



COPELAND

Advancing Industrial Steam Generation with Vilter Heat Pumps
Steam-Generating Heat Pumps, OST Webinar, 29 September 2026

Vatsal Shah

VILTER
by **COPELAND**



Agenda

Copeland Company Overview

VQ Series of Industrial Heat Pump

Steam Generation Applications

Field Installation Performance Data

Conclusion



A Global Leader in Sustainable Climate Solutions

VISION

Together, we create sustainable solutions that improve lives and protect the planet, today and for future generations.



A Broad Portfolio Serving Diverse End Markets

Join us at
CHILLVENTA
Nurnberg, Germany | 13-15 October

COPELAND
Booth 5-132

Commercial and Industrial

Cold Chain

Residential

Focus Areas		Commercial and Industrial				Cold Chain		Residential			
Products	Compression Technologies	Solutions across battery energy storage systems, commercial buildings, data centers, hospitality, and road and rail, as well as district heating, process heating and cooling, renewable natural gas and cold storage				Cold storage, food retail, foodservice, healthcare, marine, and truck and trailer refrigeration for perishable food and medicines		Solutions for single family homes, multi-family dwellings and utilities			
	Controls Solutions	 Scroll Compression	 Oil-Free Centrifugal Compression	 Heat Pumps	 Gas Solutions	 Transcritical CO ₂ Compression	 Condensing Units	 Fixed and Two-Stage Scroll Compression	 Variable-Speed Solutions	 Reciprocating Compression	
		 Energy Management Systems	 Variable-Frequency Drives			 Facility and Refrigeration Solutions	 In-Transit Solutions	 HVAC System Components	 Thermostats		
		 HVAC System Components				 HVACR System Components	 Variable-Frequency Drives		 Variable-Frequency Drives		

Copeland Brands

COPELAND

VERDANT

VILTER

WHITE RODGERS

COPELAND

VILTER

COPELAND

sensi

VERDANT

WHITE RODGERS



Your Global Partner for Sustainable Energy Transition

FOUNDED

1867

HEADQUARTERS IN
Milwaukee, WI USA

GLOBAL PRESENCE

37,000+ m²
MANUFACTURING
FACILITY

60+
COUNTRIES WITH
INSTALLED BASE

FOUR LINES OF BUSINESS

INDUSTRIAL
REFRIGERATION



GAS
(RNG/BIOGAS)



