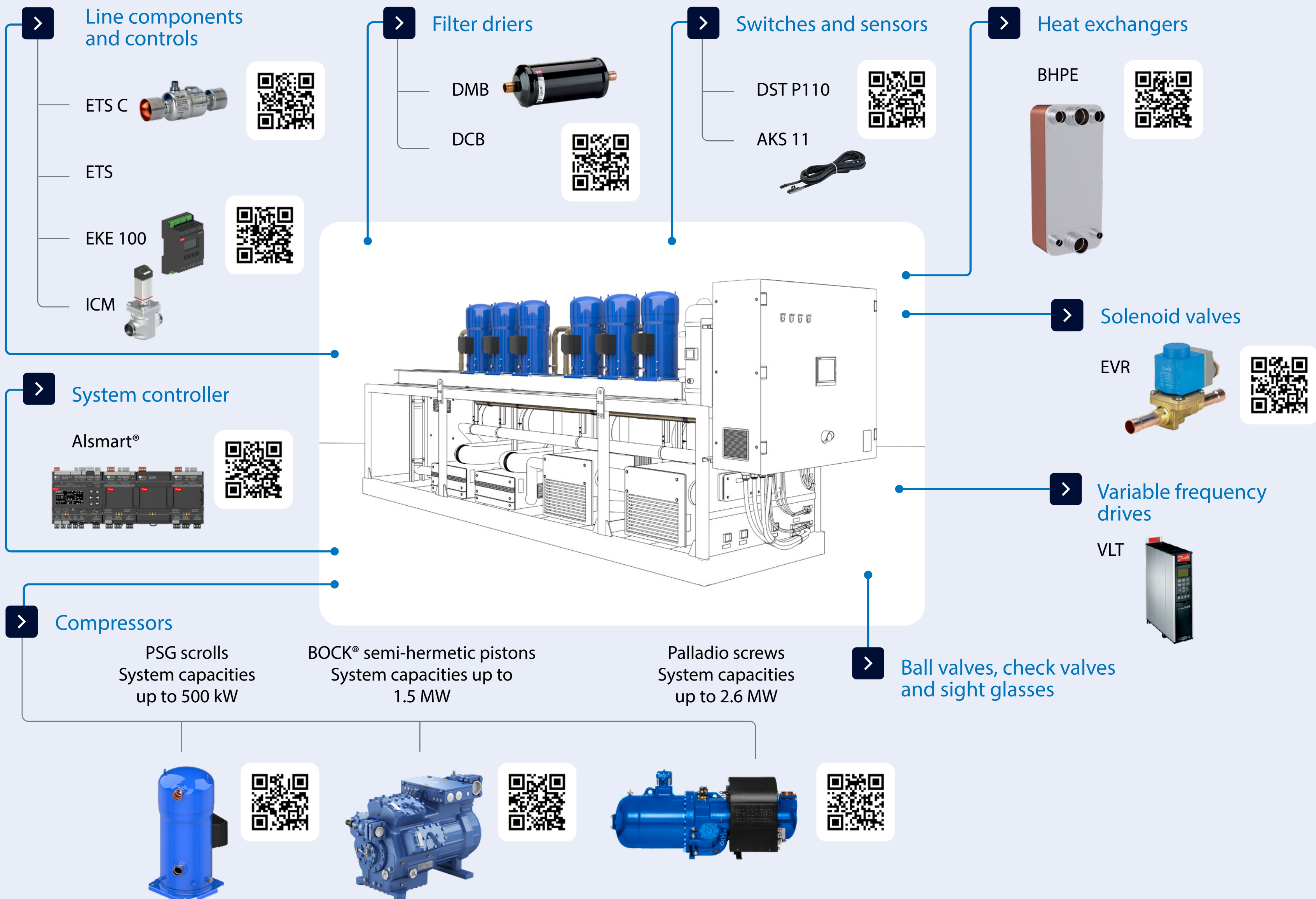




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## HFO systems up to 3 MW

- **Compressor and application flexibility:** three compressor technologies, enabling precise capacity matching and modular design for HFO-based industrial heat pumps.
- **High-temperature capability:** delivering water temperatures up to 90°C/194°F with R1234ze now, and 130°C/266°F in our sights with R1233zd. Suitable for industrial hot water, district and process heating.
- **Stable, reliable operation:** components engineered for durability and long-term industrial performance, ensuring low downtime.
- **High efficiency and system compatibility:** similar pressures and capacities to HFCs allow straightforward integration or retrofit.
- **Danfoss portfolio and application expertise:** complete product portfolio, backed by industrial application know-how, ensures optimized system performance.





