Sabroe HeatPAC™ HPX heat pumps
put waste heat to hot use
New high-temperature capabilities

Heat pumps are all about energy optimisation – pushing the envelope to exploit temperature differences in the most effective way possible. HeatPAC HPX heat pumps open up a new realm of industrial opportunities by producing hot water at temperatures up to 90°C, via the effective thermodynamic exploitation of any suitable source of low-temperature heat. This means only tiny energy inputs are needed.

New industries can benefit from heat pumps

This makes HeatPAC HPX heat pumps ideal in set-ups where it’s essential to prevent bacteria from flourishing, including pasteurisation, sterilisation and a wide range of other high-temperature processing set-ups.

In fact, this ground-breaking heat pump configuration is ideal for use in virtually any industry seeking the benefits of reliable hot water outputs at low cost.

Small size, big effect

HeatPAC HPX heat pumps feature an integrated single-stage configuration that features less than half the space and weight requirements of any other pump designs usually necessary to achieve 90°C hot water outputs.

Reliability and efficiency

Another key feature of HeatPAC HPX heat pumps is the combined Water Heating & Cooling system (WHC), which automatically switches between heating and cooling in step with the demands placed on the unit (heating during standstill, and cooling while running). This top-cover cooling system helps protect against breakdowns, improves the longevity of the valves and springs, and extends the overall service life of the compressor.

Exceptional COP

This unique Sabroe cooling system reduces heat radiation from the unit, improving the overall efficiency and making it possible to minimise wasted energy, as well as reclaiming any waste heat being transferred from the compressor to the outside ambient air.

Exceptional COP

The ground-breaking design of HeatPAC HPX heat pumps results in an exceptional Coefficient of Performance (COP), stemming from Sabroe’s unique ability to combine compressor know-how and engineering capabilities.
The best of two worlds

Best of multiple worlds

HeatPAC HPX heat pumps combine the best features and operating advantages of several popular Sabroe systems – all of which have consistently proven their reliability and effectiveness in installations throughout the world.

1. New HPX hybrid high-pressure reciprocating compressor design that combines the practical operating advantages of a 60–bar rated HPC casing featuring HPO technology
2. Evaporator technology from the ChillPAC™ packaged ammonia chiller, featuring a patented shell-and-plate evaporator that keeps the refrigerant charge to a minimum.

High-pressure compressor design

The breakthrough HPX hybrid compressor design makes it possible to achieve differential pressures as high as 40 bar and discharge pressures as high as 60 bar. A special connecting rod in the HPX compressor enables the unit to push differential pressures up to previously unseen levels.

The compressor is also fitted with big-end bearings that feature advanced metal polymer bearing technology, to keep down wear and ensure longer service life even at high differential pressure.

ChillPAC benefit

Sabroe HeatPAC units feature an extremely compact patented shell-and-plate flooded evaporator sourced from the company’s renowned ChillPAC chiller units, and is equipped with an ultra-precise level control system.

The patented condenser combines a desuperheater, condenser and sub-cooler in a space-saving configuration that only requires a very small refrigerant charge.

This configuration provides multiple advantages, including:
- Small refrigerant charge (≤50 kg)
- Low mean temperature difference, resulting in high energy efficiency
- Compact, low-weight single-stage unit that is easy to install virtually anywhere
- Vibration-free, low-noise set-up
- Reliable running under all load scenarios

The unit also features a vibration-dampening design, with integrated vibration dampers fitted between the compressor and base frame to keep both vibration and noise to the absolute minimum. This also improves the durability of all the components in the heat pump by ensuring minimal vibration transfer.
Variable-speed advantage

HeatPAC HPX heat pumps are fitted with variable-speed drive (VSD) as standard. The VSD drive enables extremely accurate temperature control and helps make sure the HeatPAC units perform with exceptional efficiency regardless of load conditions. This results in the big benefit of the greatest possible energy efficiency. This makes HeatPAC heat pumps with HPX compressors the ideal solution in heat recovery installations where it is important to combine exceptional performance and the lowest possible operating costs with operational flexibility.