INDUSTRIAL
HEAT PUMPS



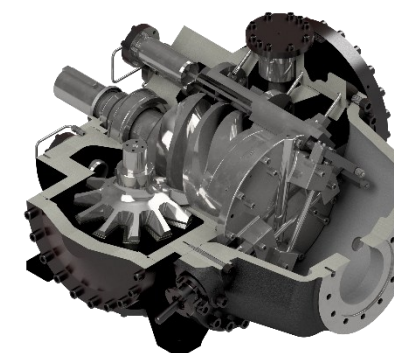
LIFECYCLE
SERVICES



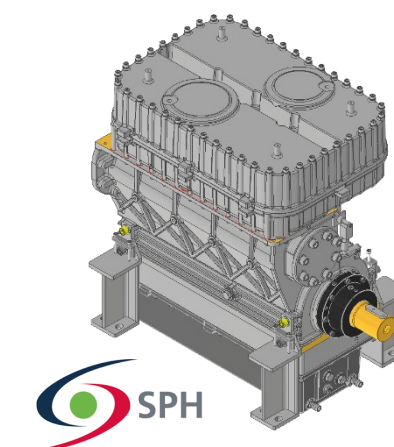
INDUSTRY PARTICIPATION



CORE COMPRESSION TECHNOLOGY



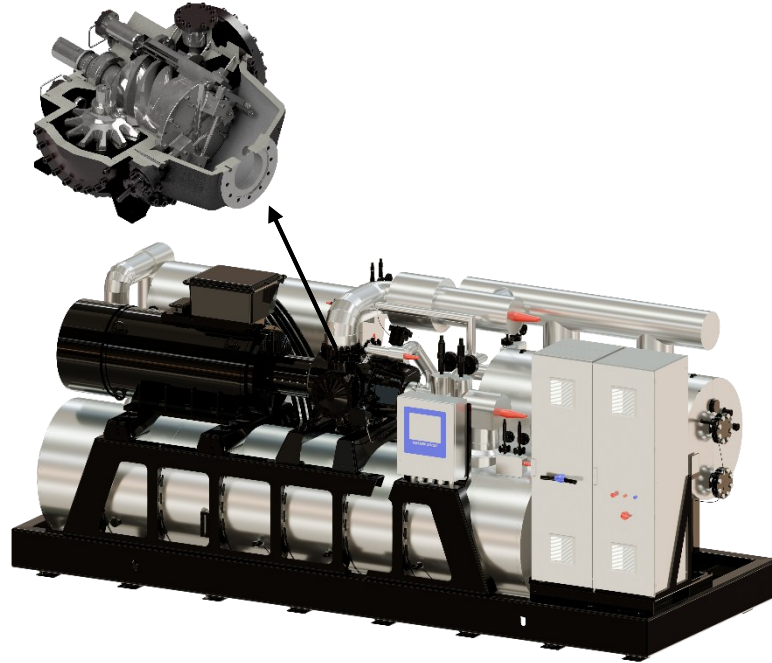
Single Screw



Reciprocating Piston

VQ Series Industrial Heat Pump Portfolio

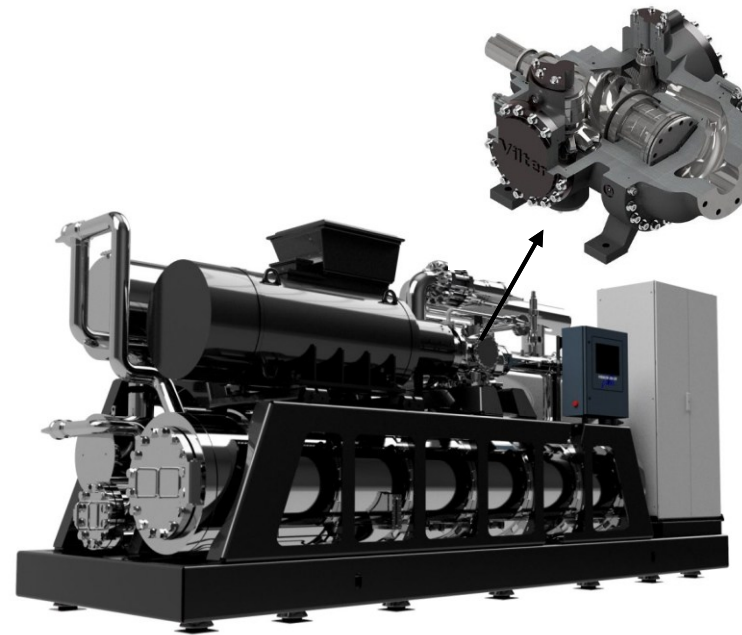
Vilter Single Screw



VQ95

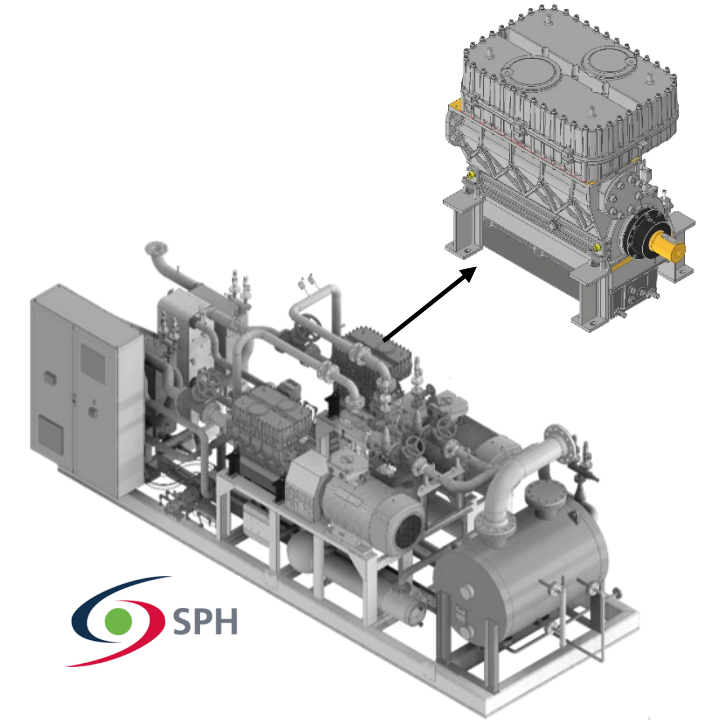
- 1-stg Ammonia Heat Pump
- Heating capacity up to 5 MW on 1 skid
- System PS: 60 bar
- Compressor: Vilter Single Screw
 - Paralex slides controlling capacity and volume ratio
 - Max Pressure Differential: 38 bar
 - Max Volumetric Flow: 2000 m³/h

Vilter Single Screw: HPLD



VQ145

- 1-stg Ammonia High Temperature Heat Pump
- Steam Generation up to 1.7 barA
- Heating capacity up to 2 MW on 1 skid
- System PS: 120 bar
- Compressor: HPLD (High Pressure Low Disp)
 - Max Pressure Differential: 69 bar
 - Max Volumetric Flow: 400 m³/h

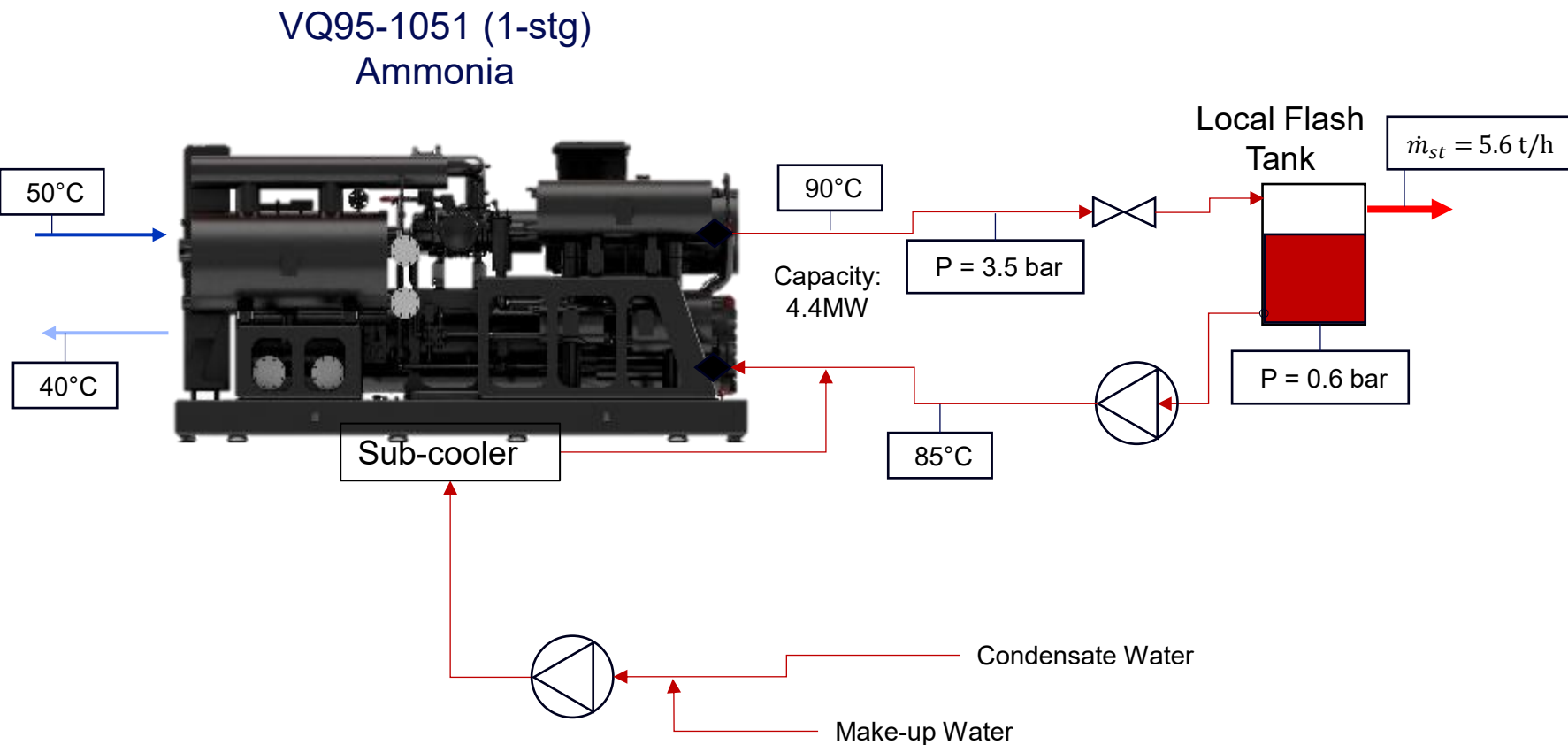


VQ180 (ThermBooster™)

