Hall 4A

CHILLVENTA

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

CONNECTING EXPERTS.

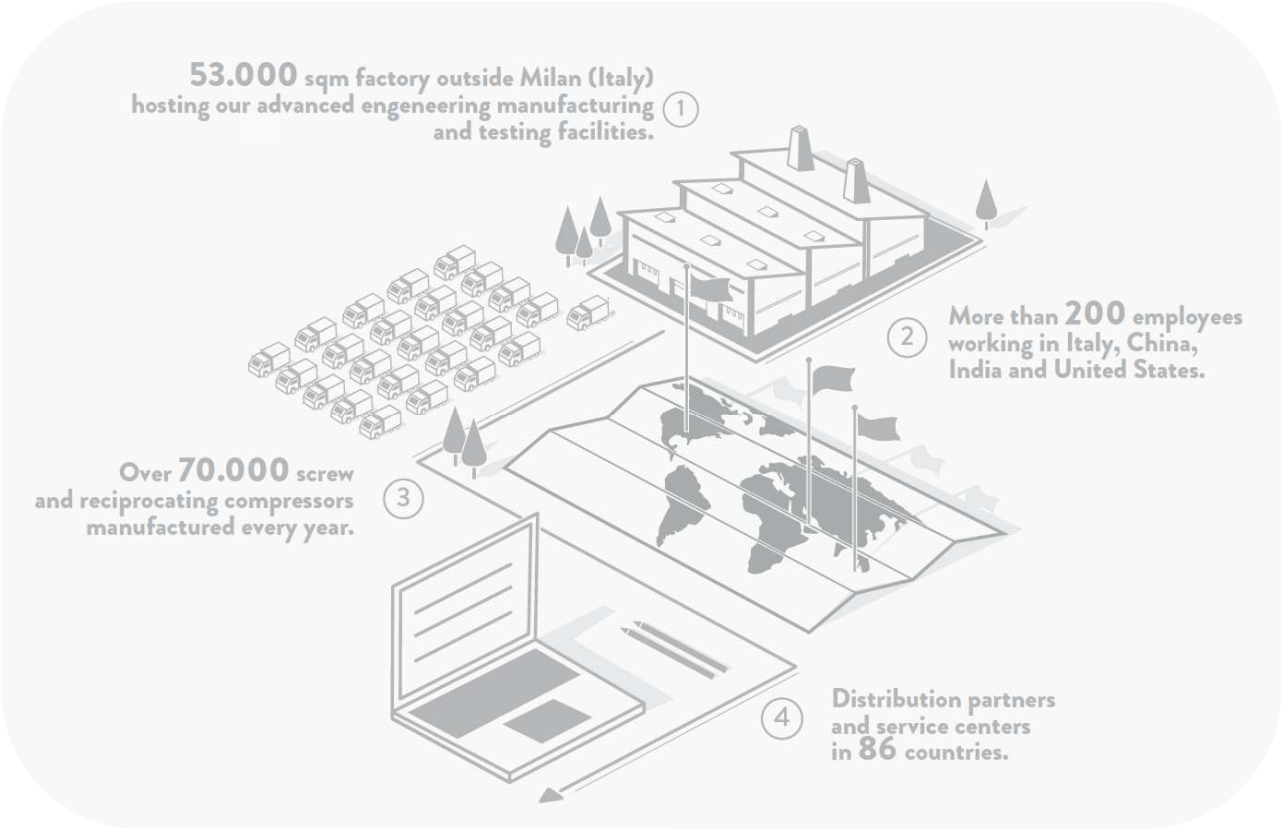
Corrado de Gioia-Carabellese

Project Manager

Driving Sustainability in the Heating Industry with Innovative High-Temperature Compressors

AGENDA

1. Company introduction
2. EU Regulations, Markets & Applications
3. HT series – Reciprocating Compressors
4. HT series – Screw Compressors

