



The High Temperature Ammonia Heat Pump

Designed To Save Energy



EMERSONTM
Climate Technologies

Are Your Energy Costs Rising?

Whether your company produces chocolate, supplies heat for communities, processes milk, distils bio fuels or is engaged in similar thermal processes, it is more than likely that the cost of heating and cooling is a major challenge.

In the past, industrial heat pumps were often limited to producing water temperatures of 60 °C. Neatpump - a high temperature heat pump for industrial applications - can extract heat from a wide variety of sources, substantially widen the field of applications up to levels of 90°C, and it typically saves 40 percent of the energy costs compared with fossil-fuel-based processes.

A Winning Team

Emerson Climate Technologies supplies global markets with products, services and solutions that facilitate sustainability and eco-efficiency. One example is Vilter, Emerson's brand that represents the unique single screw compressor technology. This technology can be applied to high pressure applications such as high temperature industrial heat pumps. Emerson Climate Technologies is supplying its single screw technology to Star Refrigeration, one of the most experienced experts in industrial refrigeration and heating systems. In recent years, Star Refrigeration has gained substantial experience in the design of high temperature heat pumps, and this has resulted in the design of the unique Neatpump.

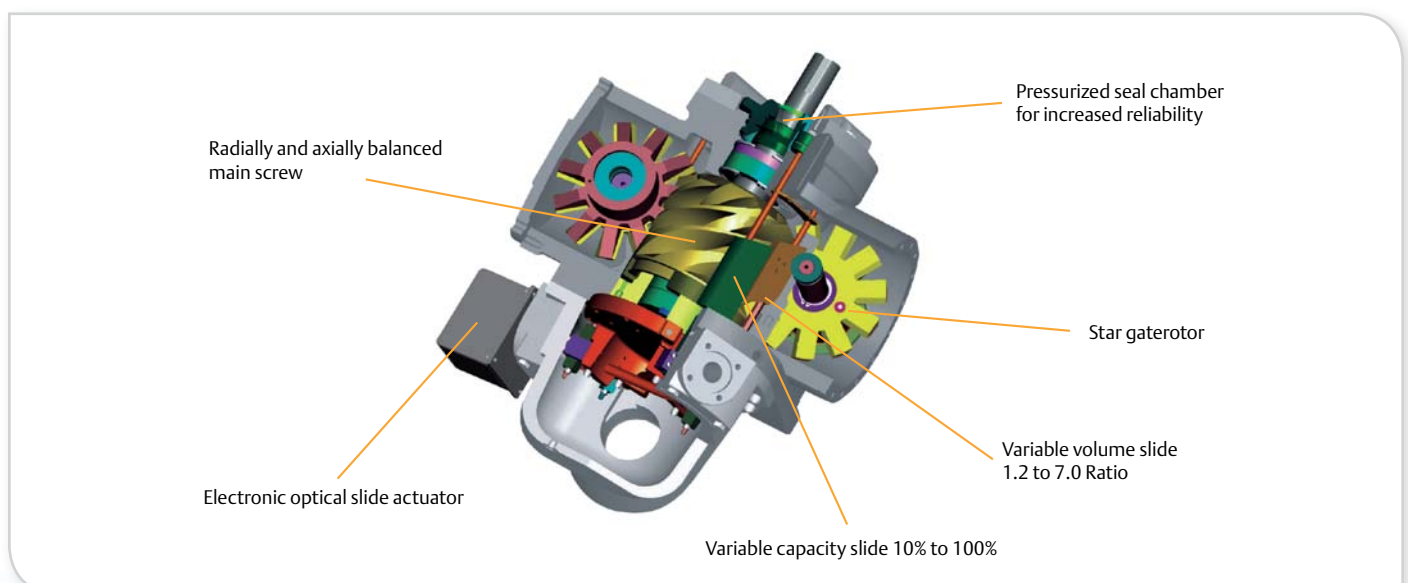
Single Screw Technology For High Temperature Heat Pumps

The core of a heat pump is the compressor. The Vilter single screw compressor offers several advantages over other technologies using ammonia, particularly when it comes to producing high water temperatures.

Key Features And Benefits Of Single Screw Compressors

- **Balanced forces:**
Radial and axial forces around the single rotor are balanced, enhancing bearing life when compared with twin screw technology.
- **Working pressure:**
The compressor is operating far below its maximum allowable working pressure, even when producing hot water at 90°C. This results in improved reliability and reduced maintenance requirements.
- **Automatic capacity control:**
Variable capacity and volume ratio control ensures high part-load efficiency all year round at changing condensing and evaporating temperatures.