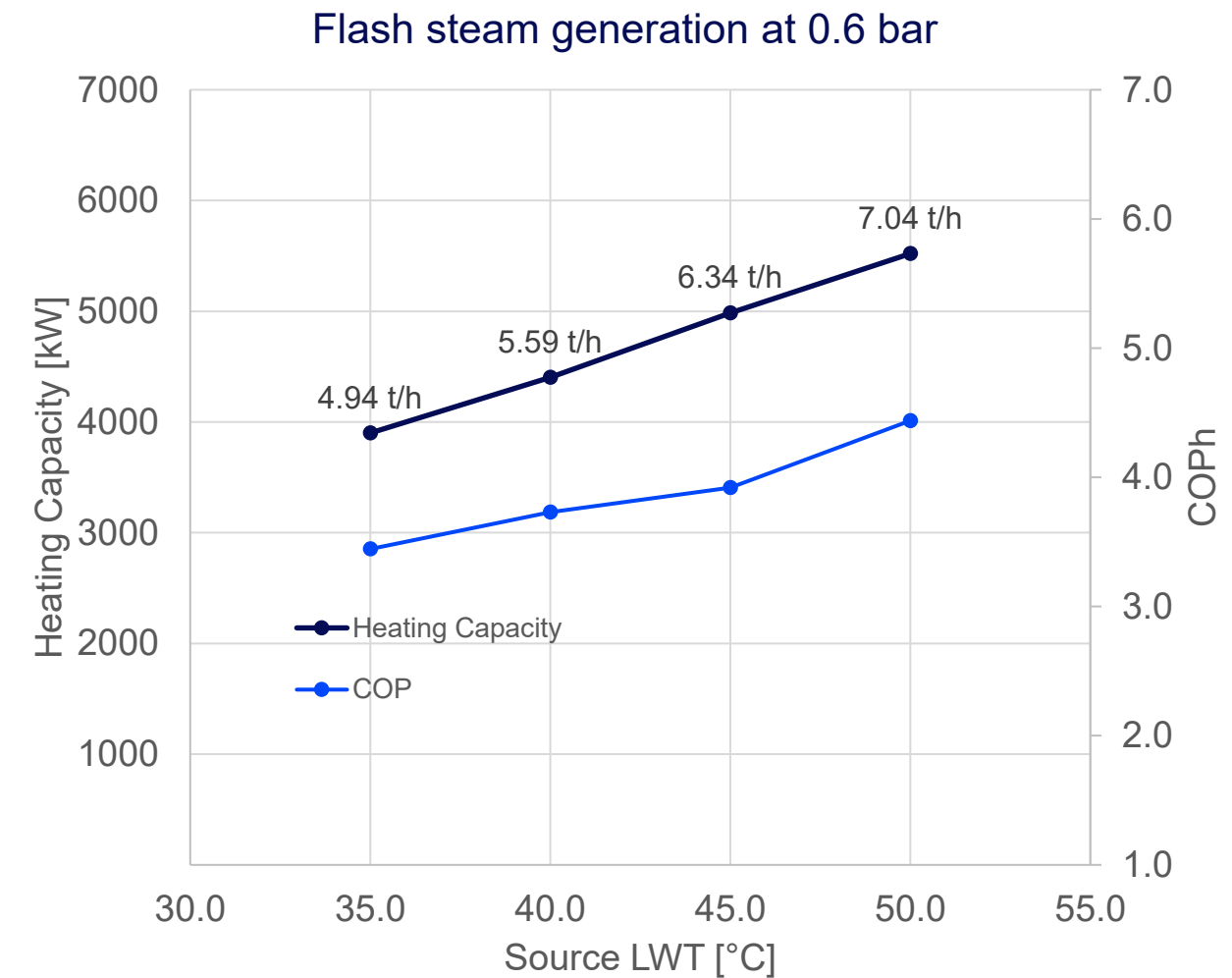
- 1-stg / 2-stg Heat Pump with HC or HFO
- Steam Generation up to 8.9 barA
- Heating capacity up to 2.5 MW on 1 skid
- System PS 35 bar
- Compressor: 4-cyl Reciprocating Piston
 - Max Pressure Differential: 28 bar
 - Volumetric Flow: 570 m³/h

Steam application with VQ95:

Pressurized Hot Water distribution with Local Flash Steam Generation

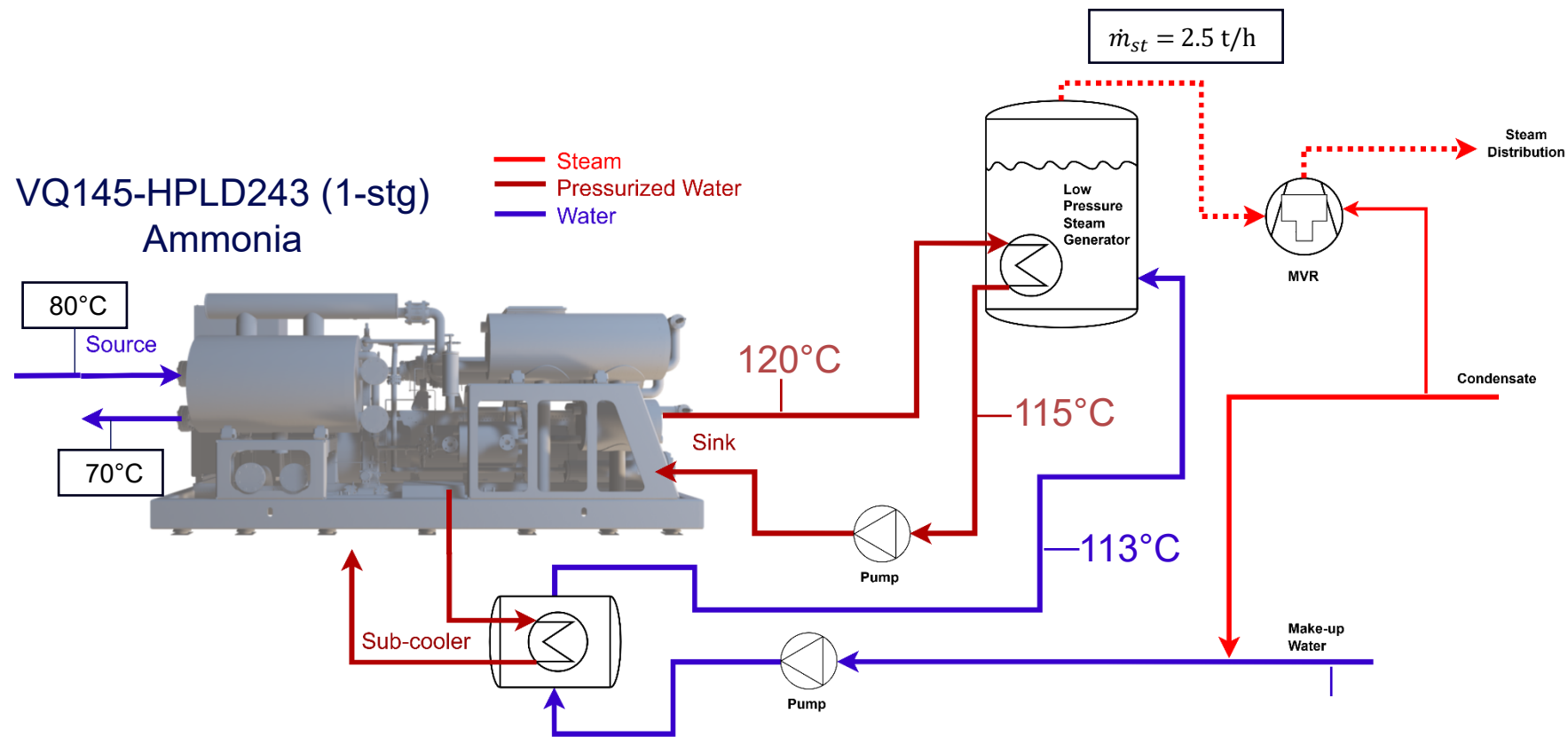


- Possible to deliver vacuum pressure steam
- Compared to steam, distributing pressurized hot water provides better flexibility



