

Thursday, 1 October 2026, 16.00 - 16.20 h

Pieter Salomez

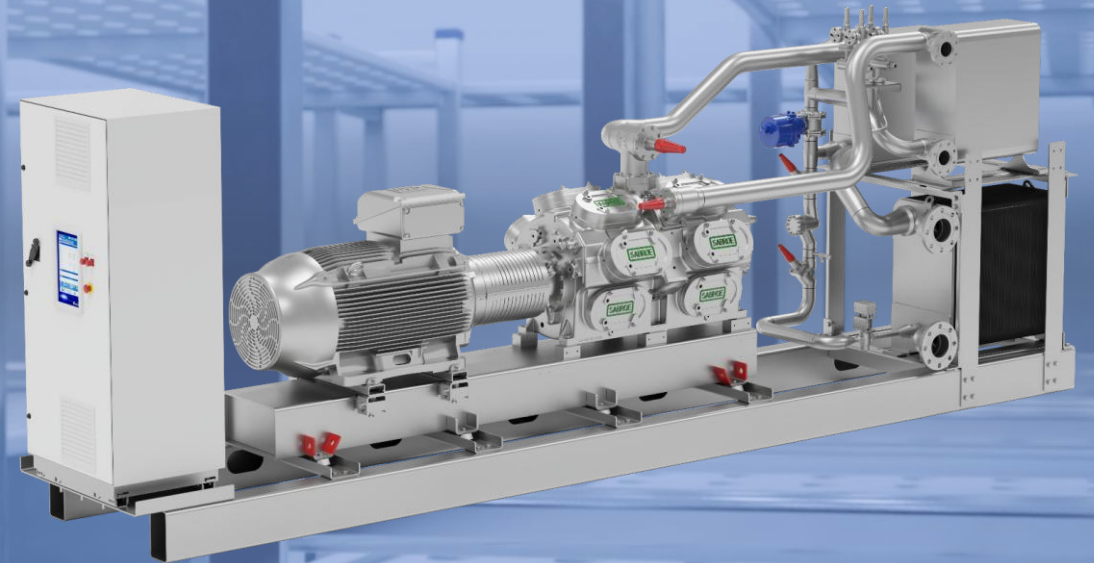
For more information, visit www.sabroe.com



HitemHP

High-temperature Heat Pump

Decarbonise at higher temperatures, up to 122°C



The power behind **your mission**

A wide portfolio of industrial refrigeration products

Reciprocating Compressors



SMC 100



CMO 20-30



HPC 100



HPO 20



HPX 700



TSMC



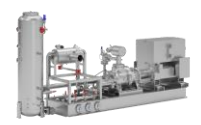
SAB XJF



SAB SGC



SAB SGC HP



SAB HPS HP

Screw Compressors

Chillers



ChillPAC



ComPAC



PAC Recip



PAC Screw



CAFP



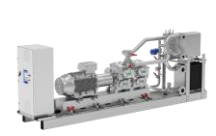
HeatPAC



DualPAC



HicaHP



HitemHP

Heat Pumps

Controls



UniSAB 4



Chiller and HP
Plant Controller



Panels



Vibration
monitoring



ISAC

Heat Exchangers and Vessels



Cascade



Condensers



Evaporators



Desuperheaters



Economisers



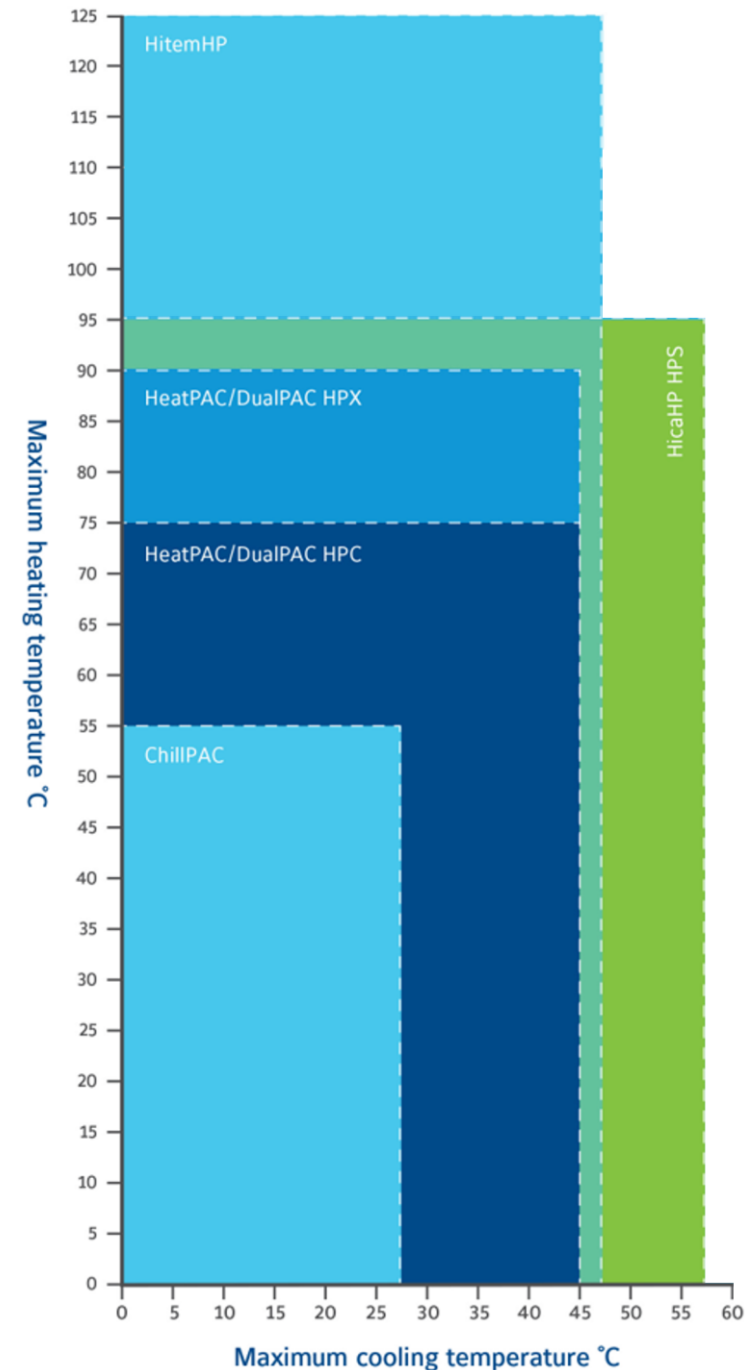
Vessels

Sabroe heat pump temperature ranges

Higher degrees and higher efficiency applying Sabroe green technology

Heat pumps are designed to transfer heat, rather than generate it, enabling a much higher conversion of electricity to useful process heat

At Sabroe, we have decades of experience developing industrial heat pumps based on the principles of industrial refrigeration



Industrial heat pumps-Overview

ChillPAC

- Ammonia - Recip
- Outgoing water $\leq 55^{\circ}\text{C}$
- Capacity $\leq 2700\text{ kW}$
- Low refrigerant charge (25-110kg)



HeatPAC-HPX

HeatPAC-HPC

- Ammonia - Recip
- Outgoing water $\leq 75^{\circ}\text{C}$
- Capacity $\leq 2700\text{ kW}$
- Low refrigerant charge (25-110kg)



DualPAC-HPX

DualPAC-HPC

- Ammonia - Recip
- Outgoing water $\leq 90^{\circ}\text{C}$
- Capacity $\leq 2700\text{ kW}$
- Low refrigerant charge (25-110kg)
- Temp. lift $\leq 110\text{K}$
- $-20^{\circ}\text{C} \rightarrow +90^{\circ}\text{C}$



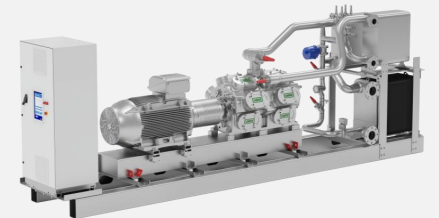
HicaHP-HPS

- Ammonia - Screw
- Outgoing water $\leq 95^{\circ}\text{C}$
- Capacity $\leq 24\text{ MW}$
- Temp. lift $\leq 110\text{K}$



HitemHP

- Isobutane or Butane
- Recip
- Outgoing water $\leq 122^{\circ}\text{C}$
- Capacity $\leq 1200\text{ kW}$
- Low refrigerant charge



Compressor colouring

Heating supply up to 56°C



The **Sabroe** compressors are configured for use in refrigeration, cooling, and air conditioning

Heating supply up to 90°C



The **Sabroe** compressors are specifically for use in heat pumps and heat-recovery setups, And are therefore specially designed to cope with the high pressures normally encountered in such systems.