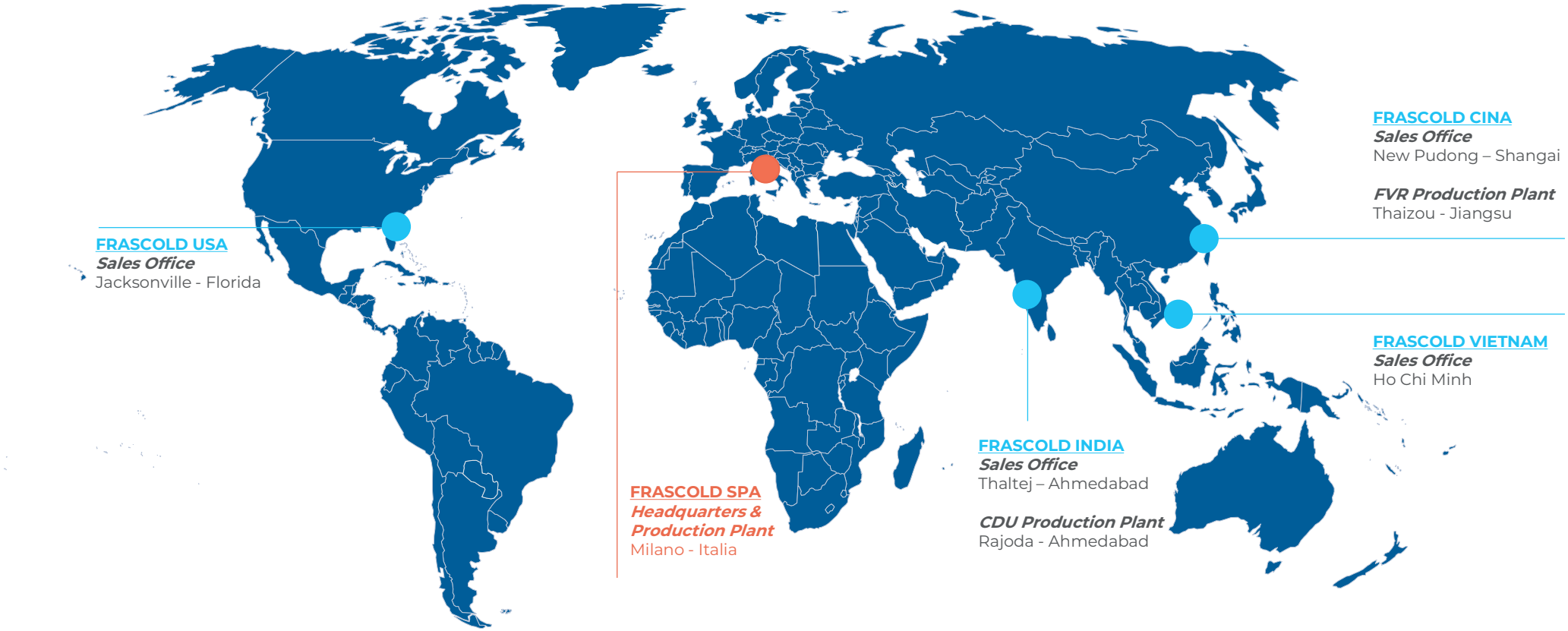


OUR IDENTITY
since 1936

We are a company specialized in the development, production, and marketing of compressors serving the refrigeration, air conditioning, and heat pump industries.

COMPANY

Global presence



EU REGULATIONS

EU Green Deal, FGAS and REACH

EGD

EU GREEN DEAL

Action plan to reach the EU climate-neutrality by 2050 through the European Climate Law. Intermediate target of 55% GHGs reduction by 2030 ('Fit for 55'). REPowerEU (2022) to speed up decarbonisation

2019

F-GAS

REVISION

Stricter quota system with a complete phase-out by 2050. From 2025, phase-down of FGAS with GWP > 150 for new equipment. Export ban for systems with GWP ≥ 1000

2024

REACH

REVISION

Inclusion of PFAS ("forever chemicals"). Stricter controls and potential bans on the use of most synthetic refrigerants (R32 and R152a out of scope)

2025?