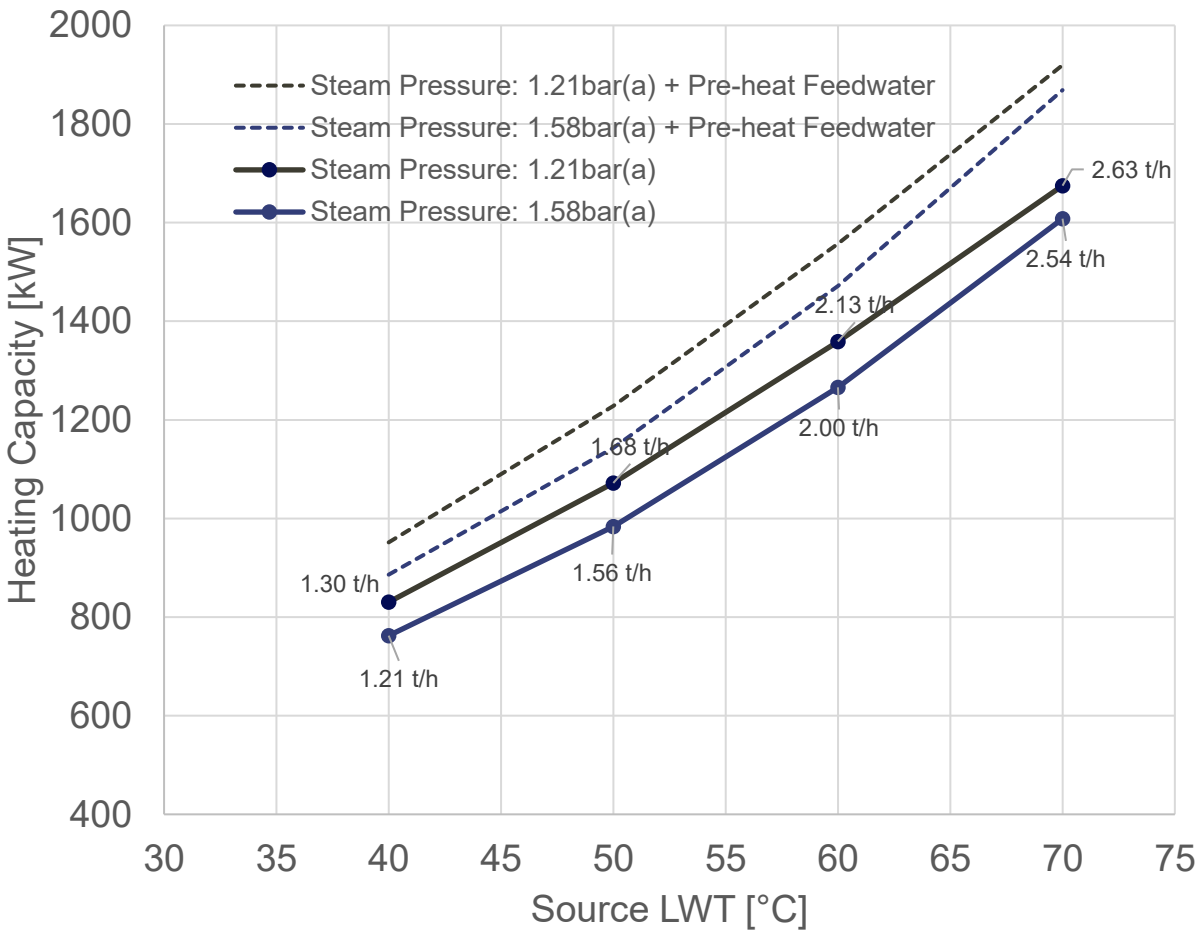
Steam application with VQ145:

Low Pressure Steam Generation (LPSG) Upto 1.7 barA

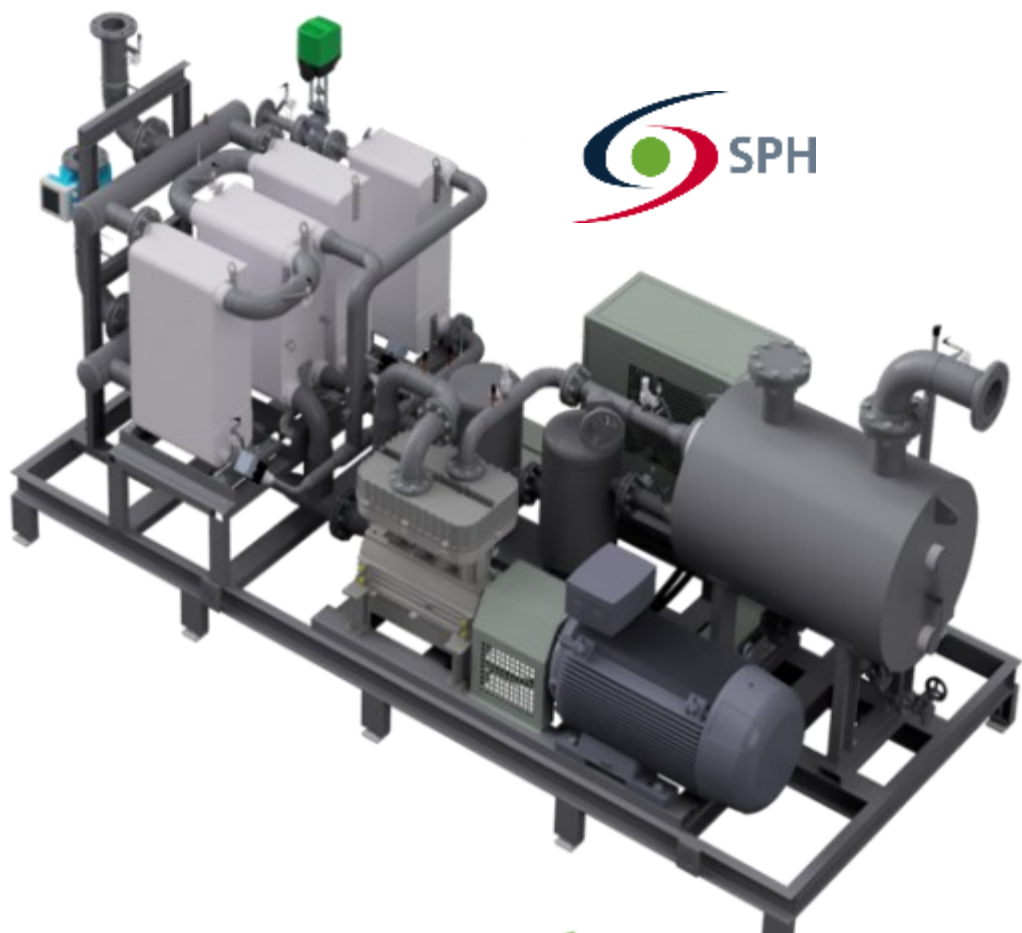


Steam Pressure: 1.58 bar(a)	Heating Capacity	COP
Steam Generation	1610 kW	3.17
Steam Generation + Preheating	1870 kW	3.69