Design Of Single Screw Compressor



Neatpump - A Long-Term Benefit

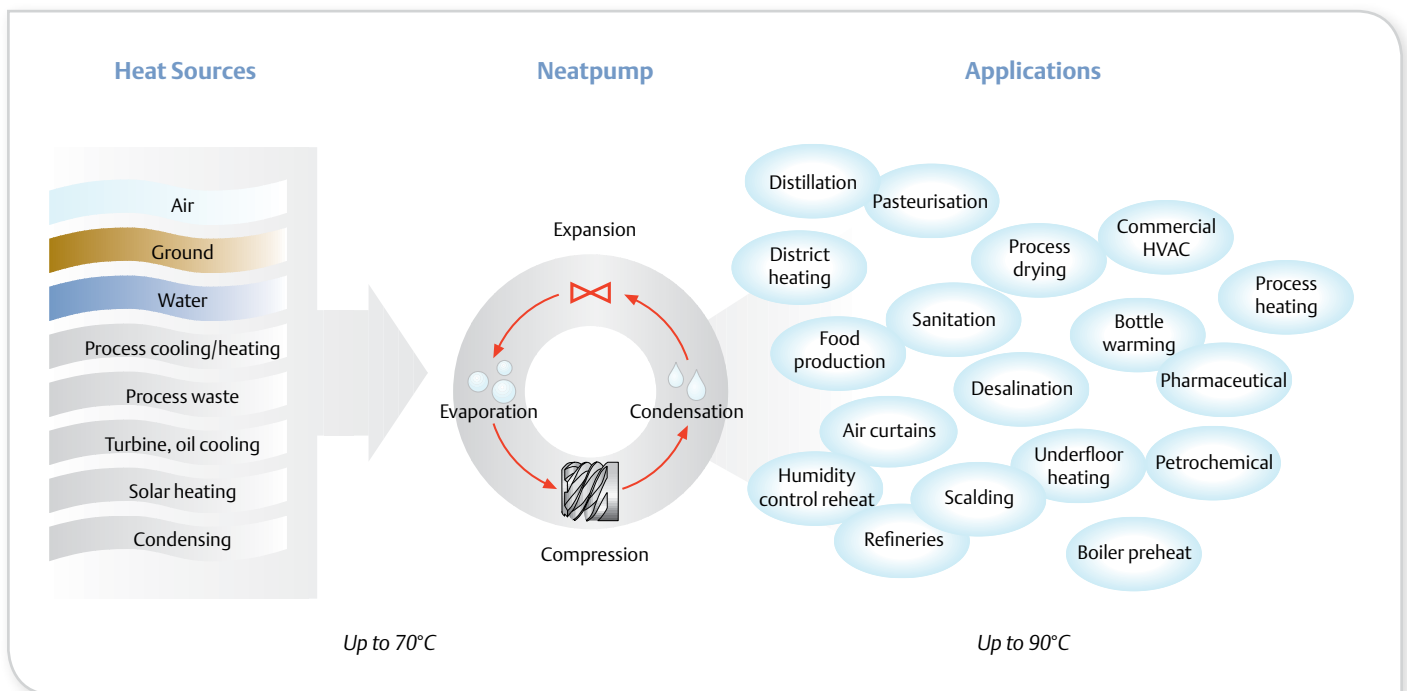
Recognized as leveraging renewable heat sources and compared with alternatives technologies, Neatpump offers :

- 20+ year design life
- Greater efficiency
- Reduced maintenance costs
- Excellent return on investment both for new installations and retrofits
- Low carbon emissions: Whatever the country and its energy mix, carbon emissions for Neatpump are significantly less than for boilers
- Peace of mind: The zero direct global warming potential of ammonia ensures that Neatpump will not be affected by future environmental legislation, since it is a natural refrigerant.



Factory built water to water Neatpump

Different Heat Sources For A Wide Range Of Applications



Neatpump - Skills And Worldwide Support

Neatpump offers the warmest possible heat source (up to 70°C for the Neatpump) and is designed for the lowest possible delivery temperature. These are the decisive factors for a Neatpump's efficiency, making it a challenging heating solution.

Our worldwide local teams are your skilled partners in realizing such demanding projects - supporting analysis, development and implementation of the most efficient and ideal heating solution for your application.

