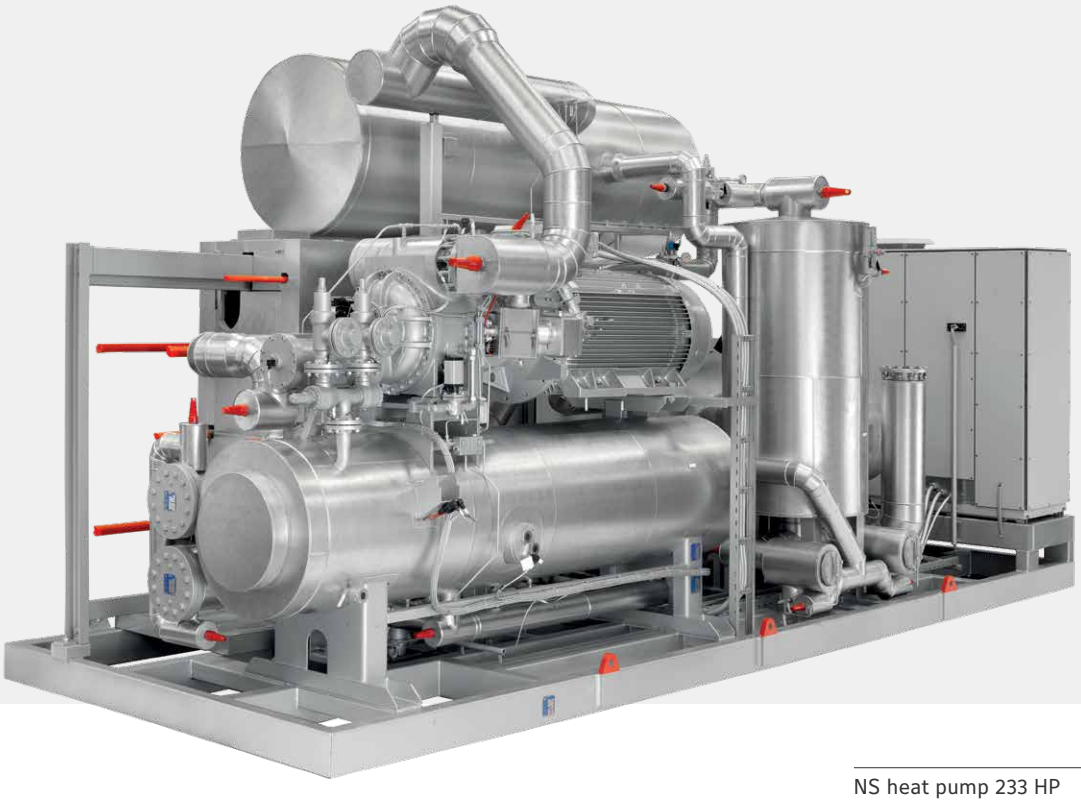
SABheat



NS heat pump 233 HP
with economiser

Sabroe customised heat pumps

Ammonia-based heat pumps using a screw compressor with capacities of up to 8,000 kW

Johnson Controls provides Sabroe customised large-capacity heat pumps for reclaiming waste heat or supporting industrial processes that require both heating and cooling at the same time. These highly effective heat pumps, utilising the economiser technology of screw compressors, ensure very high performance and exceptional reliability as well as the cost-effective exploitation of a key heat source in industry – waste heat from other processes.

These extremely large customised heat pumps can be configured with one, two or even three heat exchangers and compressors to provide capacities extending as high as 8,000 kW.

The backbone for all this is the unique high-pressure version of SAB screw compressors, featuring casings made of ductile iron, ensuring exceptional reliability and long service life. Individually configured units focus on meeting specific operating requirements, and the wide range of options makes it possible to achieve a considerable effect on operating margins in heating solutions.

All Sabroe heat pumps are designed to make clear business sense when in operation. Large Sabroe heat pumps – even single-stage high-lift units fitted with an economiser – deliver the performance needed for effective interaction with boiler systems or modern district heating systems.

The design paves the way for running modes in which the heat pump is used either as a parallel supplier to the boiler or in series to boost performance, thus optimising operating conditions so that Sabroe heat pumps can reclaim waste heat effectively under different conditions over the course of the year. This provides maximum return on investment.

Advantages	Benefits
Factory-assembled, pre-tested packaged units	Easy pre-commissioning makes installation and running-in both faster and cheaper
Capacity test that ensures high performance at both full and part load	Maximum part-load efficiency and low life cycle costs
Supreme high-pressure units designed specifically for ammonia with strong legacy in the market	Makes it possible to utilise waste heat as an effective alternative heat source
Small, space-saving footprint, with fewer moving parts and very low vibration	Exceptional reliability and low maintenance costs, as well as very easy access for service
Supports Condition Based Service (CBS) schedules, which help improve safety and ensure maximum reliability	Optimised service/maintenance intervals, with a minimum of unscheduled downtime

SABROE

Condenser water inlet +60 °C, outlet +70 °C | 40 bar design pressure, R717 refrigerant

Model	Max. rpm	Cold side temp. In/out °C	Cooling	Heating	Power consumption	Sound pressure level	COP shaft heating
			kW	kW	kW	db(A)	
NS heat pump 193 HP	4200	10/6	1270	1797	527	84	3.4
	4200	40/34	2822	3399	577	84	5.9
NS heat pump 233 HP	3800	10/6	2040	2866	826	86	3.5
	3800	40/34	4576	5466	890	86	6.2
NS heat pump 283 HP	3000	10/6	2895	4063	1168	88	3.5
	3000	40/34	6492	7744	1252	88	6.2

Condenser water inlet +40 °C, outlet +90 °C | 60 bar design pressure, R717 refrigerant

Model	Max. rpm	Cold side temp. In/out °C	Cooling	Heating	Power consumption	COP shaft heating
			kW	kW	kW	
NS heat pump 273	3600	60/50	6030	7090	1060	6.7
	3600	30/20	2350	3260	910	3.6

40 bar design pressure
SAB 193 HP, SAB 233 HP and SAB 283 HP.
All capacities include economiser operation.

60 bar design pressure
SAB 273

Dimensions on request.

Non-standard Sabroe heat pumps are available on request.

Sound pressure levels measured in free field, over reflecting plane and one metre distance from the unit.

Sound pressure levels are guidelines only.

Options

- Two-stage units
- Modular design for easy transport and rapid on-site assembly
- Shell-and-plate heat exchangers
- Shell-and-tube heat exchangers
- Parallel heat exchanger operation
- Variable-speed drive
- Soft-starter or Y/D starter
- High-voltage motors
- Complete economiser systems
- Customer-witnessed factory acceptance test (FAT)

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All information is subject to change without notice.