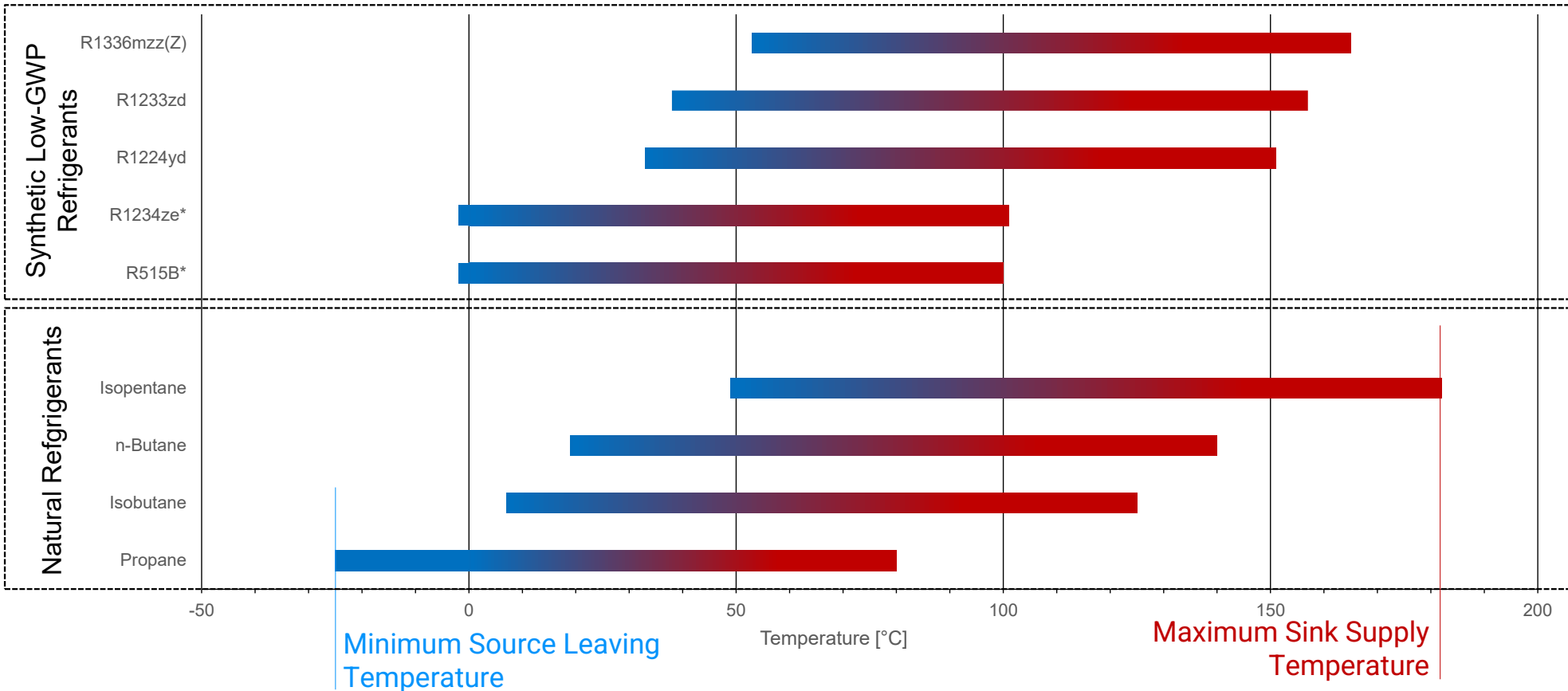
VQ145-HPLD243 (1-stg) Ammonia



Steam Generation with VQ180 (ThermBooster™)

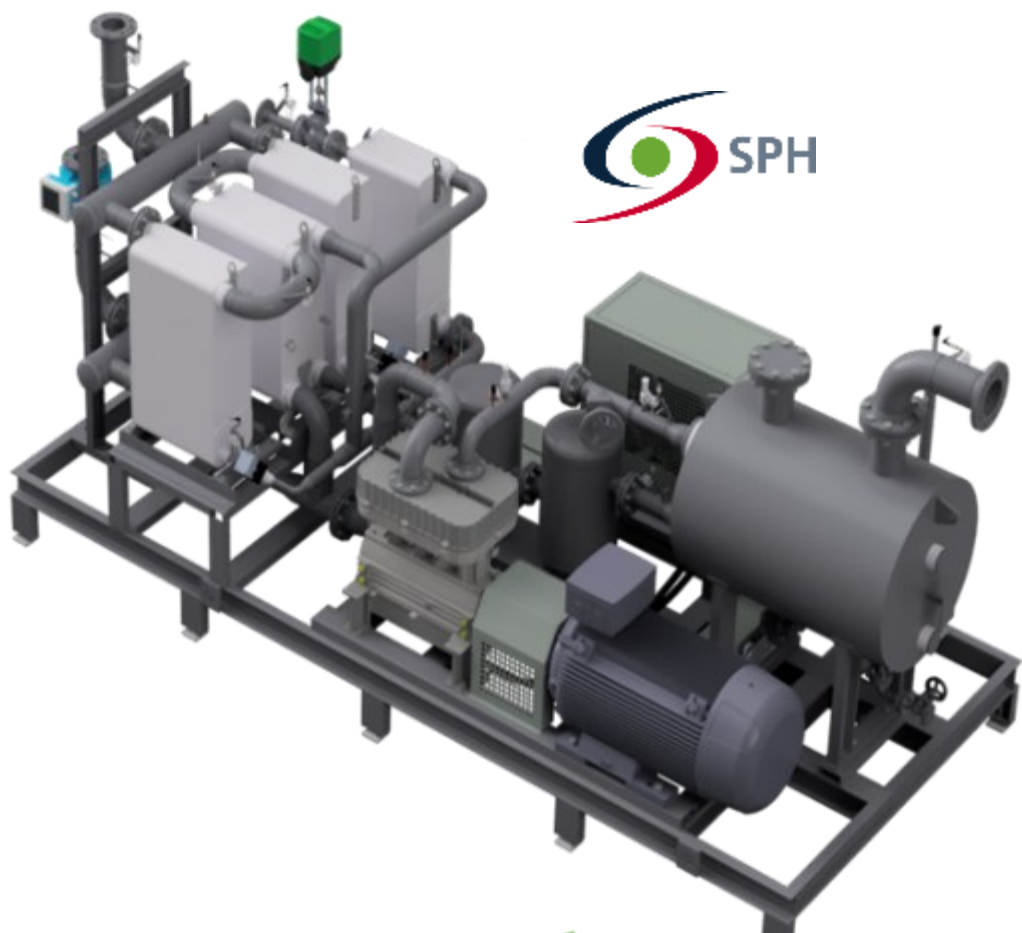


- Multiple options of refrigerants available to use with VQ180
- Possibility of 2-stage system architecture with different refrigerants to extends the range of temperature lift