HIGH TEMPERATURE HEAT PUMP MARKET

Market requests and sales development

MARKET REQUESTS

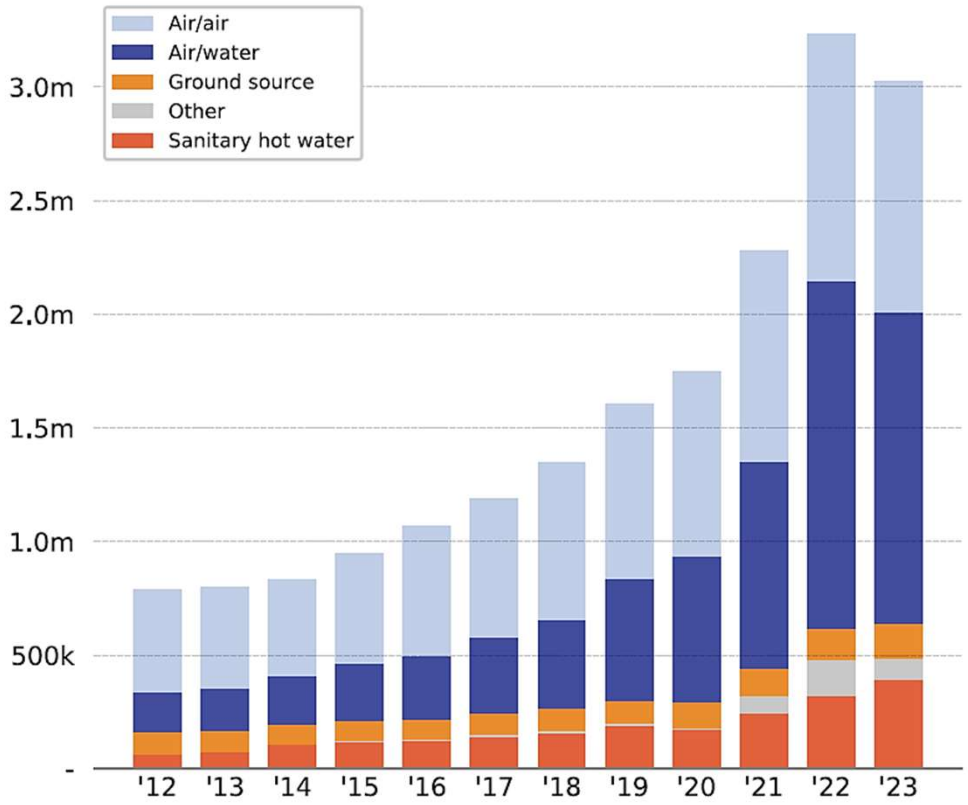
Achieve climate targets by reducing CO_2 emissions

High energy efficient solutions to reduce operational costs

Electrification of industrial processes by replacing fossil fuel

Reversible heat pump in the residential and commercial sector

SALES DEVELOPMENT

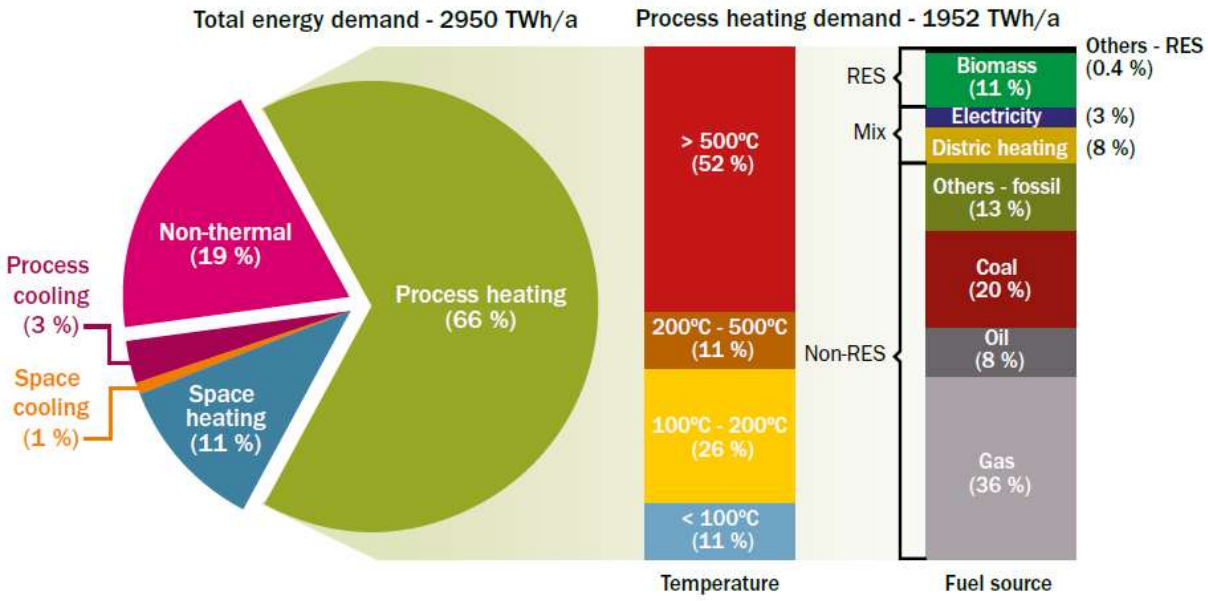


Source: EHPA

HIGH TEMPERATURE HEAT PUMP APPLICATIONS

EU energy demand and applications

EU ENERGY DEMAND



Source: Heat Roadmap Europe

APPLICATIONS

Process steam and hot air for drying processes

Recovery of industrial waste heat to increase process efficiency

Processes in the pulp and paper, food and beverage and chemical sectors

Heating solution for commercial and residential buildings (up to **80°C**)