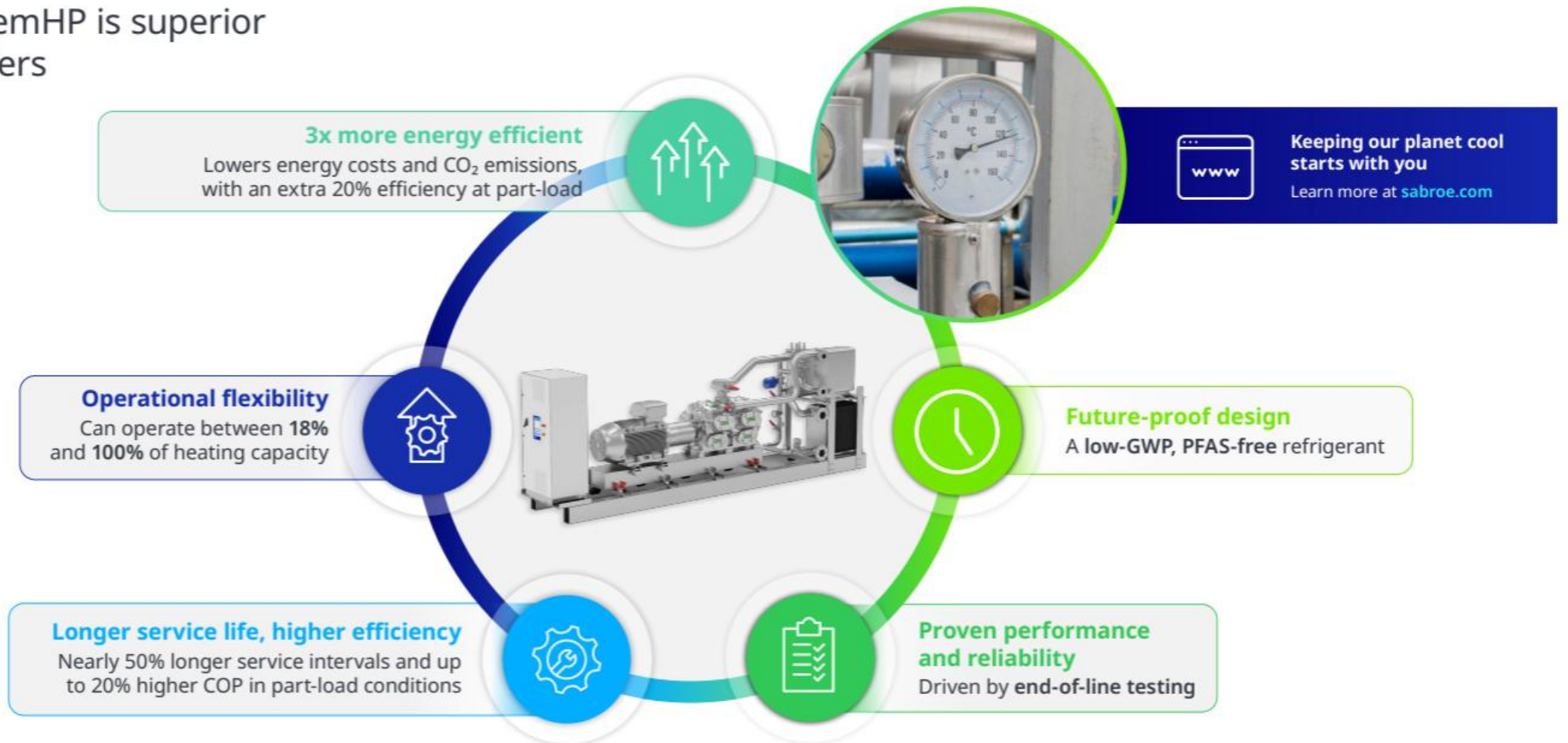
Heating supply up to 122°C



The **Sabroe** compressors are specifically for use in > 90°C heat pumps, and are therefore specially designed to cope with the high temperatures

Boiling it down

Why Sabroe HitemHP is superior to standard boilers

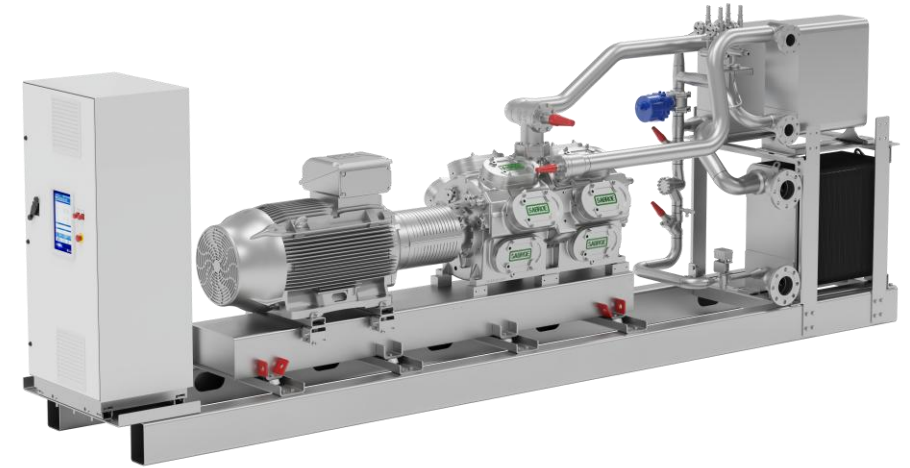


Sabroe HitemHP heat pump

Single-stage, low-pressure, hydrocarbon-based heat pumps with capacity range of 100-1000 kW and temperatures up to 122°C

HitemHP helps you to meet sustainability goals and market temperature demands by providing green technology based on natural refrigerants (butane and iso-butane).

- High energy efficiency by utilizing **Sabroe SMC recip.** compressors
- Open recip. compressor enables exceptionally low part-load percentage
- Large temperature lift, **up to 90K**
- Low operational pressure (**max. 25bar**)
- Suitable for indirect steam production
- Small footprint, 6 x 1 x 2 m (L x W x H)



