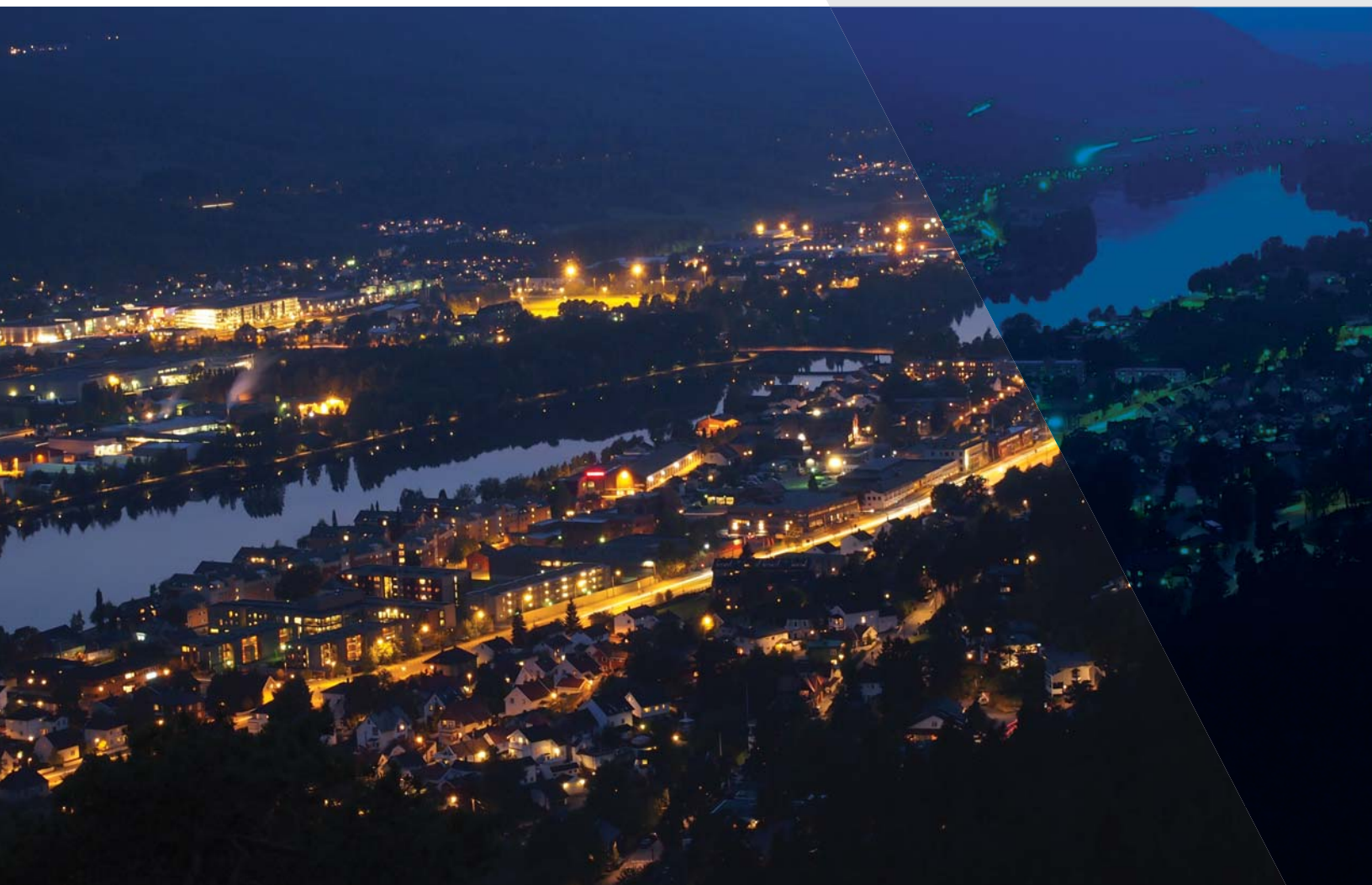


# Single Screw Ammonia Heat Pumps

Harness Your Heat... Don't Reject it



**VILTER™**

  
**EMERSON™**

## Harness Your Heat, Don't Reject It

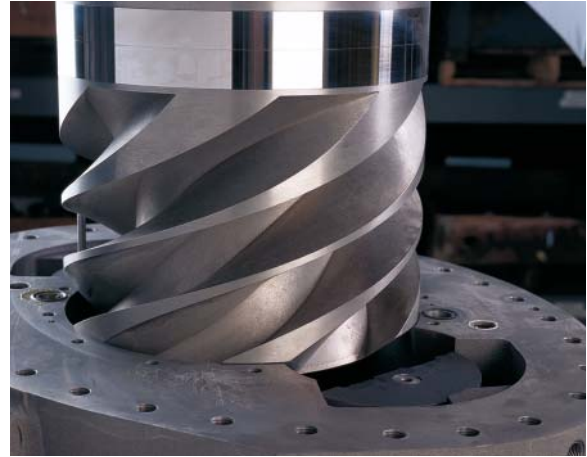
Industrial processes consume considerable energy from two primary sources in the production of their products. Mechanical refrigeration applied in the processing and preservation of products consumes electrical energy, while the hot water supplied for clean-up, cooking and process heating employs mostly fossil fuels.

The considerable energy absorbed by ammonia in industrial refrigeration is usually discarded to the atmosphere as wasted heat. This rejected heat has the potential to significantly offset and reduce the quantity of fossil fuels required to produce hot water in the plant.

With a growing interest in conserving energy and water, industrial processors are enhancing the use of their refrigeration system's wasted heat by employing the latest innovations in compressor technology and optimizing the use of their resources. End-users are realizing the powerful potential of applying industrial heat pumps to their processes and converting their waste heat into useable heat, afforded through the use of the high pressure capabilities of single screw compressor technology.