HIGH TEMPERATURE SERIES

Reciprocating and Screw compressors

Compressors for HT heat pumps in single-stage or cascade systems

Reliable and efficient solutions

All models VFD compatible

Available in ATEX version

S, V HT

4 Cylinders
33 - 93 m^3/h @50Hz
7 - 30 HP

Z HT

6 Cylinders
106 - 126 m^3/h @50Hz
35 - 40 HP

W HT

8 Cylinders
142 - 206 m^3/h @50Hz
50 – 80 HP

CXH HT

Twin-screw with built-in oil separator
316 - 912 m^3/h @50Hz
130 – 310 HP

03

HT SERIES - RECIPROCATING COMPRESSORS

HT SERIES RECIPROCATING COMPRESSORS

Application temperatures

Leaving Fluid Temperature up to:

HT

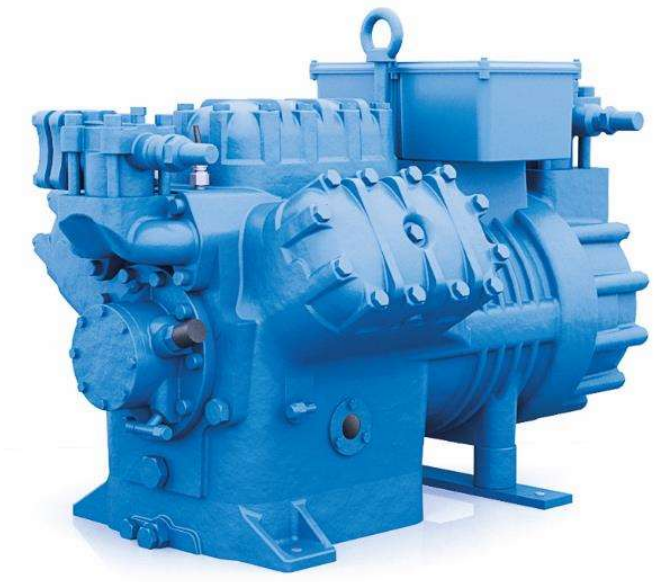
80°C	110°C	130°C	140°C
R290	R600a	R600, R1233zd	R601a, R1233zd