Food &
Beverage



Process
Industries

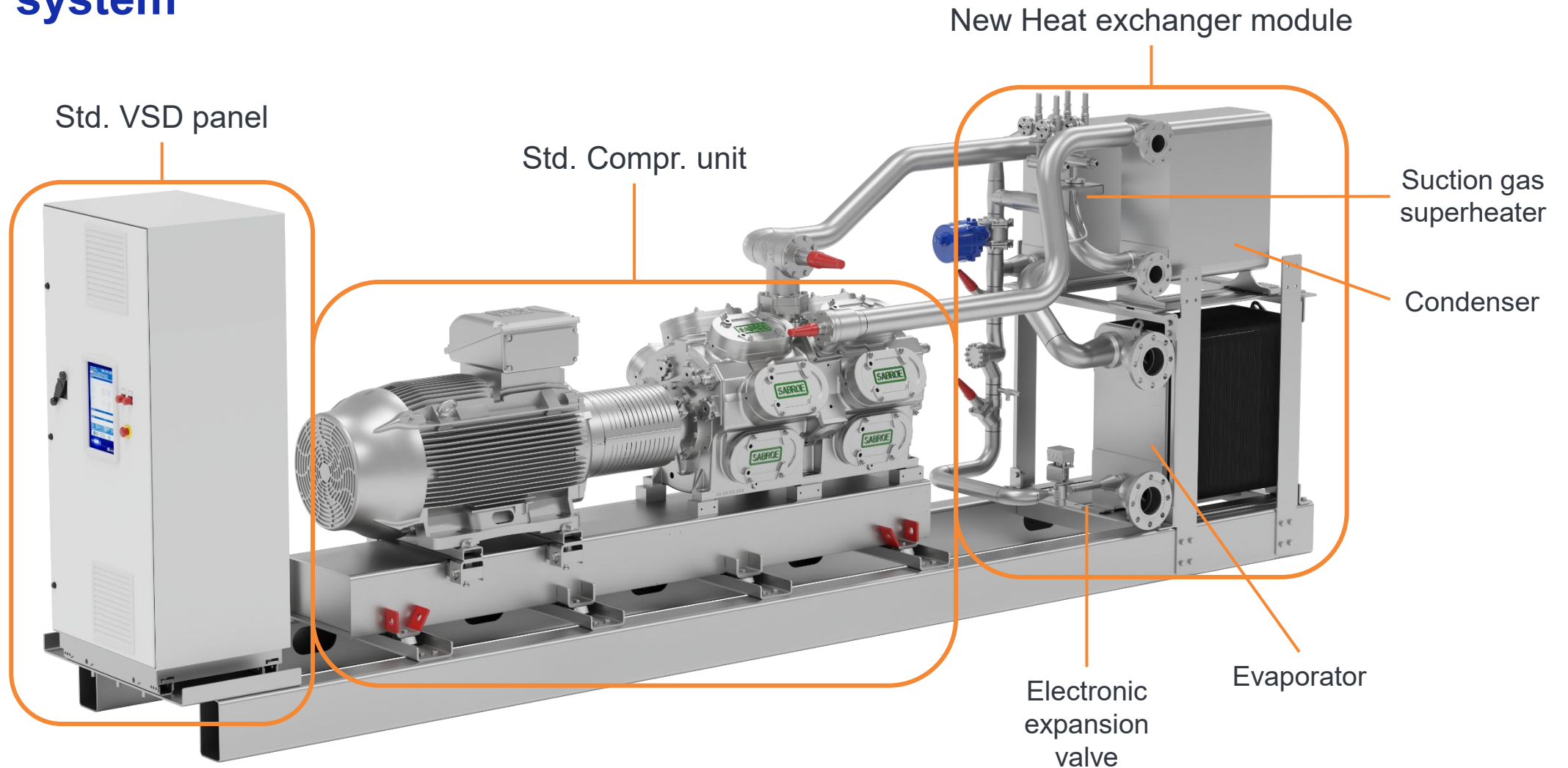


Chemical &
Petrochemical

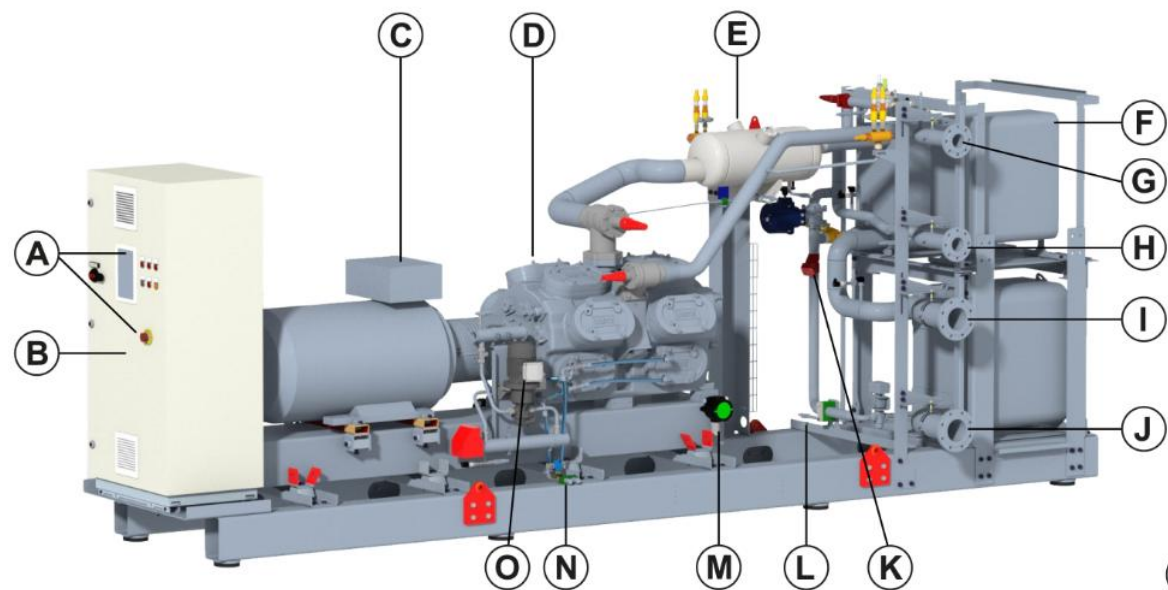


Pharmaceutical &
Healthcare

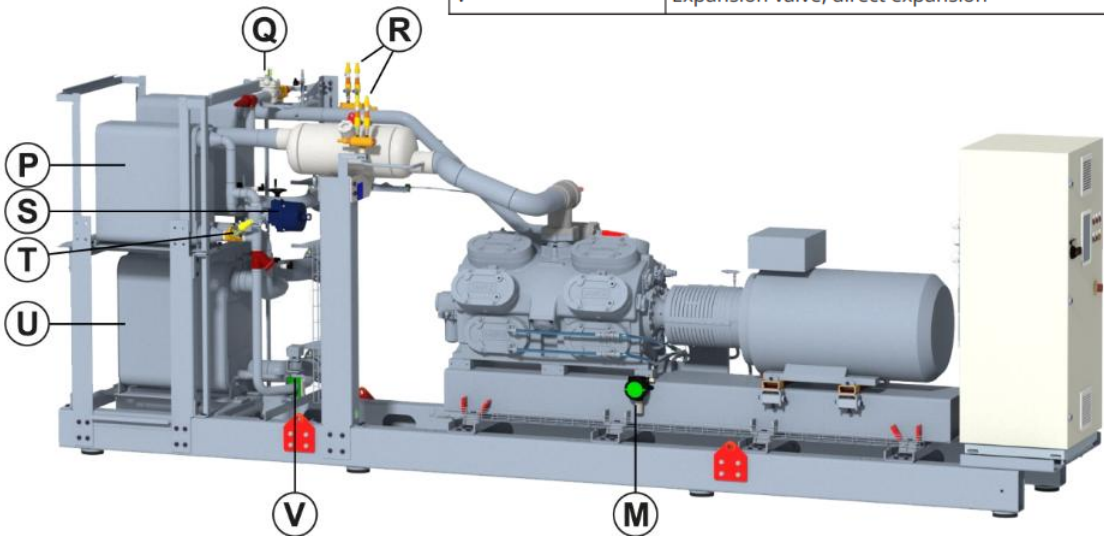
HitemHP system



Components of the HitemHP heat pump



Callout	Description
A	UniSAB 4, HitemHP controller and emergency stop built into electrical panel
B	Electrical panel
C	Motor
D	Compressor
E	Secondary liquid separator
F	Condenser
G	Outlet condenser, brine
H	Inlet condenser, brine
I	Inlet evaporator, brine
J	Outlet evaporator, brine
K	Refrigerant filter
L	Refrigerant charge valve and drain valve
M	Refrigerant leakage detector
N	Compressor water cooling inlet/outlet
O	Oil heating system (OHS)
P	Suction gas super heater
Q	Hot gas bypass
R	Safety relief valves
S	Superheat regulation valve
T	Manually operated regulating valve
U	Evaporator
V	Expansion valve, direct expansion

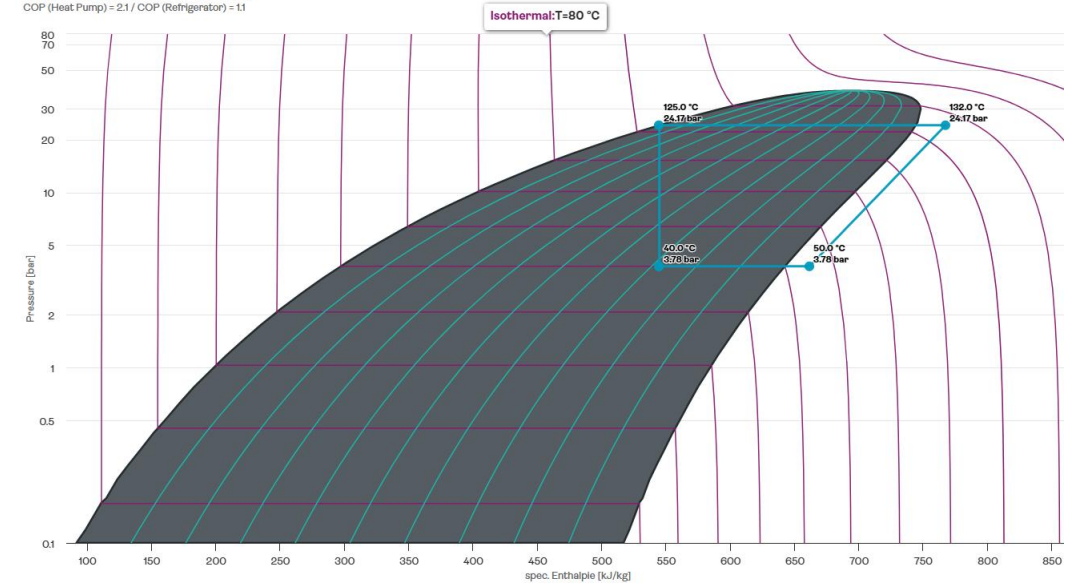


Comparison

- Hydrocarbons such as R600, R600a, and R601 have a strongly right-sloping saturated vapour line in the h-log(p) diagram and are therefore classified as "dry fluids".
- Due to the combination of the shape of the saturation dome and the relatively flat isentrope, the compression of hydrocarbons often remains closer to the saturation range. As a result, sufficient superheating is necessary to ensure dry compression under all operating conditions.
- Due to their lower isotropic exponent, the compression of hydrocarbons is thermodynamically more favorable. For the same pressure ratio, this results in a lower final compression temperature than with ammonia. This keeps compressed gas temperatures, oil load and thermal load on the compressor lower.
- For pentane or butane:
 - larger molecules
 - many rotation and vibration modes;
 - lower k-value.
- Part of the compression work is stored as internal molecular energy, so that the temperature rises less quickly.