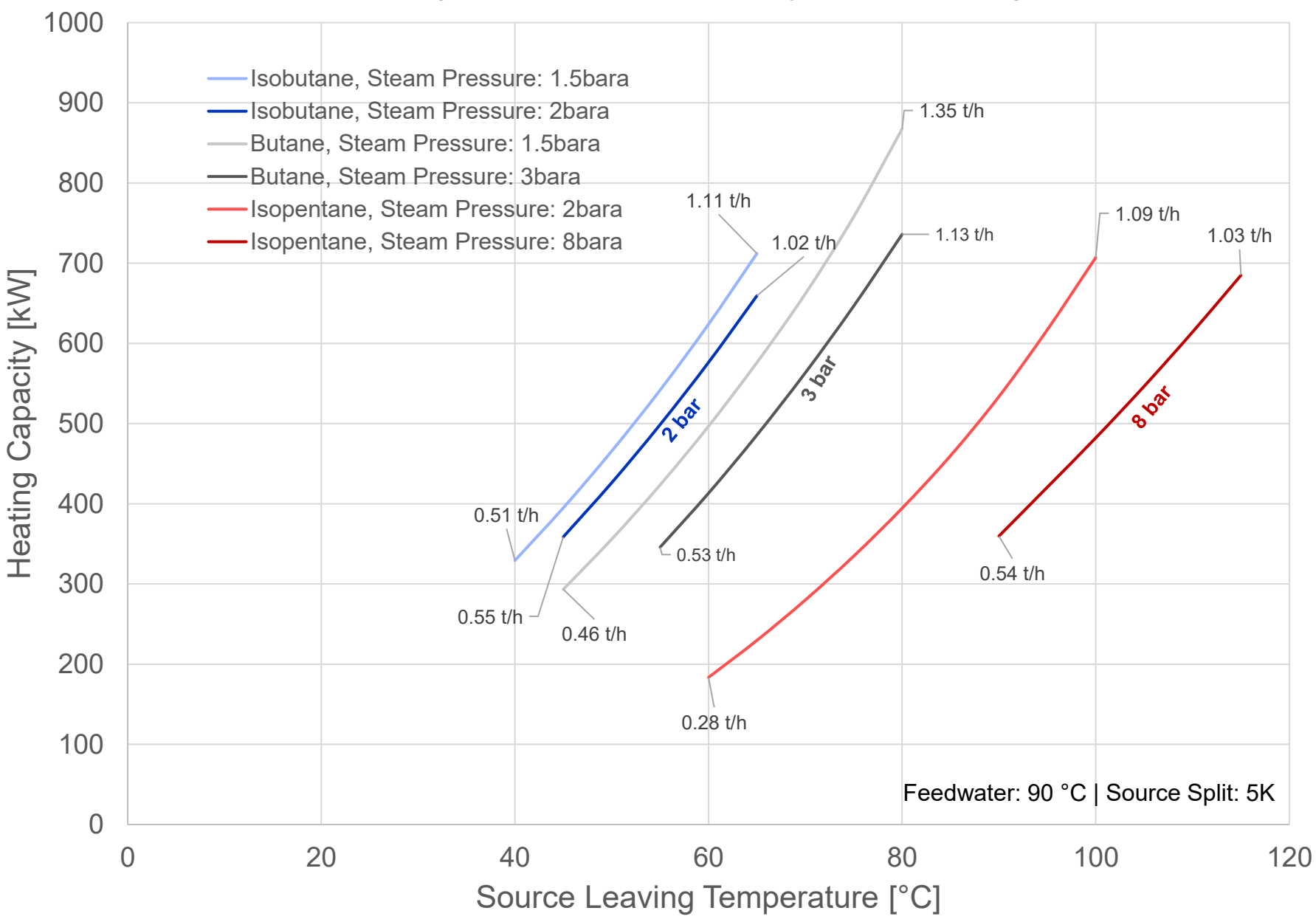


*for the lower stage circuit in 2-stage systems

Steam Generation with VQ180 (ThermBooster™)



1-stage VQ180 with different hydrocarbon refrigerants



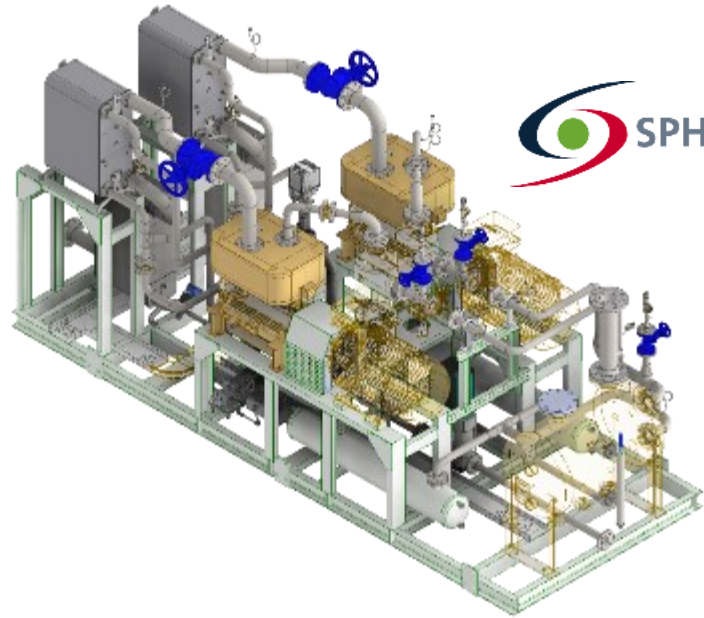
Reference Cases of VQ180 ThermBooster™



Supplying heat at more than 100°C

#	Country	Industry	Unit	#	Medium Sink	Temperature Sink [°C]	Refrigerant
1	Netherlands	Thermoplastics	LL2	2	Water	130 °C	R1233zd
2	Germany	Paper	LS2s-2	1	Steam	123 °C	R1233zd
3	Italy	Consumer goods	LS1-1	1	Steam	139 °C	R1233zd
4	Austria	Pharmaceuticals	LS2 + MVR	1	Steam	115 °C	Butane
5	Spain	Packaging materials	LS2	2	Steam	159 °C	R1336mzzZ
6	Austria	Chemicals	LL1	1	Thermal oil	140 °C	R1233zd
7	Germany	Bio plastics	LL2	1	Thermal oil	110 °C	Butane
8	Spain	Juice production	LL2	2	Water	110 °C	R1224yd
9	Switzerland	Meat processing	LS1	1	Steam	140 °C	Pentane
10	Germany	Whisky distillery	LS2s-1	1	Steam	120 °C	R1224yd
11	Turkey	Food production	LS2	1	Steam	142 °C	R1233zd

Reference Case: Aluminium Coating - Spain



**VQ180
ThermBooster™**

LS2 (1-stage)