Effective control

HeatPAC HPX heat pumps are equipped with the advanced Unisab III compressor package controller as standard. This controller monitors the operating conditions for the package and the compressor as well as ensuring that the HeatPAC unit is well protected against overload and that the package controls equipment and the VSD are operated correctly in order to maintain accurate hot-water temperatures and ensure the most efficient running.

The integrated Multisab load distribution software enables Unisab III controllers to operate in setups featuring multiple HeatPACs. This ensures well-tuned operation for each individual HeatPAC unit as well as the installation as a whole. The Unisab display and keyboard provide easy-to-use local operation and monitoring of the HeatPACs and easy configuration of the load distribution scheme for multiple HeatPACs.

A range of different communication options paves the way to remote monitoring and control, and free software is available for remote monitoring and operation from PCs and laptops. Free apps for Unisab event monitoring are available for both iPhones and Android smartphones.

Unisab III controllers also have the big advantage of supporting Load Based Service (LBS) schedules, so that service intervals as well as service costs are a direct reflection of the actual loadings, usage and wear of each heat pump.

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The best of two worlds

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Save up to 10% on energy consumption
Experience counts

Sabroe has almost 50 years of solid practical experience with the design, manufacture and service of industrial heat pumps based on both reciprocating and screw compressors.

We’d mastered the technology long before it became greentech-fashionable, and our customers benefit from the remarkable energy-efficiency these heat pumps make possible.

More with less

This unique range of HeatPAC HPX heat pumps makes it possible to lift low-temperature waste heat to a supply of hot water with temperatures as high as 90°C, using only a minimum of electrical energy.

The integrated single-stage configuration of these heat pumps weighs less, and takes up less than half the space of the two-stage heat pump designs and other installations usually needed to provide a supply of 90°C water.

Ideal for combating bacteria

A low-cost supply of hot water at temperatures ideal for sterilisation and pasteurisation – as well as for many other hygiene-sensitive functions – opens up big commercial opportunities in (for example) breweries, dairies, the food industry and pharmaceutical production.

Dual function benefits

HeatPAC HPX heat pumps have the big practical advantage of a combined heating and cooling function. These attractively priced single-stage high-lift units make full use of both the hot and the cold side, converting the heat pump into an energy machine that provides cooling and heating at the same time – with chiller and boiler working in parallel for maximum energy efficiency.

Combined advantages

Using these well-proven Sabroe systems, renowned for their reliability, results in exceptional uptime statistics, as well as cutting back on service and maintenance costs.

Easy to install, ready to run

HeatPAC HPX heat pumps are delivered ready to install. Everything is pre-configured and factory-tested prior to delivery, with full documentation for each unit’s performance and capabilities as well as its compliance with relevant standards and requirements. This makes commissioning straightforward and inexpensive, and easy to keep on schedule.

Advantages

- Factory-assembled, pre-commissioned units based on ultra-reliable Sabroe reciprocating compressors
- Compact single-stage configuration weighs less and takes up less space than bespoke and/or two-stage heat pump designs
- Exceptional Coefficient of Performance (COP) in high-temperature single-stage configuration
- Variable-speed drive (VSD) and Unisab III compressor package controller as standard
- Service and maintenance based on Load Based Service (LBS) schedules

Benefits

- Easy, rapid commissioning saves time, money and manpower, and minimises disruption
- Easy to mount or retrofit, even in confined spaces or unconventional locations
- High energy-efficiency, low operating costs
- Outstanding part-load performance and maximum operating flexibility
- Improved reliability, longer service intervals, minimal downtime, low cost of ownership
# Sabroe HeatPAC™ HPX heat pumps capacity range

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity range</th>
<th>Cold side</th>
<th>Hot side</th>
<th>COP</th>
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<td>HeatPAC 157 single-stage screw</td>
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