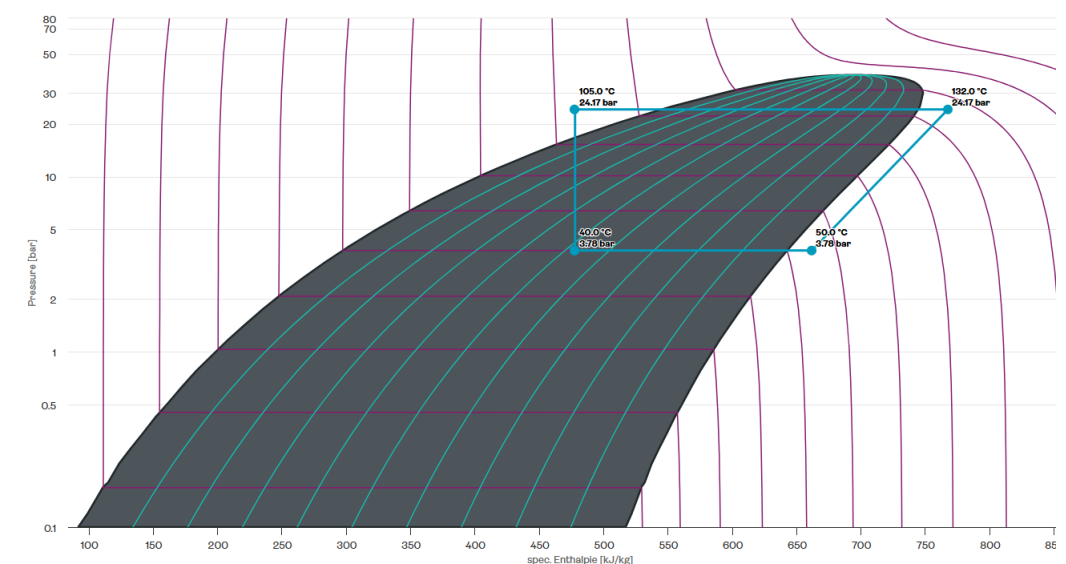
log(p)-h chart R600 (n-Butane)

COP (Heat Pump) = 2.1 / COP (Refrigerator) = 1.1



log(p)-h chart R600 (n-Butane)

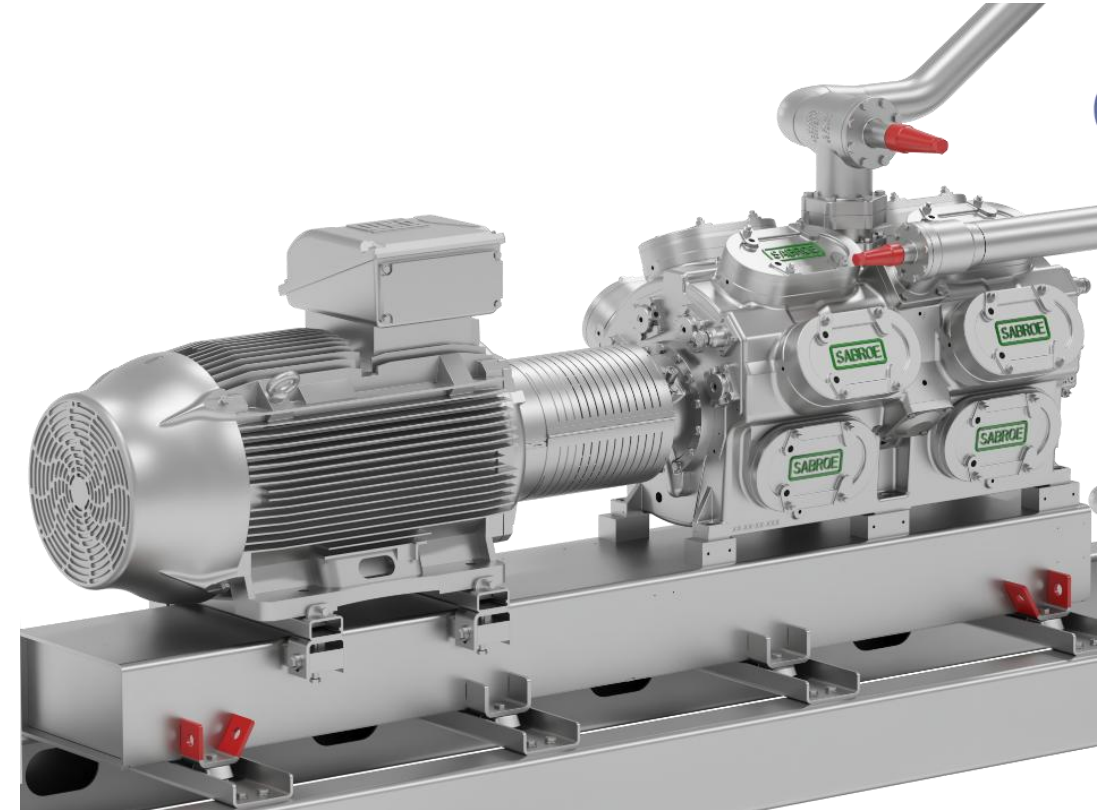
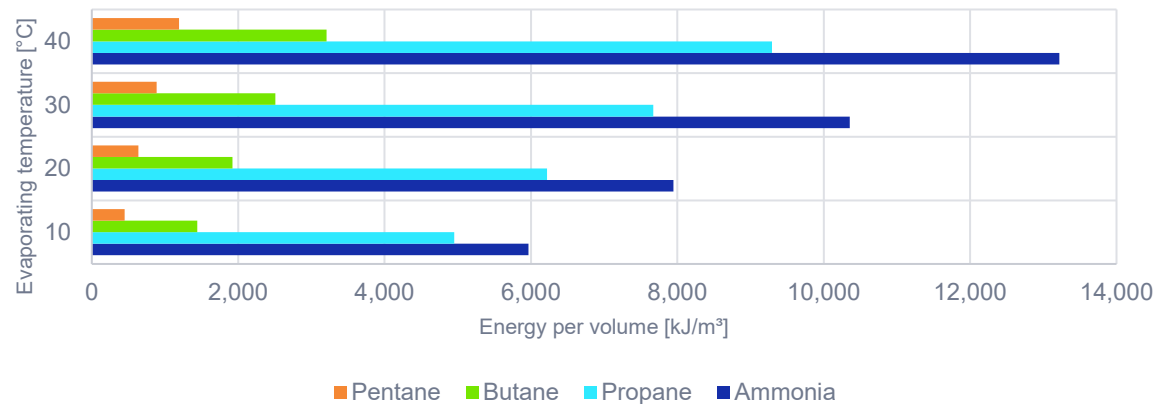
COP (Heat Pump) = 2.73 / COP (Refrigerator) = 1.73