Refrigerant

R1336mzzZ

Medium Heat Source

84/92 °C Water

Medium Heat Sink

159 °C, 6 bara Steam

Installed

July 2025

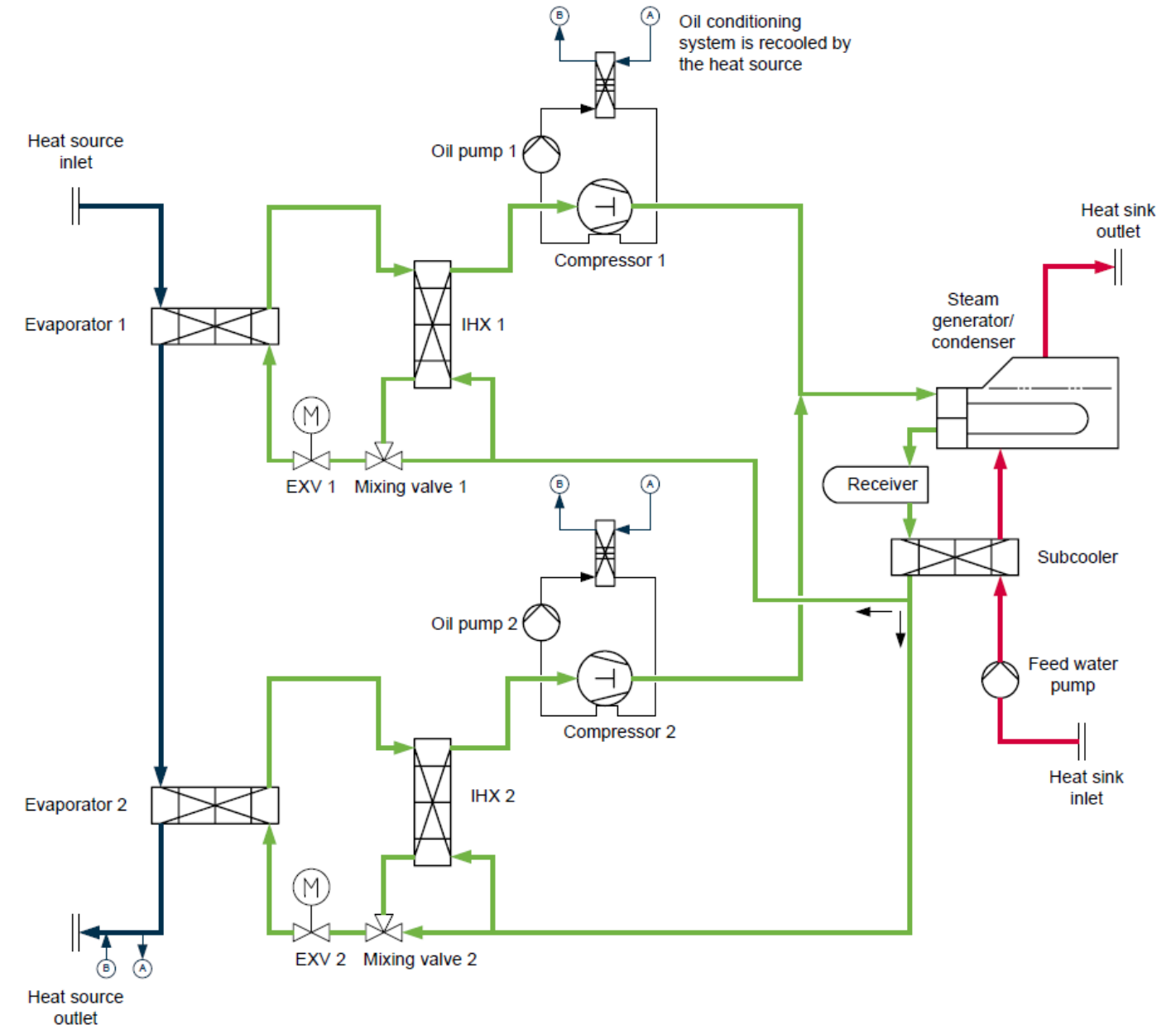
Heat generation

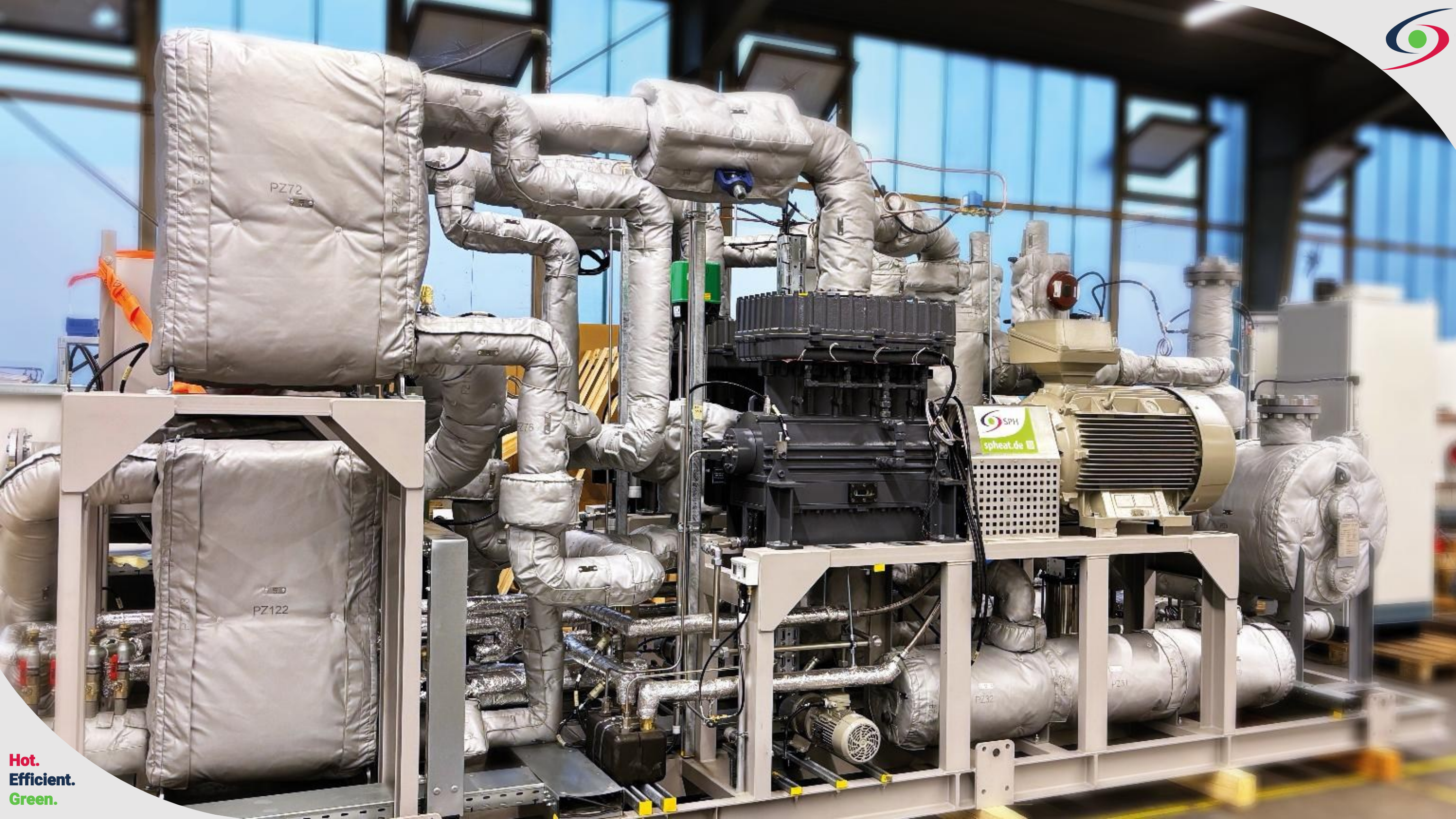
6.4 GWh / a

Decarbonisation

1,300 t CO₂ / a

COPELAND





Hot.
Efficient.
Green.

