High-temperature Sabroe HeatPAC

Single-stage ammonia heat pump with screw compressor

A characteristic feature of a heat pump is that it produces more energy than it consumes. The surplus energy is primarily supplied by free energy sources such as industrial waste heat, condenser heat rejection or ambient temperatures.

Profound experience within refrigeration has made Johnson Controls one of the leading heat pump suppliers. Concurrently with the rapid development in the energy field, Johnson Controls has acquired status as a leading supplier of customised industrial heat pumps to the world market. The first Sabroe-branded heat pump left the factory in 1967, and our technical solutions are based on the unique experience accumulated from the many heat pump deliveries since then.

With the development of a high-pressure screw compressor Johnson Controls is now able to expand the heat pump programme with a Sabroe HeatPAC that produces water up to 90°C.

The integrated units feature fully welded plate heat exchangers, pre-formed piping, a shell-and-plate evaporator with a built-in liquid separator, and a shell-and-plate condenser. This unique configuration, with a flooded system, was designed to provide exceptional heat pump capacity with only a very small refrigerant charge.

The Sabroe industrial heat pumps are based on the natural refrigerant ammonia. Every Sabroe heat pump unit is factory-built and customised for each specific application, ensuring that optimum energy saving potentials are realised. All units are performance-tested in our end-of-line test centre and delivered with a test certificate with capacity and efficiency data.

Significant advantages

- Outgoing temperature up to 90°C
- Max. heating capacity: 1600 kW (40°C source/ 85°C water out), 1000–6000 rpm, standard variable-speed drive
- The Sabroe HeatPAC design is based on a flooded evaporating system, using ammonia only
- Low-charge technology using ammonia as refrigerant
- Cascade evaporator available for condenser heat reclaim
- All HeatPAC units are tested at the Sabroe end-of-line test centre before dispatch.

Customer benefits

- Ideal for high-temperature production processes, cleaning, heating, and district heating
- Increased application flexibility
- Very high COP and outstanding part load performance
- Ammonia is a highly efficient natural refrigerant which contributes to low life cycle costs
- Reliable and efficient condenser heat reclaim
- Verified performance and easy commissioning.

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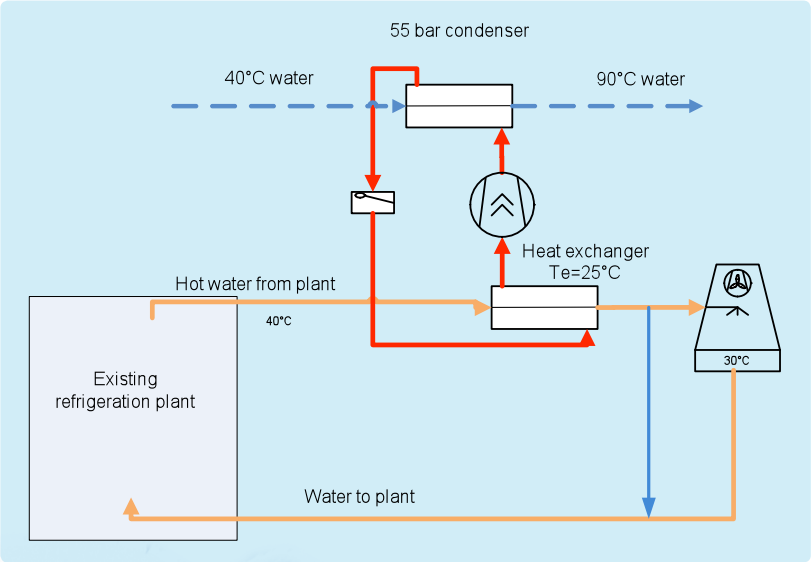
Heat pump usage

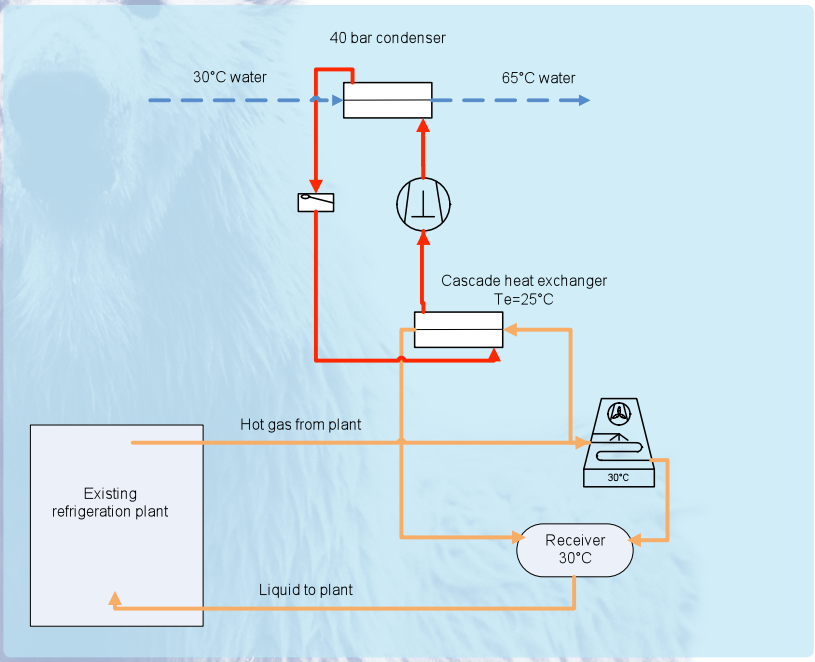
A high-temperature HeatPAC exploits waste heat from equipment such as motors and compressor units by cooling the hot water from the condensers. Instead of wasting this energy, as is often the case in traditional installations, a high-temperature HeatPAC unit transforms this valuable resource into hot water of up to 90°C, at a very low cost.

The hot water can then be used in a variety of industrial installations including abattoirs, dairies, breweries, and fish processing plants. Heat can also be reclaimed from condensers, waste process heat, gas cooling in power plants, etc.

By enabling companies to make the best possible use of energy that would otherwise be wasted, the high-temperature HeatPAC installations reduce the energy costs and the overall environmental impact of the company activities.



Water/water condenser heat reclaim



Cascade condenser heat reclaim

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