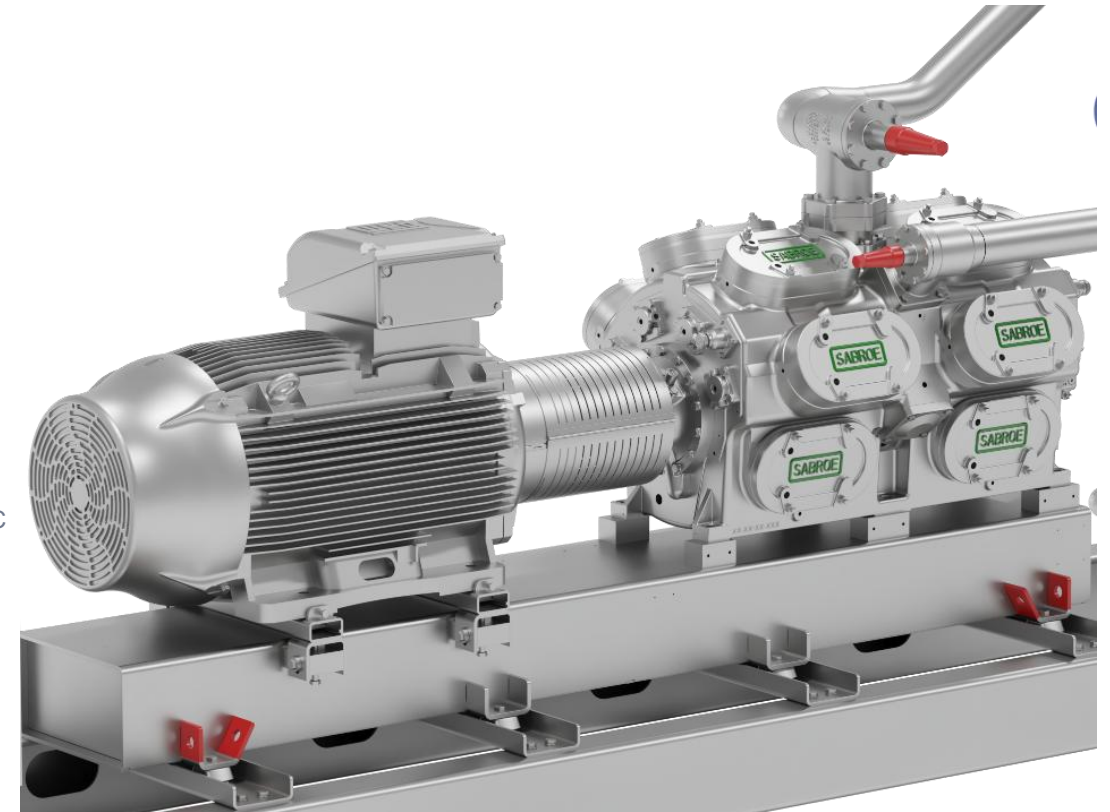
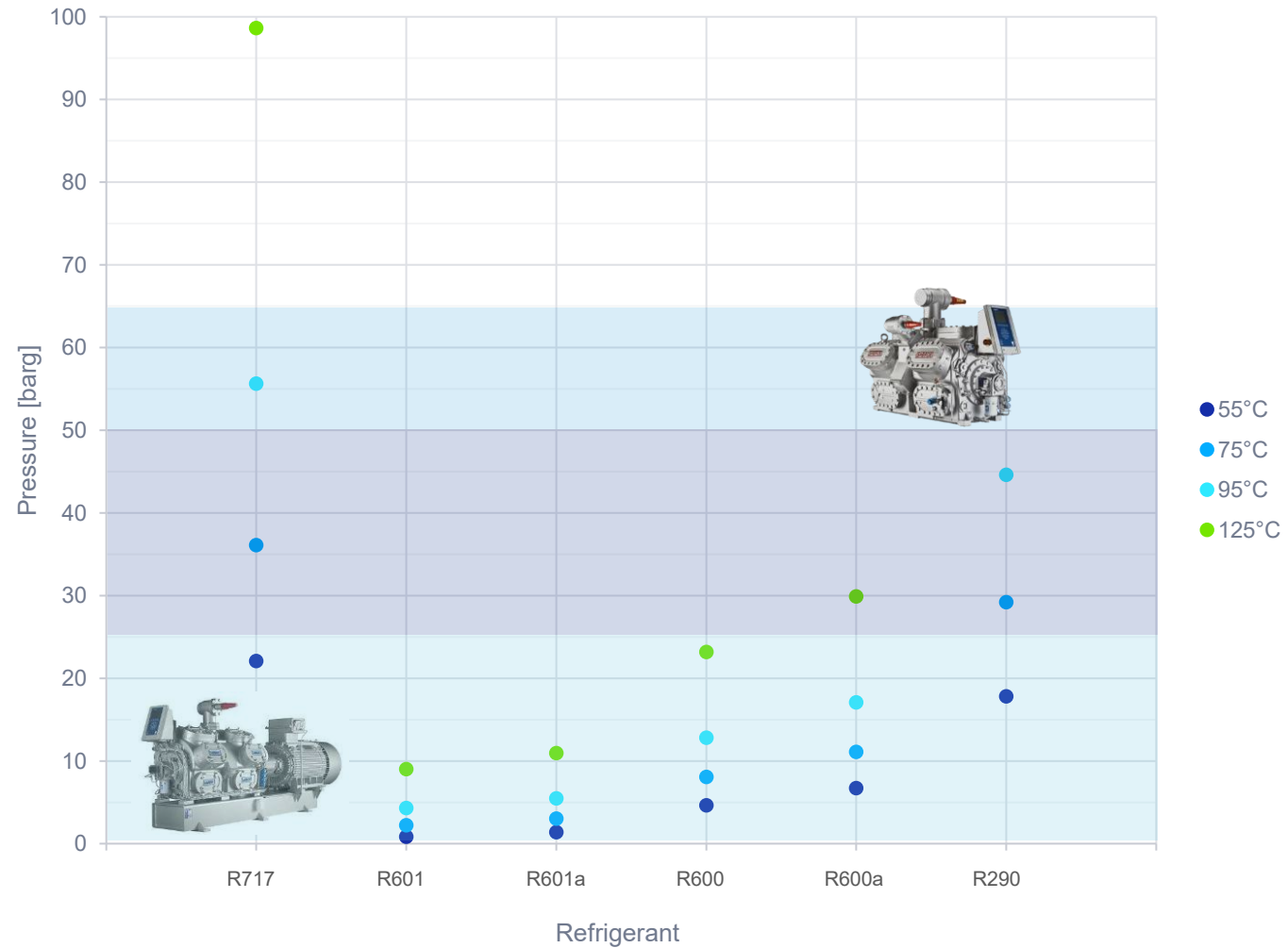
HitemHP compressor range

High flexibility of utilizing Sabroe standard pressure range of compressors

- Sabroe SMC compressor 104, 106, 108, 112 & 116
 - S & L versions up to 1.500 rpm
 - Pentane approx. 10% of ammonia capacity
 - Butane approx. 25% of ammonia capacity
 - Propane approx. 75% of ammonia capacity
- No oil separator needed
- Always without top cooling
- Longer service intervals compared high pressure compressors