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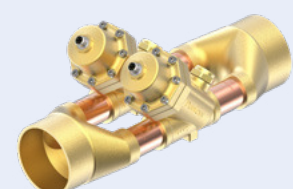
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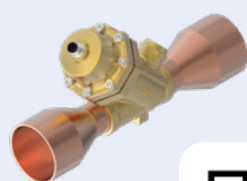


### Line components and controls

ETS L/P



EKE 100

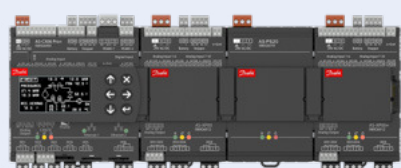


PTS



### Controllers and cloud services

Alsmart®



TurbocorCloud®



### Filter driers

DMB



DCB



### Liquid level control

AKS 4100

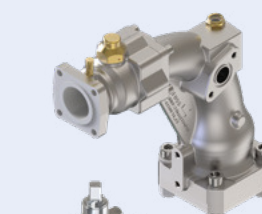


LLS 4000

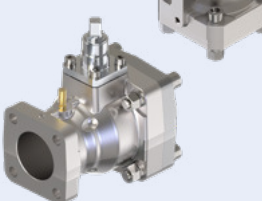


### System protection

OFC



OFB



### Ball valves, check valves, solenoid valves and sight glasses



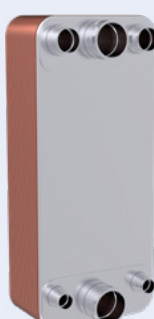
### Compressors

Turbocor® oil free  
centrifugal compressors  
System capacities  
up to 3.5 MW

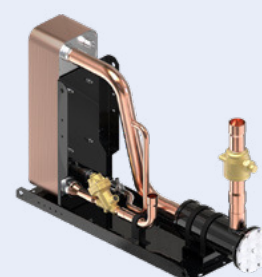


### Heat exchangers

BHPE



### Economizers



## Oil-free HFO systems up to 3.5 MW

- **Compressor and technology advantage:** oil-free and friction-free means continuous performance throughout lifetime without efficiency loss from mechanical wear and oil migration that occurs on oiled machines.
- **Medium-temperature capability:** water temperatures up to 80°C/176°F (with Active Cooling option), ideal for medium-temperature industrial process heat.
- **Low vibration and noise:** magnetic bearing means low vibration and noise, improving plant reliability and minimizing mechanical stress on piping and components.
- **Reduced maintenance and longer service life:** no oil management or contamination, minimizing downtime and maintenance.
- **Compact, modular, and flexible integration:** enable easy integration and multi-unit scaling in industrial systems. Entire oil-free portfolio available.





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## Pressure and temperature sensors