Neatpump - Wide Capacity Range For Different Heating Solutions

Equipped with a Vilter single screw compressor, Neatpump can be applied to diverse applications with different capacities:

- Factory built water to water Neatpump packages for both open and closed loop water heating applications with capacity ranges from 380kW to 2600kW.
- Site assembly heat pump up to 8MW at 90°C. Multiple modules increase efficiency and allow larger capacity even as high as 50MW
- Booster systems
For connecting to the cooling tower water loops of existing refrigeration systems.

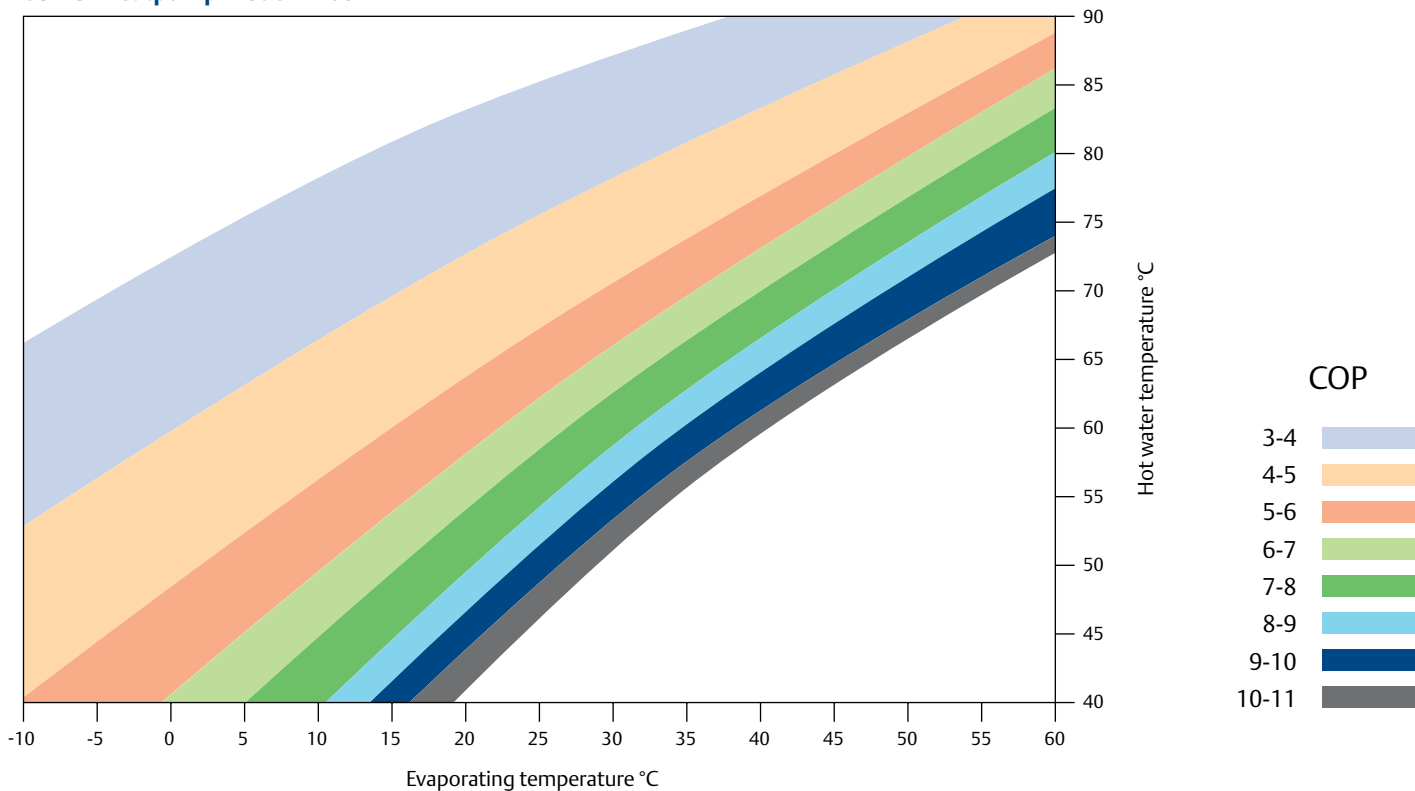


Coefficient Of Performance

The coefficient of performance (COP) of any heat pump varies widely with the temperature lift from evaporating to condensing or even water-off temperature.

The lower the temperature lift, the higher the COP. The graph below illustrates this by using the Neatpump model NP601 as an example.

COP Of Neatpump Model NP601



Please contact us for specific application examples and for further details.

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For more details, see www.emersonclimate.eu and www.star-ref.co.uk

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