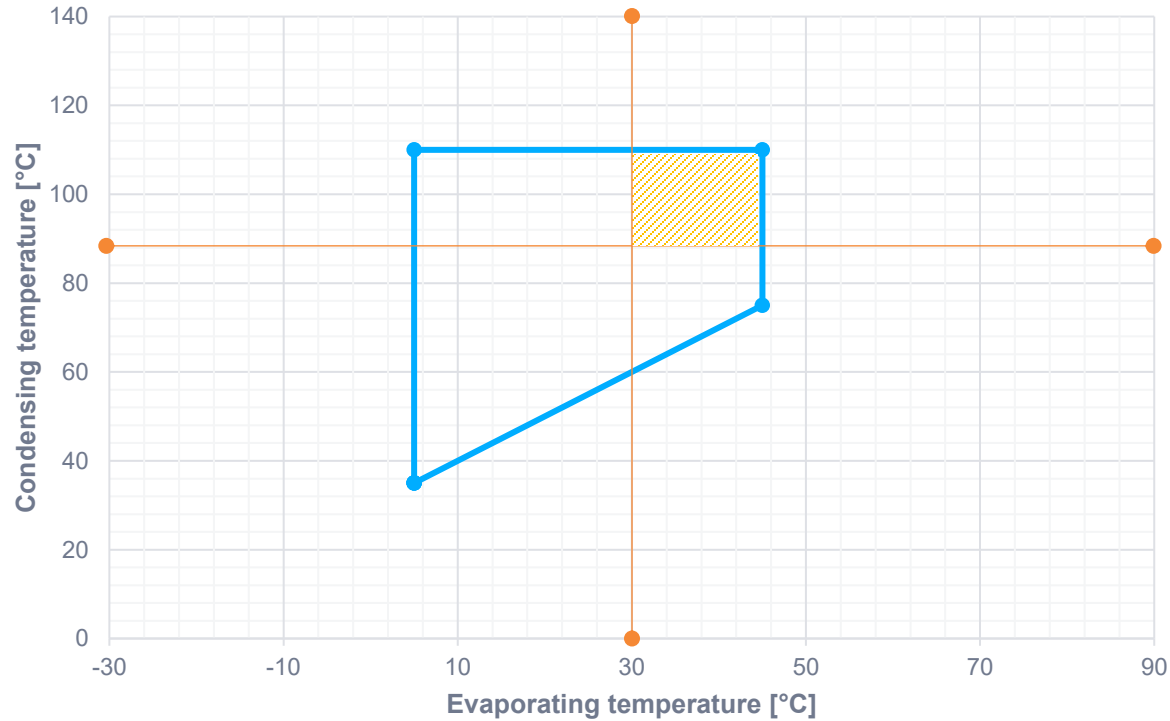


Pressure related to condensing temperatures



HitemHP – standardised & modular industrial heat pump

HitemHP with Iso-Butane / R-600A

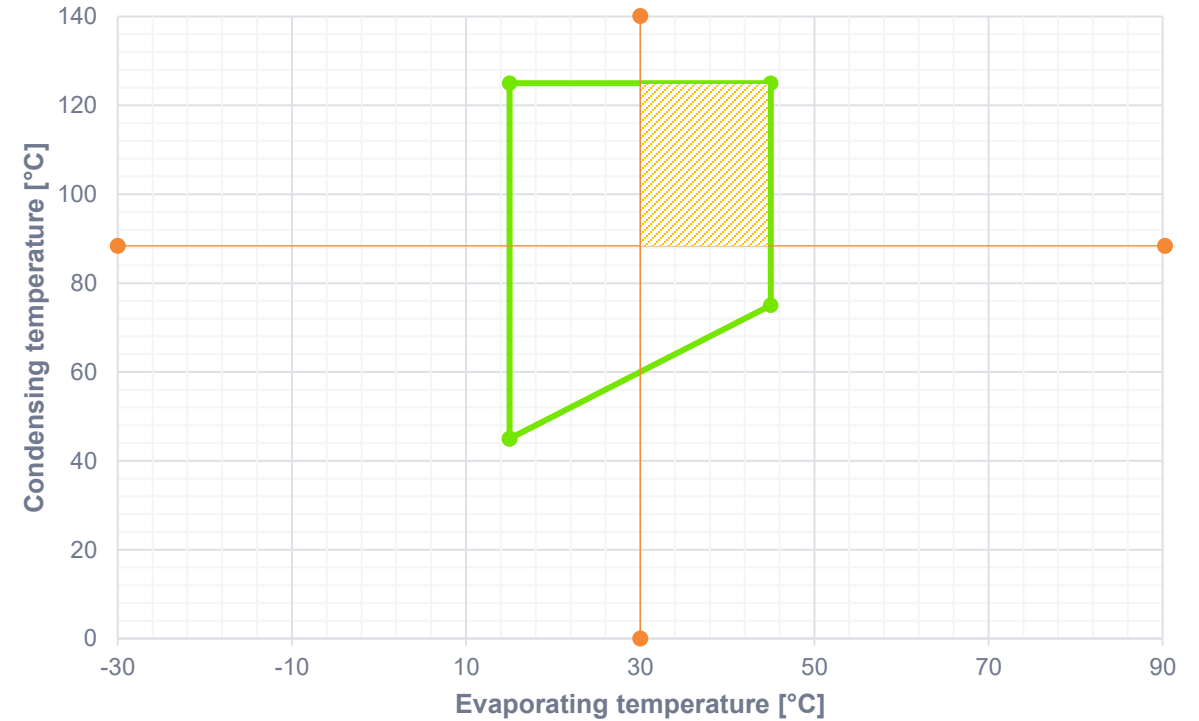


Capacity up to 700 - 800 kW*

*Depending on subcooling

Temperatures up to 107°C

HitemHP with Butane / R-600



Capacity up to 400 - 500 kW*

*Depending on subcooling

Temperatures up to 122°C

HitemHP system – heat pump using hydrocarbon for achieving up to 122°C

Direct expansion system

- Fewer components needed (no liquid separator)
- More compact

No oil separator needed

- Use of oil that is miscible with the refrigerant

Brazed heat exchangers

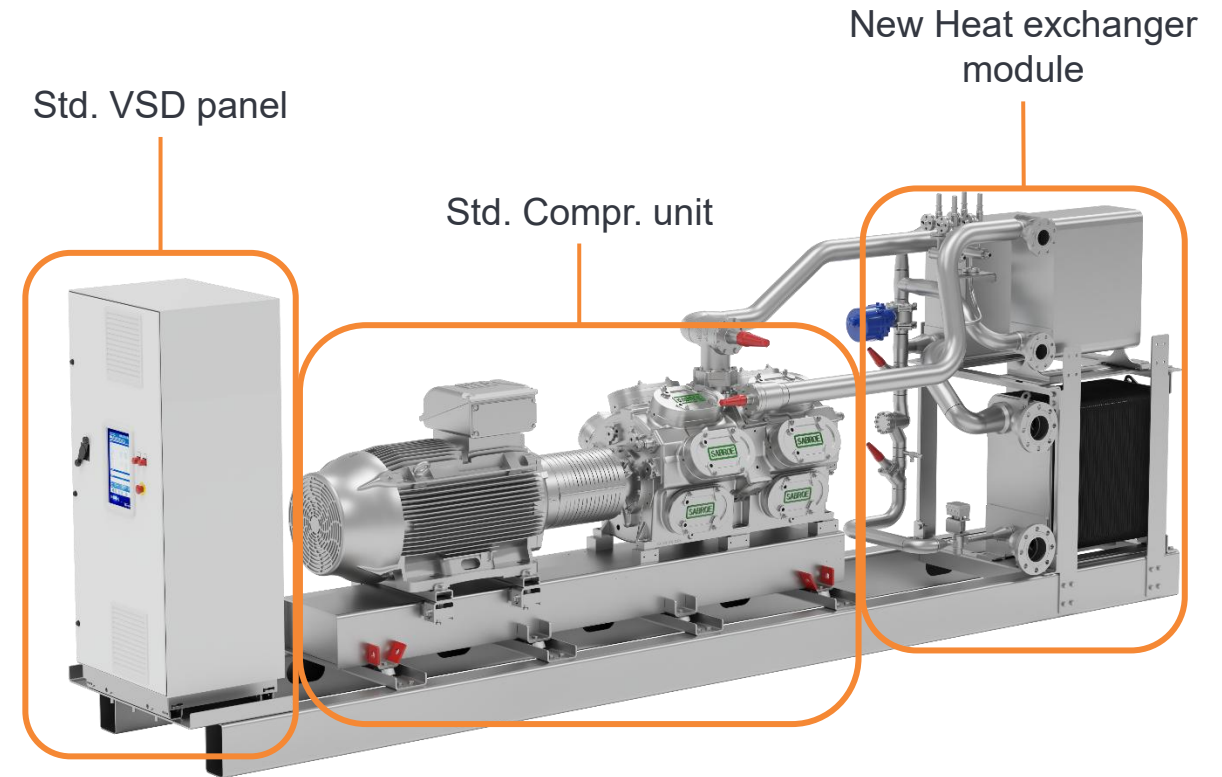
- Lower risk of leakage (no gaskets)
- Lower component cost
- Shorter delivery time

One design multiple refrigerants

- Higher capacity
- Lower cost

Low charge system

- Only one heat exchanger operate as 3-in-1 (desuperheater, condenser and subcooler)
- Fixed refrigerant charge



Enclosure

Enclosure features

- Frame made of aluminium profiles
- Outside plates of aluzinc (0.8 mm) for excellent corrosion resistance
- Perforated galvanised sheet plate inside
- Inside sheet plate is double-cross reinforced
- Roof is waterproofed with bitumen membrane
- 50 mm insulation in panels, 40 mm in doors and removable panels
- Adjustable feet for easy and stable mounting of the enclosure
- Easy service access through hinged doors and removable panels
- ATEX-certified ventilation
- Meets air flow requirements for emergency mechanical ventilation
- Temperature sensors
- Ceiling lights
- Heating panel
- Temperature control for heating and ventilation
- 3 x Gas detector (2 around compr. 1 in ventilation flow)
 - Safety control with siren and signals
 - Pre-alarm: activation of alarm and mechanical ventilation
- Main alarm: automatic stop of refrigerating system
- Compliance: PED and DS/EN 378 Location classification III.



Sabroe heat pumps with optimum service intervals



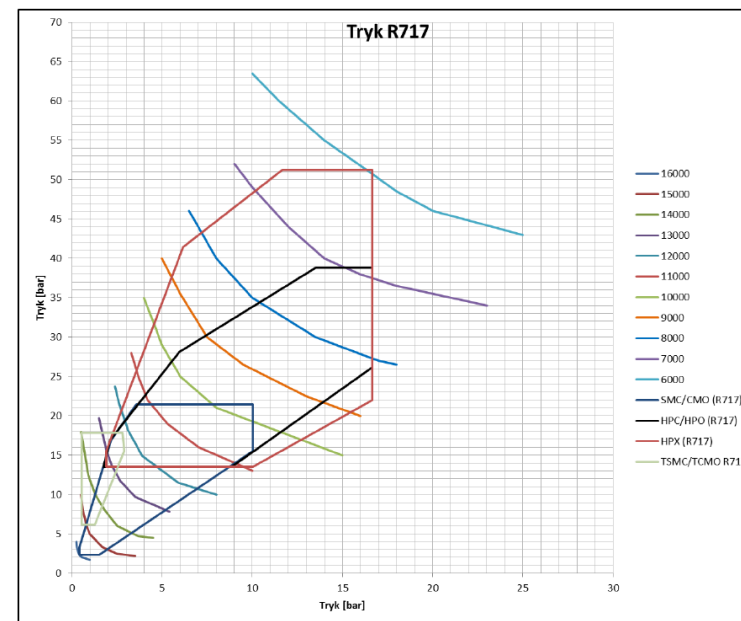
The perfect match: HitemHP and UniSAB 4

Along with SMC, UniSAB 4 offers the possibility of using the integrated load-based service module to optimise the cost of ownership.