AKS

Pt1000



## Safety valves

SFA 10

SFV 20/25

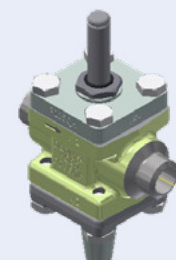


## Flow control

Motor  
operated  
valves ICM

Valve stations  
ICF

Pilot operated servo  
valves/solenoid  
valves ICS



## Line components

SVA

FIA

CHV.SCA

REG



## Gas detection

GD



## Air purger

IPS8



## Liquid level control

AKS 4100

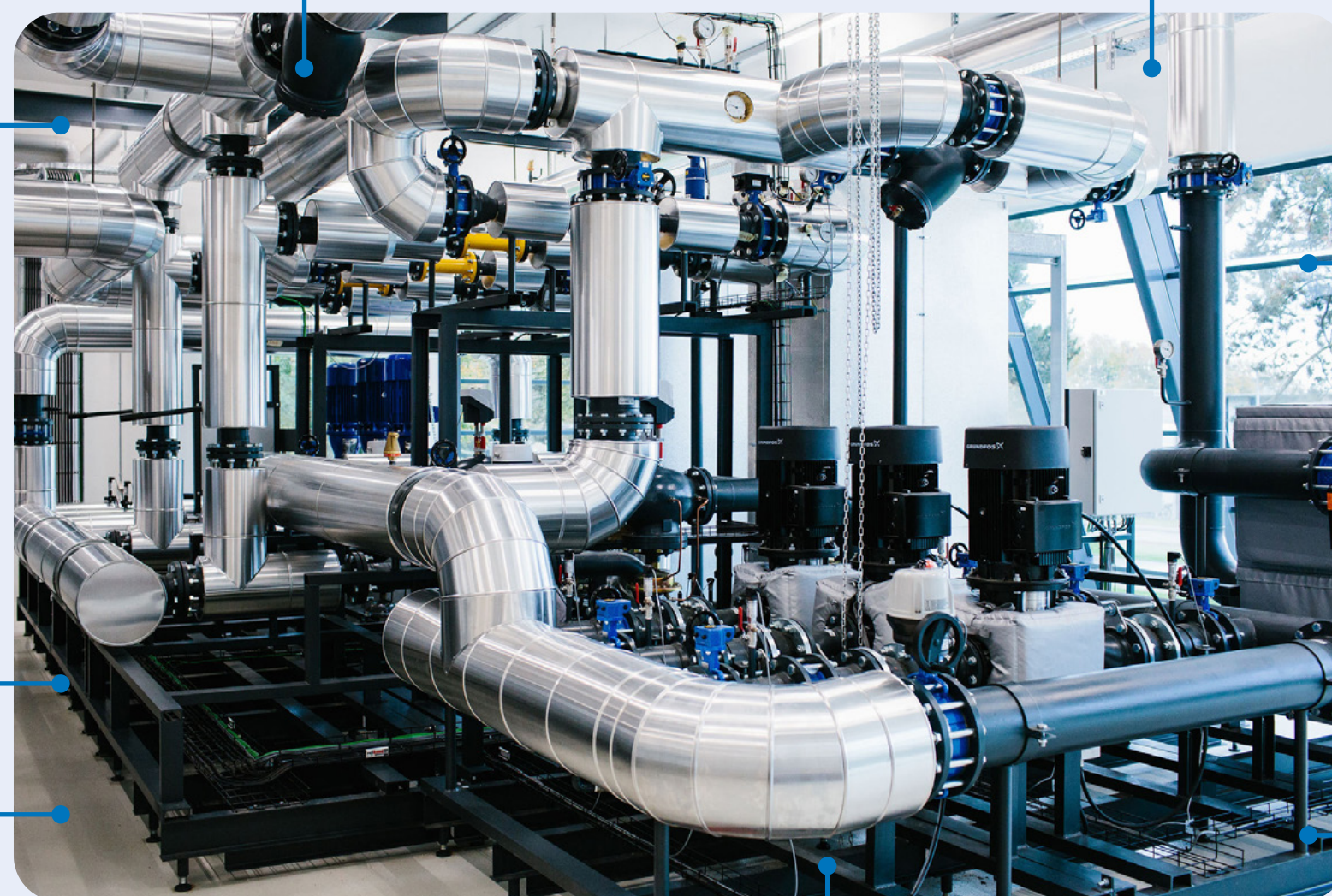
LLS 4000



## Controllers

EKE 347

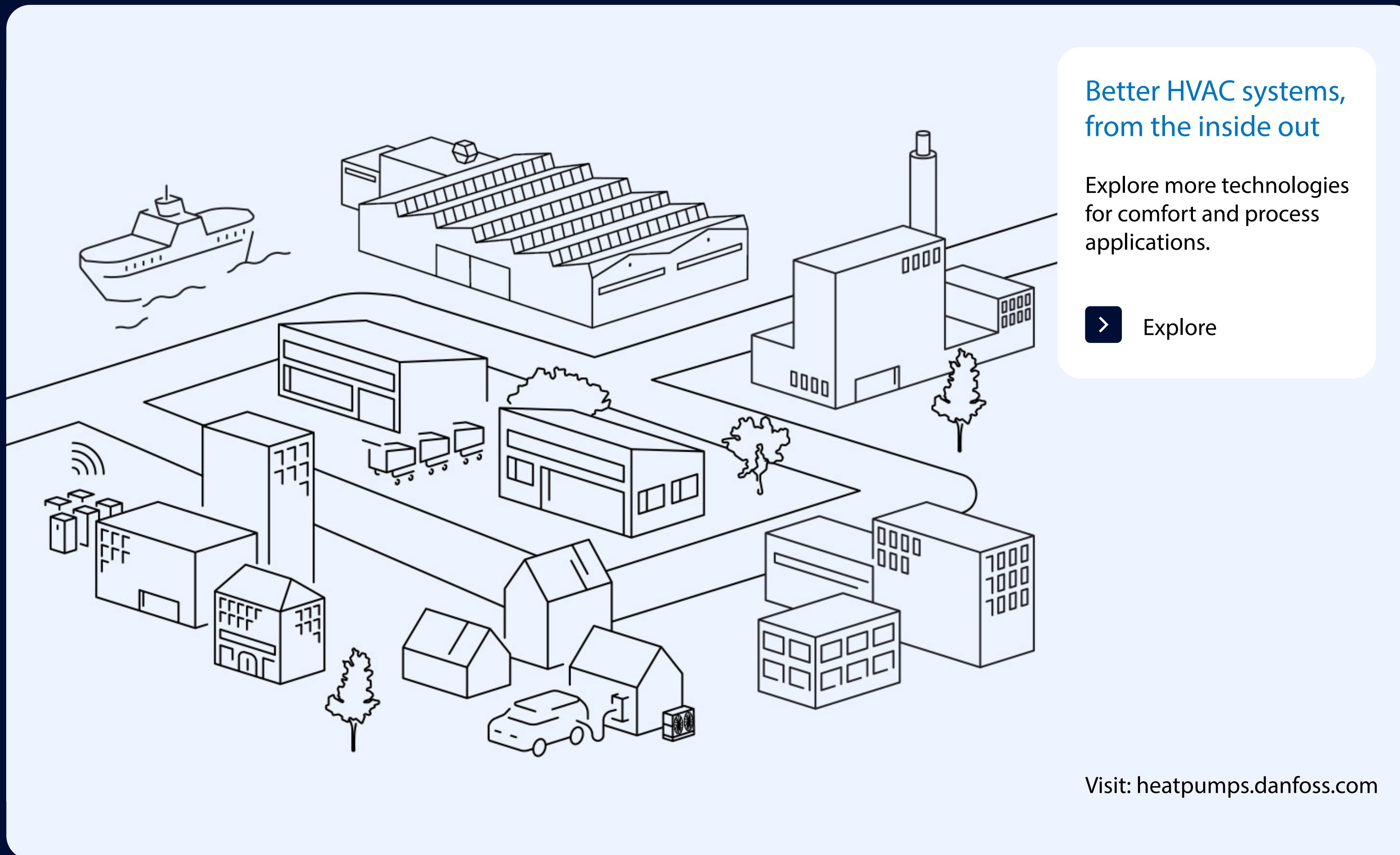
EKE 400



## Ammonia systems up to 10 MW

- **High-performance technology:** Danfoss NH<sub>3</sub> portfolio enable heat pumps to reach water temperatures up to 95°C/203°F.
- **Exceptional efficiency:** designed to deliver outstanding energy performance for demanding industrial applications.
- **Comprehensive portfolio:** covering a wide range of components to meet any industrial heat pump requirement.
- **Trusted partner:** supporting manufacturers in building reliable, high-quality heat pumps.
- **Innovation meets excellence:** combining cutting-edge technology with proven expertise in industrial heating.





### Better HVAC systems, from the inside out

Explore more technologies  
for comfort and process  
applications.

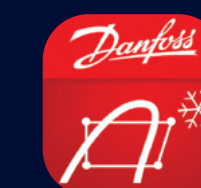
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