Std

65°C	100°C
R290	R600a, R1234ze, R515B, HC blends

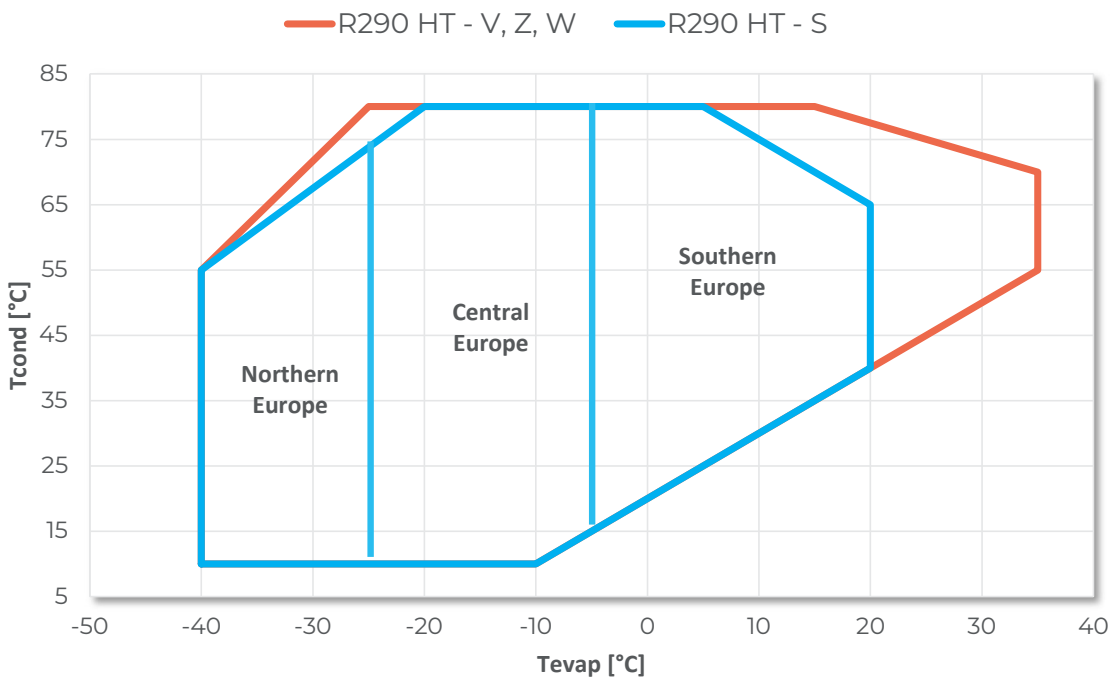
HT SERIES RECIPROCATING COMPRESSORS

R290 HT - Application envelope



TARGET APPLICATION

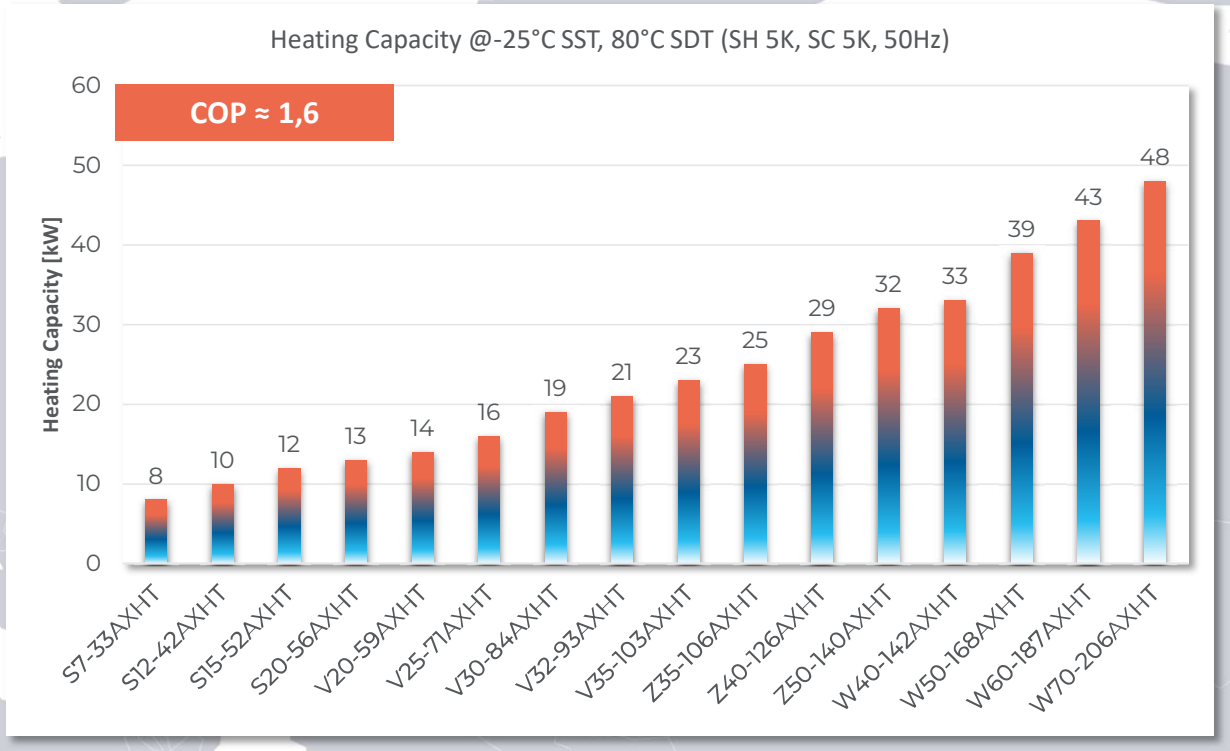
Air source Heat Pump - LWT up to 80°C & OAT down to -15 °C