The idea is to optimise the length of the service intervals, respecting that wear patterns depend on the average load on the compressor.

Depending on load and speed, the compressor unit will offer tailored service intervals accordingly.

R717 / R744 / HFC / HC

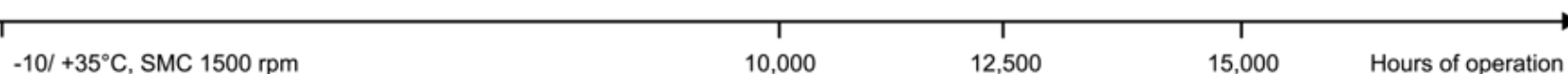


Extended service life

SMC Mk 4 service interval

SMC Mk 5 service interval

SMC Mk 5 load based service interval

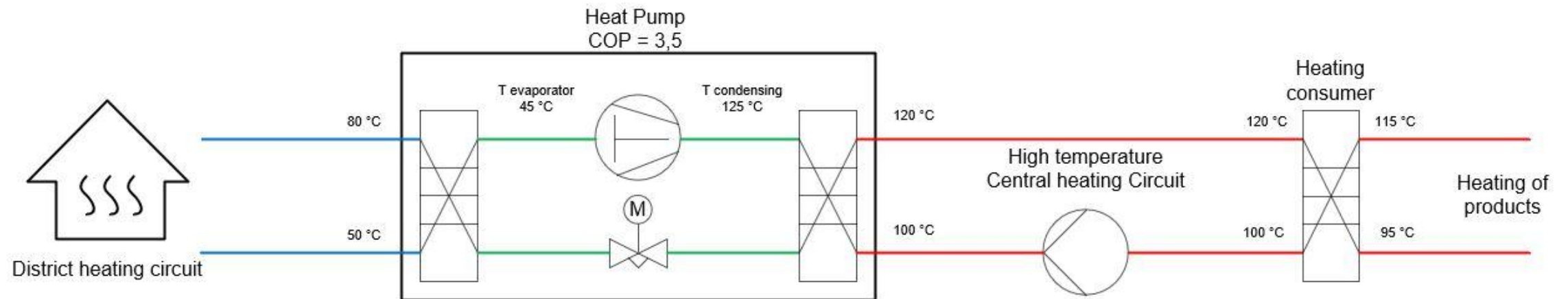


HitemHP application examples

Numerous energy sources

- District heating circuit
- Central heating circuit
- Waste heat from production and processes
- Waste heat from refrigeration plant
- Exhaust gas coolers
- And many more

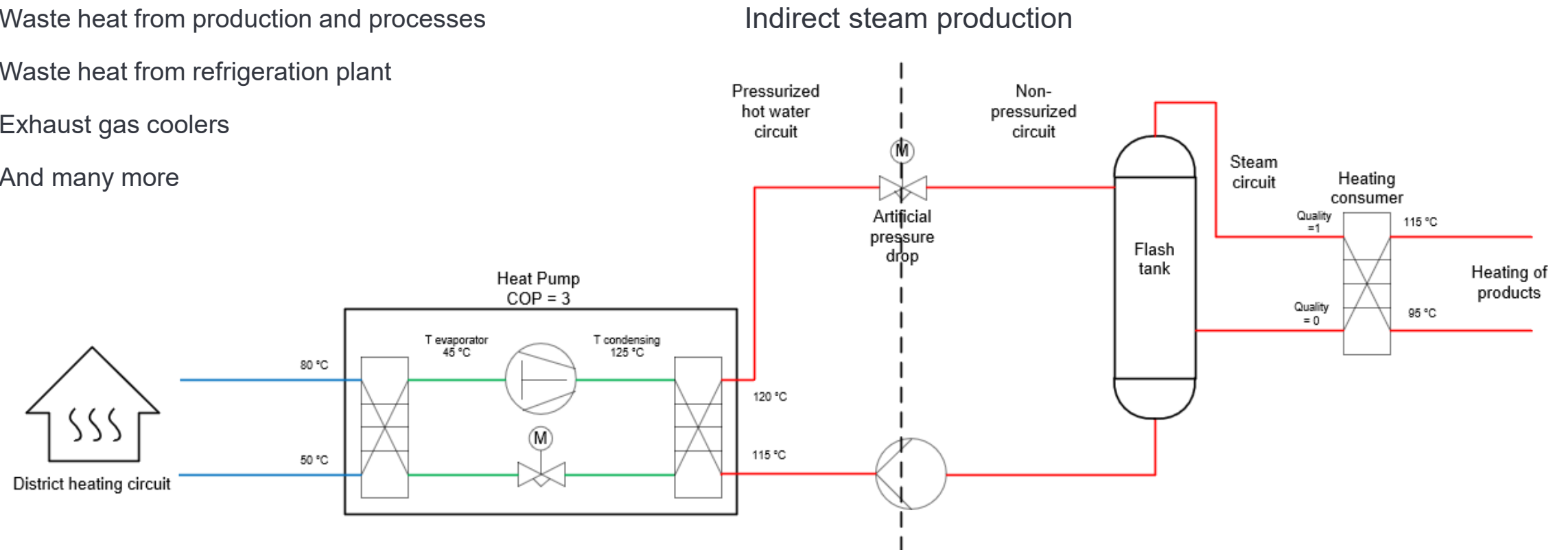
Pressurized hot water circuit



HitemHP application examples

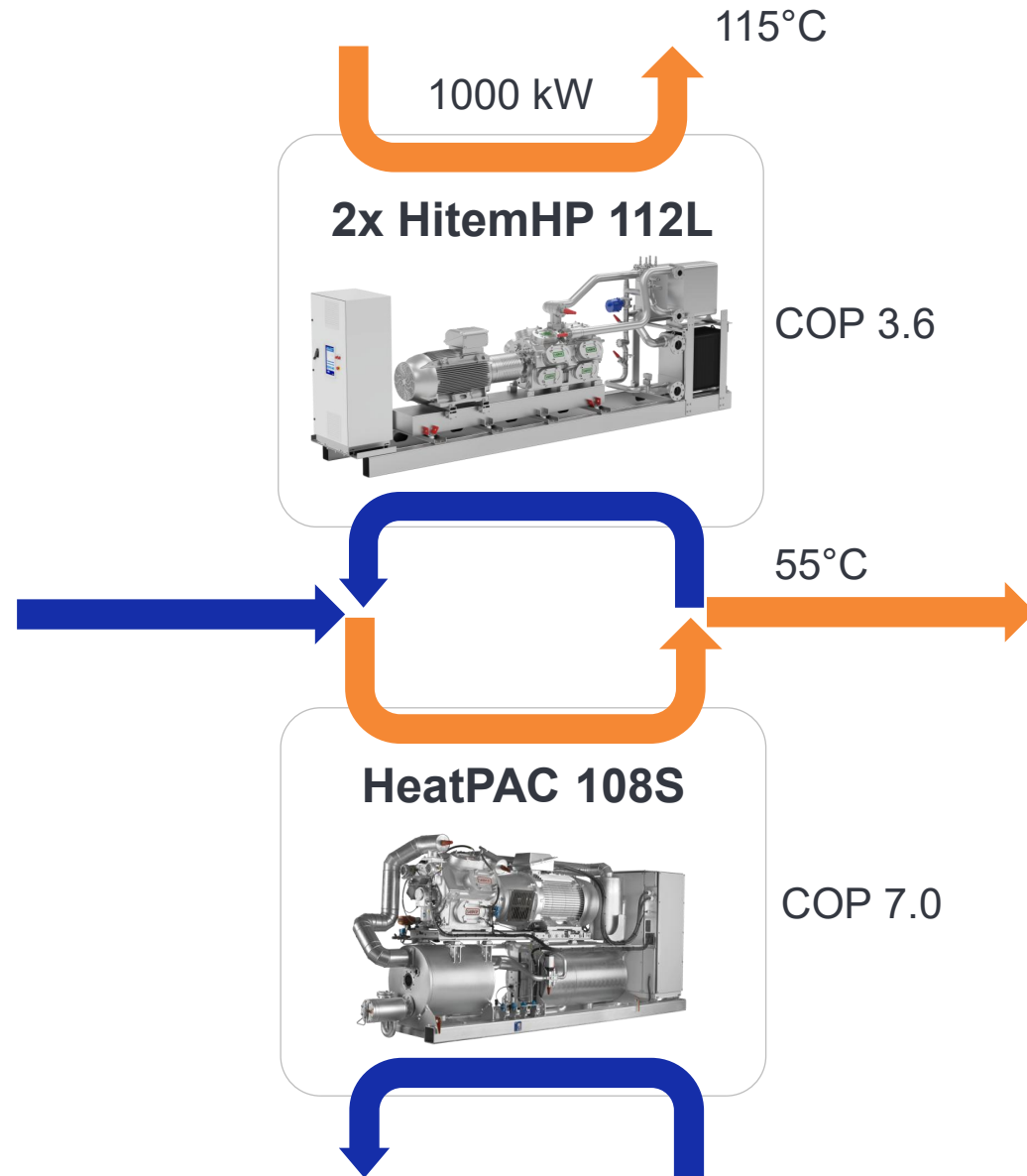
Numerous energy sources

- District heating circuit
- Central heating circuit
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- And many more