Vilter has extended the Single Screw compressor line with the addition of high pressure heat pump screw compressor models. These screw compressor units, with frames constructed of nodular/ductile iron or cast steel, are capable of operating with ammonia at extremely high condensing temperatures. Integrated into existing ammonia refrigeration systems, the heat pump compressors provide a cost effective solution to harnessing and converting your heat of rejection to high grade hot water, up to 195°F (90°C).

The Vilter high pressure heat pump compressors retain the single screw's inherent design advantages of balanced forces for long life and high reliability, and parallel slides for peak performance at full or part load performance and reliability superior to any twin screw compressor.

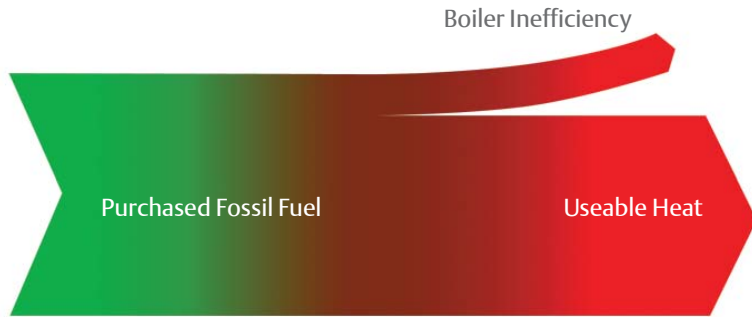


## Single Screw Ammonia Heat Pump at a major meat processing facility

- Model VHP-SC-451-600
- Converts waste heat to hot water
- Eliminates fossil fuel hot water heater
- Retrofit to an existing ammonia system
- 200 GPM at 62°F to 145°F (45.4 m<sup>3</sup>/h at 16.7°C to 62.8°C)
- Average COP of 5.0