HT SERIES RECIPROCATING COMPRESSORS

Heating capacity – low OAT

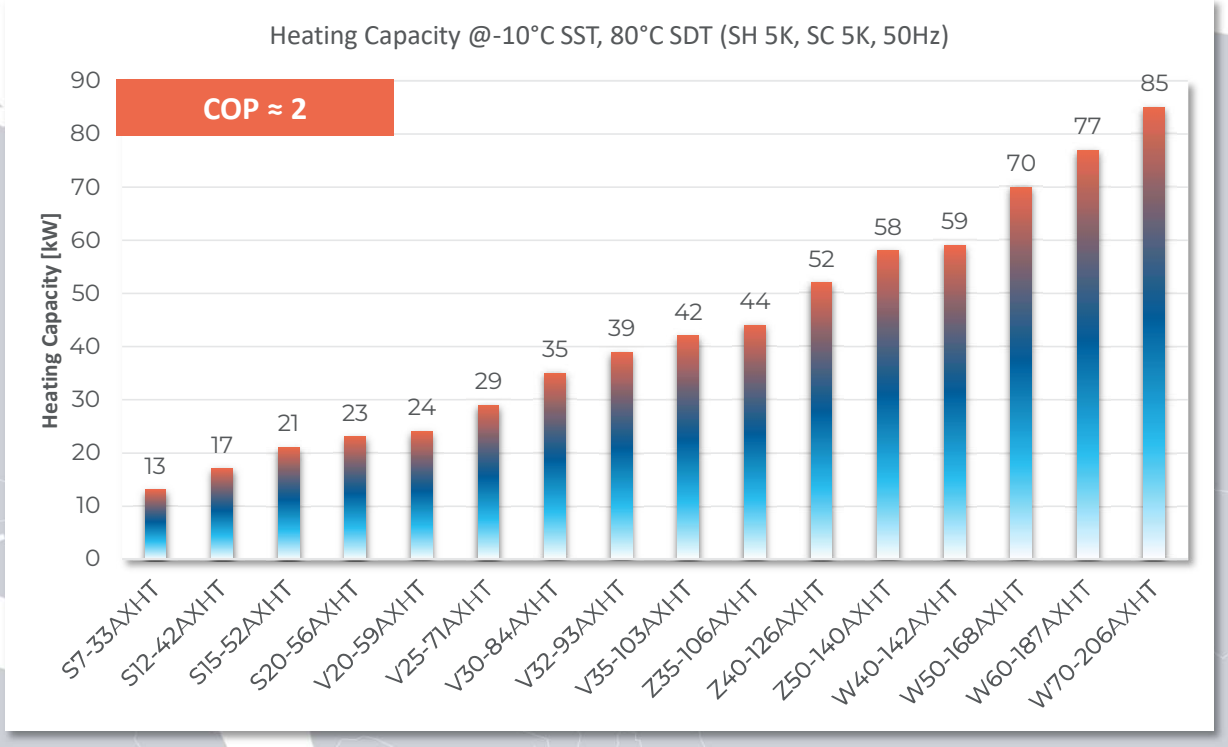
Northern Europe



HT SERIES RECIPROCATING COMPRESSORS

Heating capacity – medium OAT

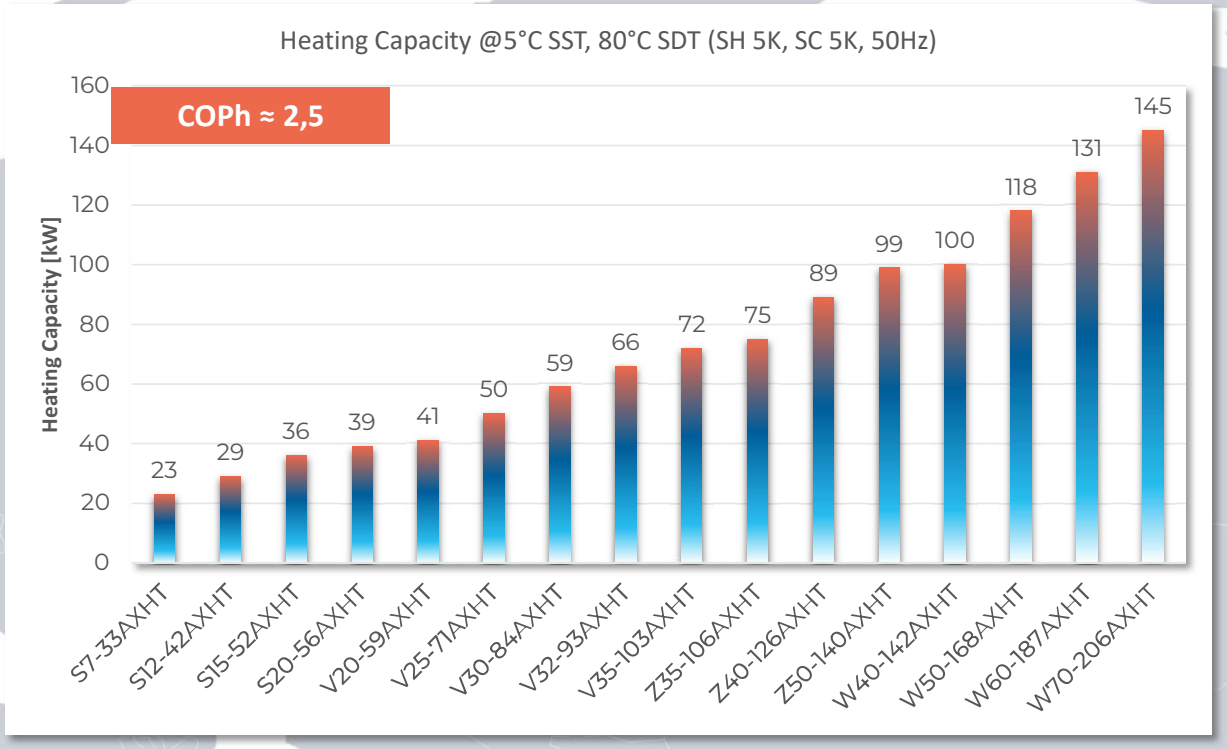
Central Europe



HT SERIES RECIPROCATING COMPRESSORS

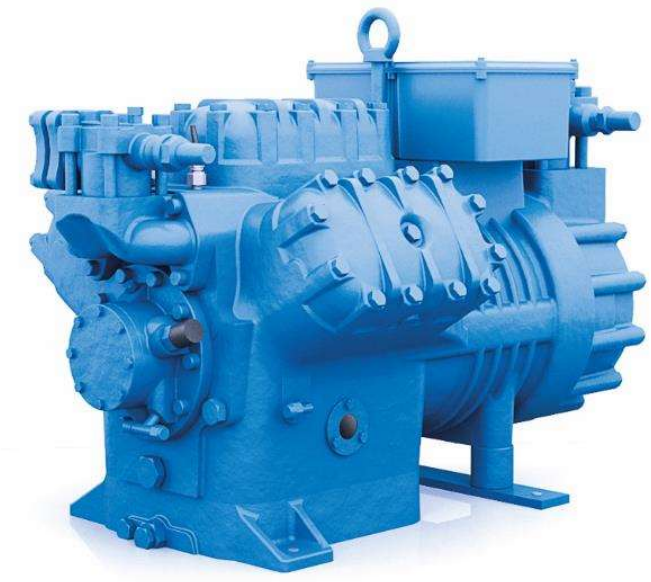
Heating capacity – high OAT

Southern Europe



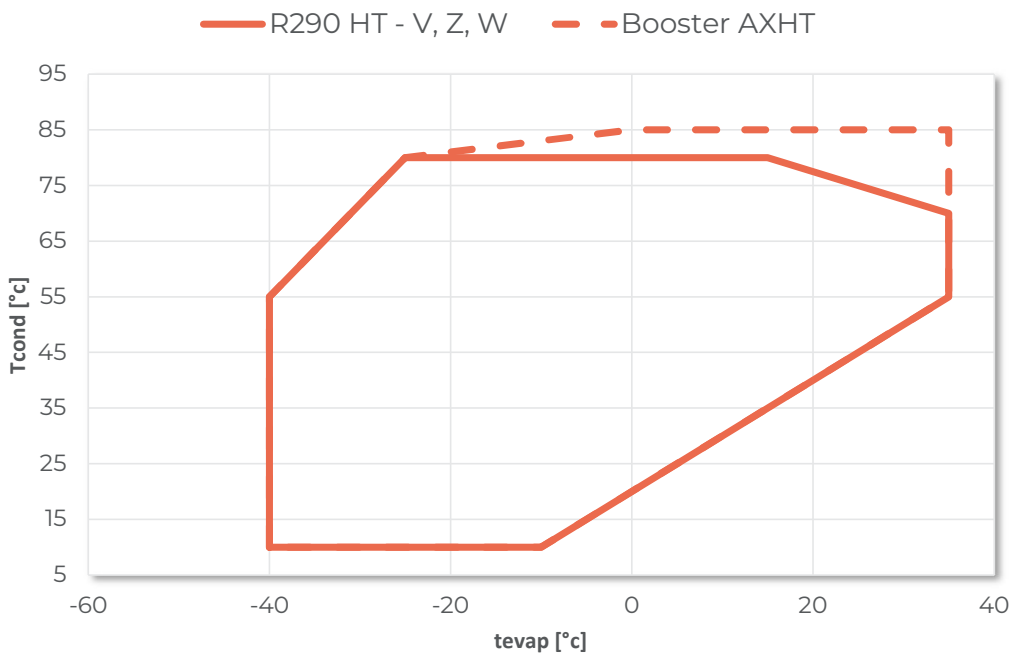
HT SERIES RECIPROCATING COMPRESSORS

R290 HT – Extended application envelope



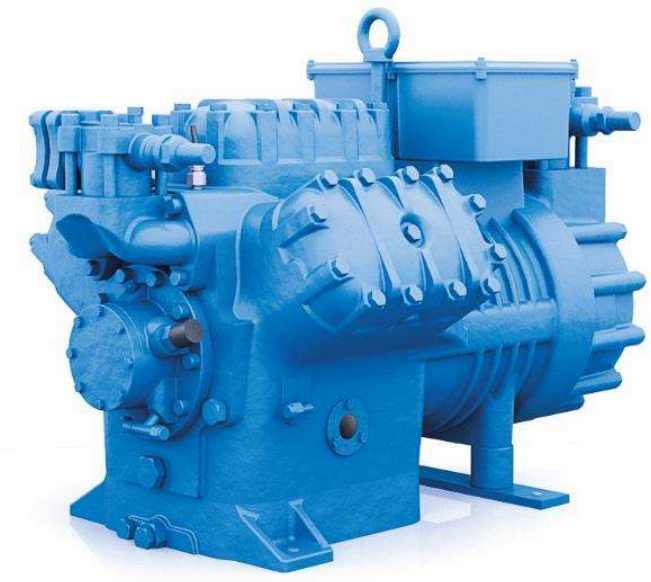
BOOSTER APPLICATION

Water source Heat Pump - LWT up to 85°C & supply temp. up to 45 °C



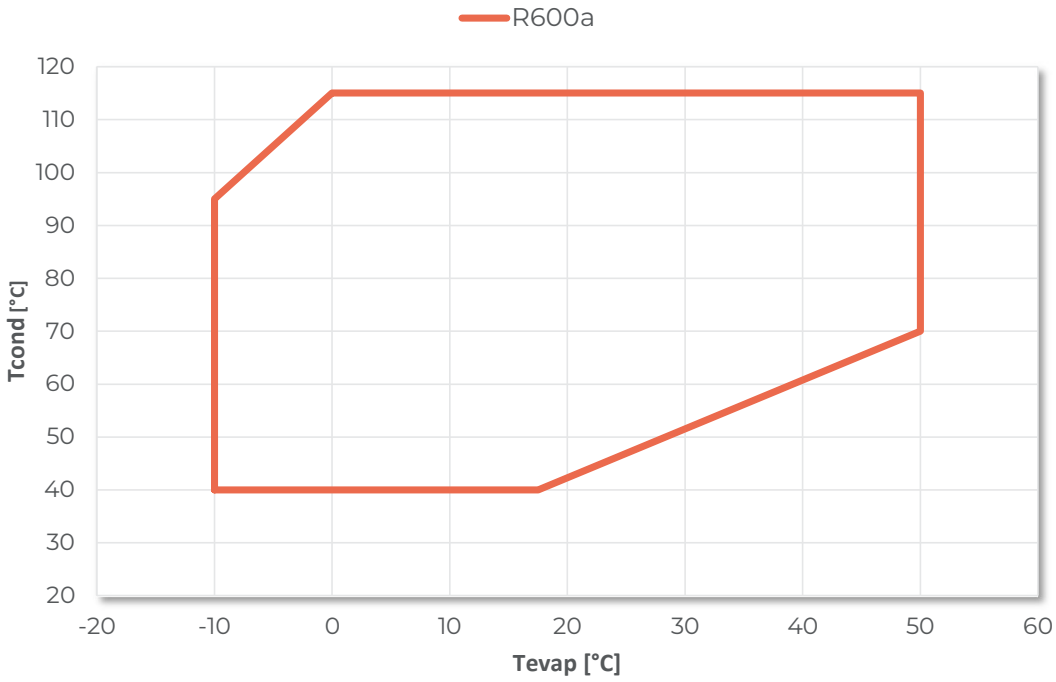
HT SERIES RECIPROCATING COMPRESSORS

R600a HT – Application envelope



BOOSTER APPLICATION

Water source Heat Pump - LWT up to 110°C & supply temp. up to 60 °C



04

HT SERIES - SCREW COMPRESSORS

HT SERIES SCREW COMPRESSORS