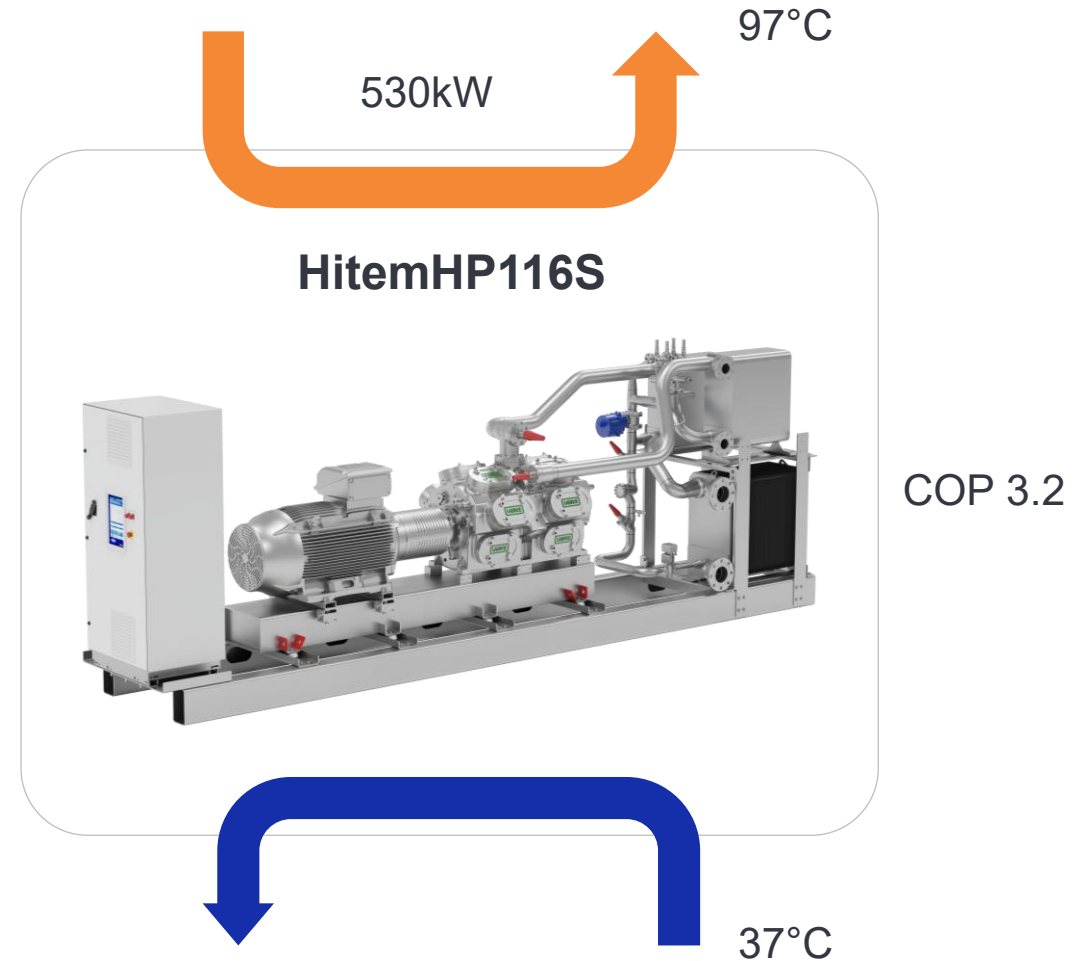
HitemHP customer cases

Industry	Dairy
Output temp	115°C
Heating capacity	2x 500 kW
Temperature lift	67K
COP	3.6
Model	HitemHP 112L
Refrigerant	Butane (R600)



HitemHP customer cases

Industry	F&B manufacturer
Output temp	97°C
Heating capacity	530 kW
Temperature lift	65K
COP	3.2
Model	HitemHP 116S
Refrigerant	Isobutane (R600A)



HitemHP range

Water-cooled condenser inlet 100°C, outlet 120°C and evaporator inlet 50°C, outlet 45°C

Type	Heating capacity	Cooling capacity	Power consumption line	Ref. charge	Dry weight	Unit dimensions in mm			Sound pressure level	COP Line heating
	kW	kW	kW	kg	kg	L	W	H	dB(A)	
HitemHP 104 S	105	70	38	10	4820	5400	1300	2400	85,1	2,8
HitemHP 104 L	130	87	46	13	4840	5400	1300	2400	85,7	2,8
HitemHP 106 S	157	106	55	16	5005	5400	1300	2400	86,5	2,9
HitemHP 106 L	196	131	68	20	5025	5400	1300	2400	87,1	2,9
HitemHP 108 S	208	140	72	21	5220	5400	1300	2400	87,6	2,9
HitemHP 108 L	258	175	89	26	5255	5400	1300	2400	88,2	2,9
HitemHP 112 S	310	209	106	31	5880	6500	1300	2400	88,4	2,9
HitemHP 112 L	386	261	132	39	5905	6500	1300	2400	89,1	2,9
HitemHP 116 S	411	278	140	41	6130	6500	1300	2400	89,6	2,9
HitemHP 116 L	514	349	174	51	6130	6500	1300	2400	90,2	3,0

Dimensions, weight and sound pressure levels are guidelines only. Sound pressure levels measured in free field, over reflecting plane and one metre distance from the unit.

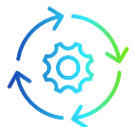
HitemHP range

Water-cooled condenser inlet 65°C, outlet 103°C and evaporator inlet 50°C, outlet 45°C

Type	Heating capacity	Cooling capacity	Power consumption line	Ref. charge	Dry weight	Unit dimensions in mm			Sound pressure level	COP Line heating
	kW	kW	kW	kg	kg	L	W	H	dB(A)	
HitemHP 104 S	199	154	48	20	4820	5400	1300	2400	85,1	4,1
HitemHP 104 L	248	193	58	25	4840	5400	1300	2400	85,7	4,3
HitemHP 106 S	294	228	70	29	5005	5400	1300	2400	86,5	4,2
HitemHP 106 L	368	287	86	37	5025	5400	1300	2400	87,1	4,3
HitemHP 108 S	397	311	92	40	5220	5400	1300	2400	87,6	4,3
HitemHP 108 L	493	386	113	49	5255	5400	1300	2400	88,2	4,4
HitemHP 112 S	600	471	136	60	5880	6500	1300	2400	88,4	4,4
HitemHP 112 L	743	583	168	74	5905	6500	1300	2400	89,1	4,4
HitemHP 116 S	791	620	181	79	6130	6500	1300	2400	89,6	4,4
HitemHP 116 L	976	763	226	97	6130	6500	1300	2400	90,2	4,3

Dimensions, weight and sound pressure levels are guidelines only. Sound pressure levels measured in free field, over reflecting plane and one metre distance from the unit.

Key benefits of the Sabroe products



Tested at the end-of-line test center – no surprises

Guaranteed performance, reliability and high quality: all products are tested in fabricated real-life circumstances at the end-of-line test center before leaving the factory.



Cost and revenue predictability

Sabroe products help you save money over the life-cycle of the product. Predict the cost and need for maintenance and use the AfterMarket Solutions to exchange parts. Our customers' Sabroe products have run efficiently for decades and counting.



Reducing operating costs and emissions

Running a heat pump to its full potential can reduce operating costs by almost a fifth (17.3%) and lower CO2 emissions by 15%.



Made in Europe certification mark

The Made in the EU label promotes sustainable and innovative manufacturing operations in the EU and indicates that the products have mainly been produced in the EU. Sabroe products have the Made in Europe certification mark.



Supporting the circular economy directive

Sabroe products follows the EU Ecodesign for Sustainable Products Regulation (ESPR) that supports products sustainability, such as product durability and reparability, energy-efficiency, and environmental footprint in the production process.



Sabroe factory 125+ years



Produces compression units, chillers, and heat pumps. All Sabroe units are tested in real-life setup before leaving the factory



State-of-the-art, durable technologies to optimise energy utilisation and cut costs



Products built for the use of natural refrigerants such as ammonia and butane – lowering your carbon footprint



Market leader for large industrial heat pumps



Expanding the heat pump production and testing areas to meet the global need for sustainable products

Thank you!

Pieter Salomez

+32 476 50 50 09
pieter.salomez@jci.com
www.sabroe.com