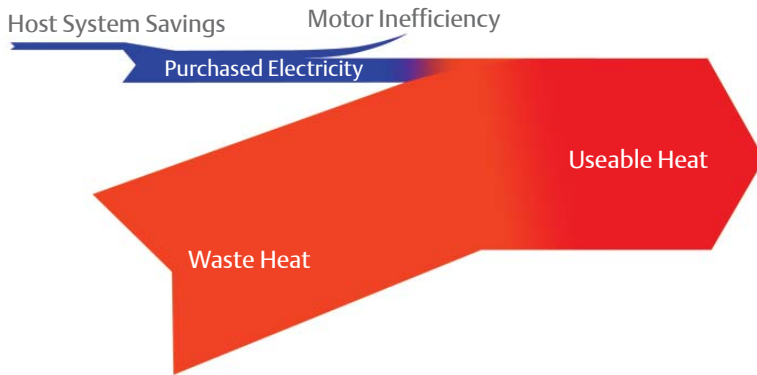


# Energy Efficiency Comparison: Fossil Fuel Boiler vs. Heat Pump



## Fossil Fuel Boiler

$$\frac{100 \text{ Units of Useable Heat}}{120 \text{ Units of Energy Consumed}} = \mathbf{0.83 \text{ COP}}$$



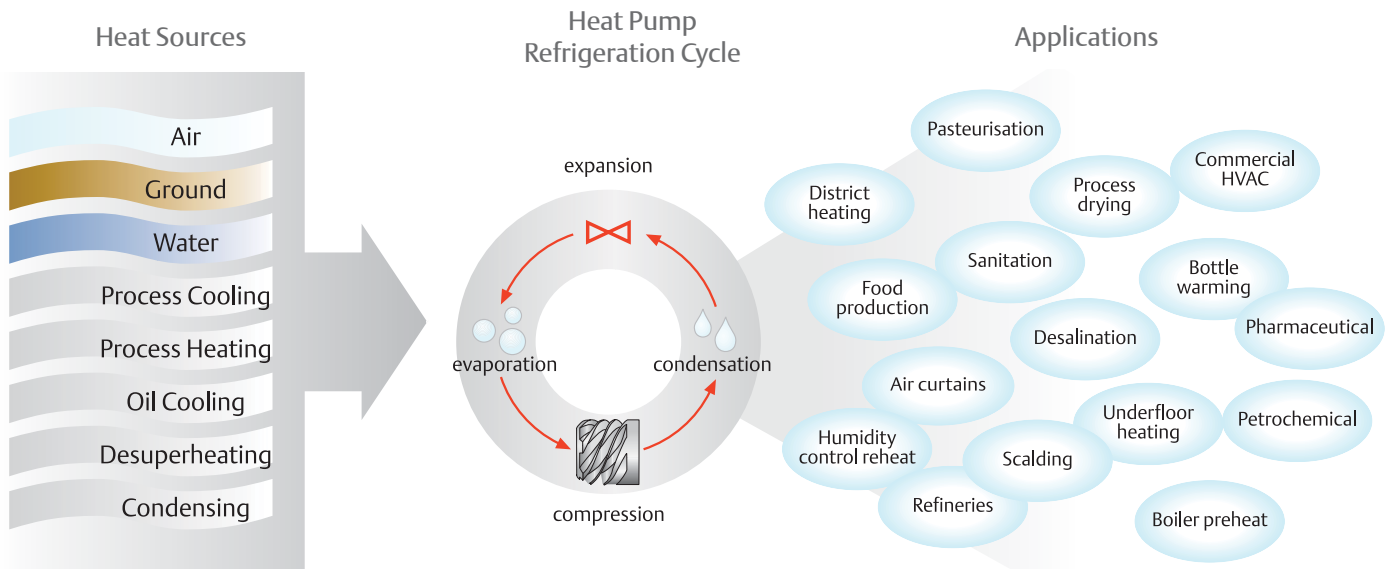
## Heat Pump

$$\frac{83.3 \text{ Units of Waste Heat} + 16.7 \text{ Units of Compressor Energy}}{16.7 \text{ Units of Compressor Energy}} = \frac{100 \text{ Units of Useable Heat}}{16.7 \text{ Units of Compressor Energy}} = \mathbf{6.0 \text{ COP}}$$