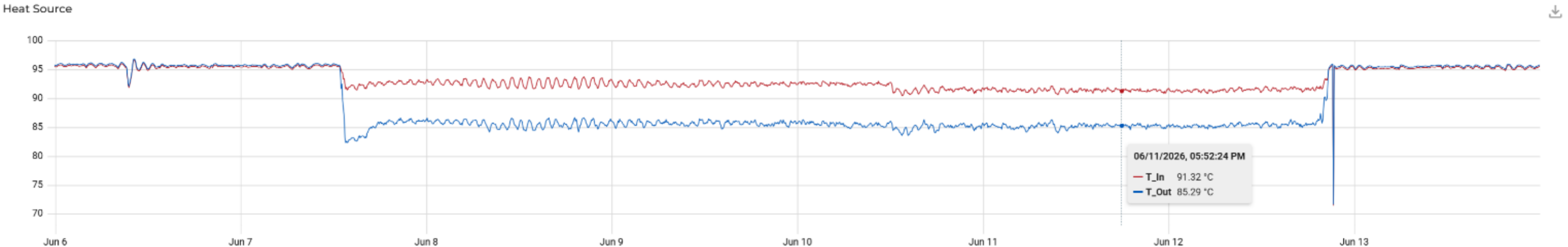
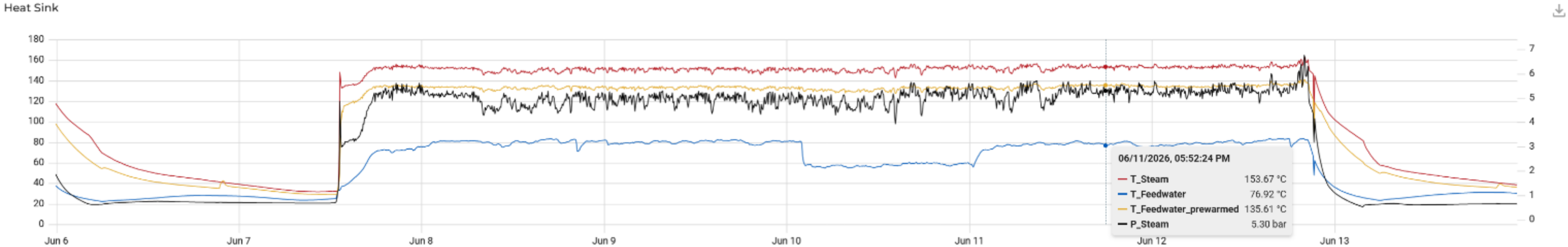
Reference Case: Aluminium Coating – Spain

Field data from LS2 ThermBooster™



$$\dot{m}_{steam} = 1.04 \frac{t}{h}$$

* Value estimated from simulation as flow measurement is not available on the sink



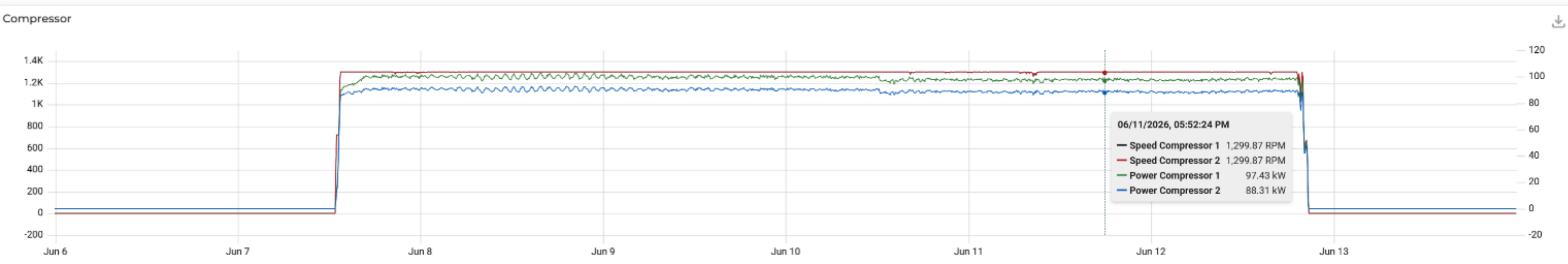
Reference Case: Aluminium Coating – Spain

Field data from LS2 ThermBooster™



* $\dot{Q}_{heat} = 697kW$
* COP = 3.75

* Value estimated from simulation as flow measurement is not available on the sink

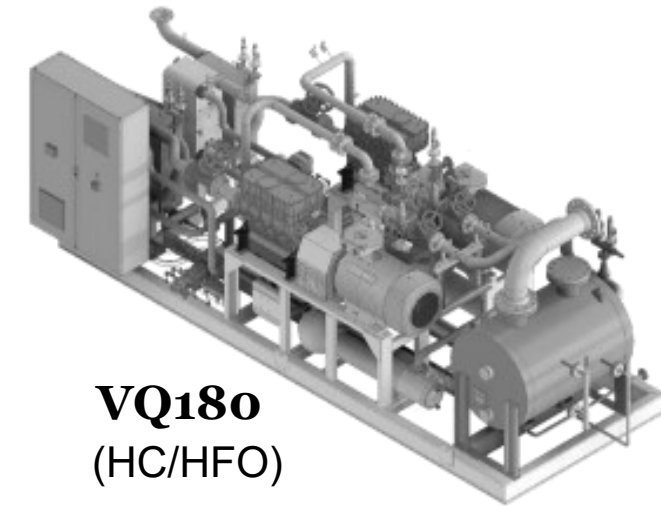


Conclusion

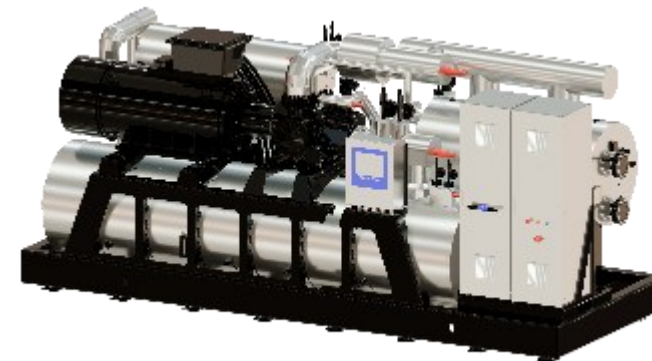
Fully aligned with Copeland's vision: VQ industrial heat pump portfolio enables decarbonization of process heating applications

- Wide range of standardized VQ heat pump products that can supply steam up to 8.9 barA.
- Proven compressor and control technology that is scalable and provides pathway to replace fossil-fuel-based process heating.
- Field installations demonstrate reliable operation of our heat pumps.
- High efficiency and steam generation performance support industrial decarbonization and reduce energy costs.

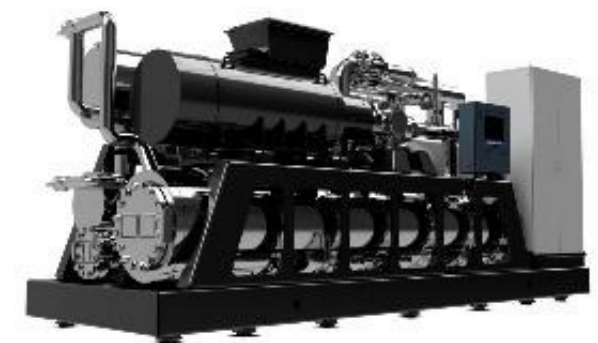
VQ Series Industrial Heat Pump Portfolio



VQ180
(HC/HFO)



VQ95
(Ammonia)



VQ145
(Ammonia)