Application temperatures

Leaving Fluid Temperature up to:

HT

65°C	110°C	130°C	165°C
R290	R600a	R600, R1233zd	R601a

Std

55°C	90°C
R290	R600a, R1234ze, R515B, HC blends

HT **SERIES SCREW COMPRESSORS**

Validation projects worldwide

Field test running

3 project up to 140°C SDT

Denmark, Finland, China

HT **SERIES SCREW COMPRESSORS**

Validation projects worldwide

Field test running

3 project up to 140°C SDT

Denmark, Finland, China

Lab and field test

2 projects up to 165°C SDT

HT **SERIES SCREW COMPRESSORS**

Validation projects worldwide

Field test running

3 projects up to 140°C SDT in Denmark, Finland and China. R601a and R1233zd(E) as reference refrigerants

Lab and field test

2 projects up to 165°C SDT. R601a as reference refrigerant

Design phase

Two different versions according to the required temperature level: up to 150°C and 180°C as discharge temperature

Validation

Series validation expected within 2024. Growing number of projects both in and outside Europe

CONCLUSIONS

Towards a sustainable future

> **Regardless of the temperature requirements or the type of refrigerant used, Frascold gives you a solution**

The new regulations force the use of more efficient and **sustainable solutions** with low GWP refrigerants

The demand for process heating in the industrial sector and space heating in the commercial and residential sectors offers significant **market opportunities**

Frascold has developed dedicated piston compressors for high temperature **R290** applications, with the widest envelope currently available on the market

Frascold has also developed innovative solutions for higher temperature applications, reaching **over 160 °C** secondary fluid temperature with natural refrigerants

Thank you

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