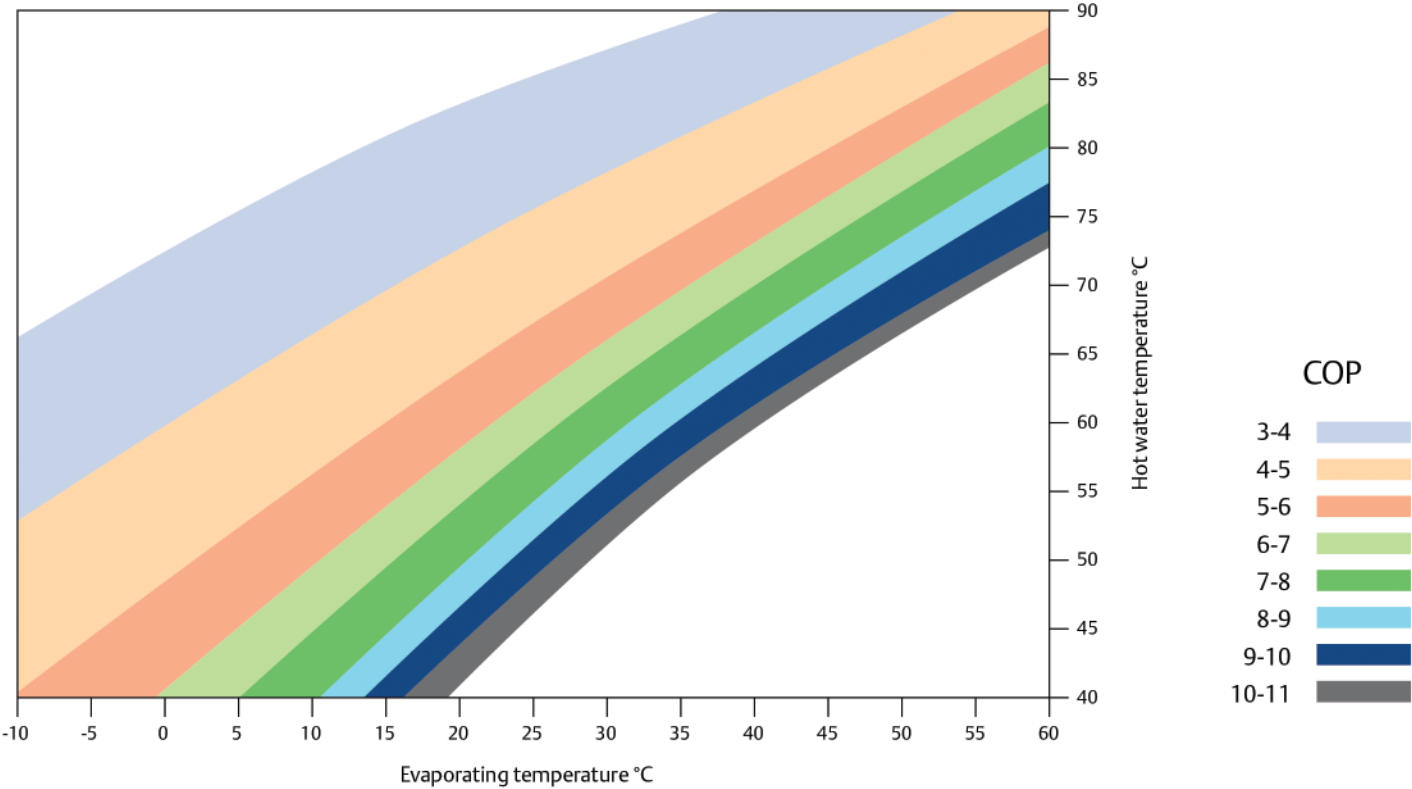
## Sources of Recoverable Heat

Heat pumps extract heat from a variety of sources and convert the heat to higher temperatures for use in many industrial applications. The advanced compression capabilities of Vilter's single screw technology have contributed to the development of heat pumps for

industrial applications, providing higher capacities and a greater range of temperatures than prior generations of heat pump compressors.



# COP of System with VSSH-601



Please contact us for specific application examples and for further details

[Emerson.com/Vilter](http://Emerson.com/Vilter)

2011VM-43 R5 (1/18) Emerson and Vilter are trademarks of Emerson Electric Co. ©2018 Emerson Climate Technologies, Inc. All rights reserved.