

CAREL INDUTRIES

Company profile & Solutions for Heat Pumps

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History in brief

- **Founded in 1973** as an electrical panel manufacturer.
- CAREL is a world leader in control solutions for **air conditioning, refrigeration and heating systems.**
- **15 production sites** on 4 continents (Europe, Asia, NAM, SAM).
- **49 branches** around eighty countries.
- **In June 2018, CAREL launched an IPO** (STAR segment).
- The value of its stock has since grown by approximately **400%**.

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A wide range of end-markets

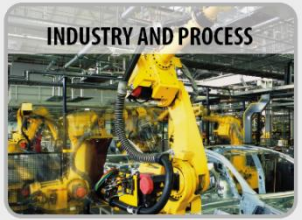
HVAC

INDUSTRIAL

DATA CENTERS



INDUSTRY AND PROCESS



PHARMA AND FOOD



RESIDENTIAL

RESIDENTIAL



COMMERCIAL

SHOPPING CENTERS



OFFICE SPACE



RECREATIONAL



REFRIGERATION

FOOD RETAIL

CONVENIENCE STORES



HYPERMARKETS



FOOD SERVICE

RESTAURANT CHAINS



REFRIGERATED MERCHANDISERS



WHOLESALERS



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Product platforms

PROGRAMMABLE CONTROLS
Electronic controls easily programmable and customisable



HMI AND UNIT TERMINALS
User interfaces for units and systems



PARAMETRIC CONTROLS
Entry level electronic controllers



ADIABATIC HUMIDIFIERS AND EVAPORATIVE COOLERS
Pressure water atomizers



ISOTHERMAL HUMIDIFIERS
Steam production systems



HEAT EXCHANGERS
Heat exchangers for AHU



DAMPERS
Dampers and other AHU components



POWER SOLUTIONS
Electrical panels



SENSORS AND PROTECTION DEVICES
Temperature/humidity and air quality sensors



EEV & DRIVERS
Electronic valves for the modulation of refrigerant flow



SPEED CONTROLLERS & INVERTERS
Speed control devices for BLDC compressors



COMPRESSORS (1)
BLDC compressors



REMOTE MANAGEMENT, MONITORING SYSTEMS, ANALYTICS
Solution for local/remote management monitoring and optimisation



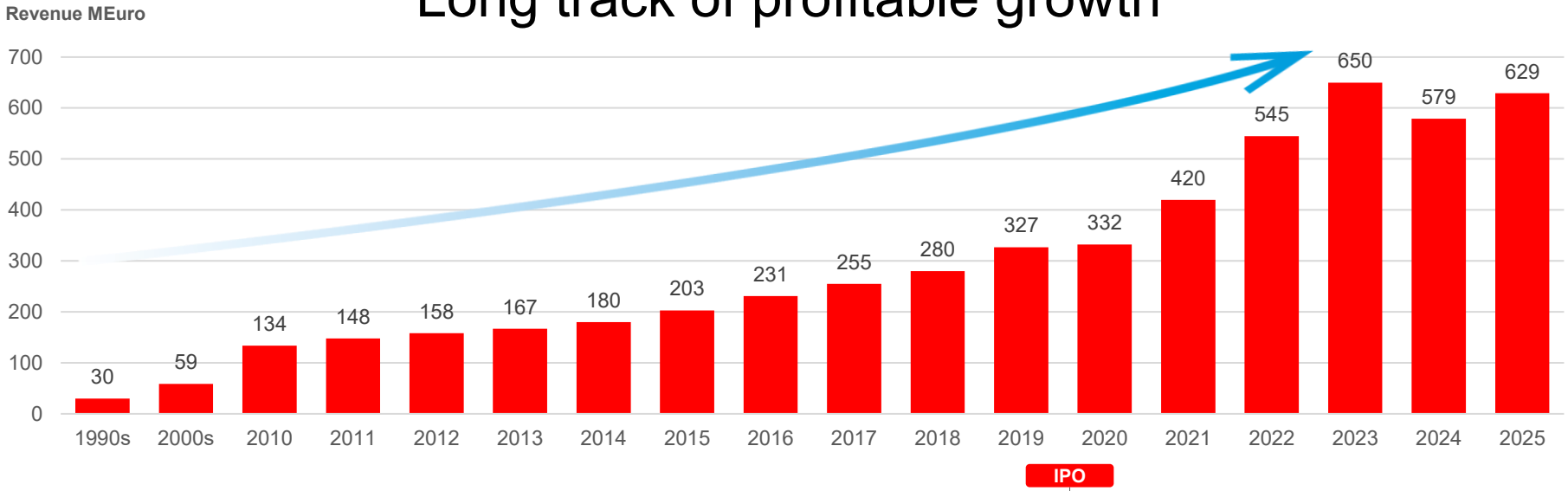
SERVICES
Full portfolio of digital and non digital services



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Long track of profitable growth



IPO

Plants & R&D

Branches

2018 – RECUPERATOR (ITA)
2018 – HYGROMATIK (GER)
2019 – ENERSOL (CAN)
2021 – ENGINIA (ITA)
2021 – CFM (TUR)

2022 – ARION (ITA)
2022 – SAUBER (ITA)
2022 – KLINGENBURG (GER/POL)
2022 – SENVA (US)
2023 – KIONA (NOR)

Key: R&D centre Plants Acquisitions of local distributors

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Leading provider of advanced control solutions for HVAC/R

Innovation focus

- **6 main R&D centres** in Europe (3), in China (1) and in the US (2)
- **>5% of revenues** invested in **R&D**

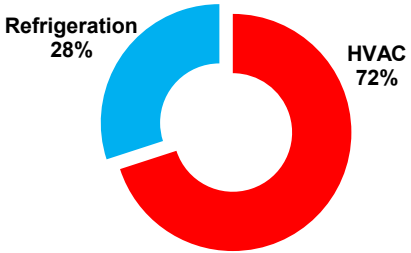
Global footprint

- **15 production plants** in Italy (6), in Croatia (2), in Poland (1), in Germany (2), in China (1), in the US (2) and in Brazil (1)

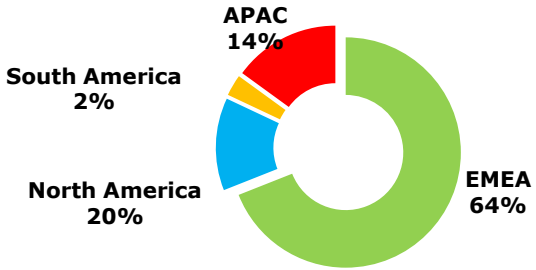
Key financials 2025

Revenue	EBITDA	Net profit
€629m	€124m	€73.6m

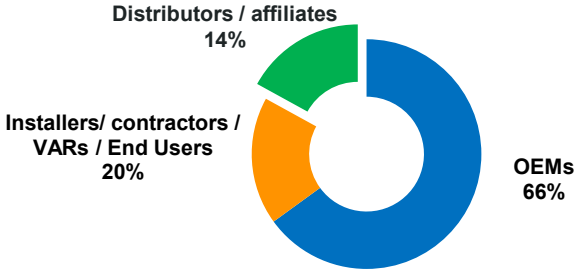
Revenue breakdown 2025



By market



By geography



By channel

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Highly-efficient global operations, sales and R&D

GLOBAL PRODUCTION FOOTPRINT

DIRECT AND HIGHLY SKILLED SALES AND TECH SUPPORT NETWORK

BEST POSITIONED TO CAPTURE GLOBAL GROWTH OPPORTUNITIES

NORTH AMERICA

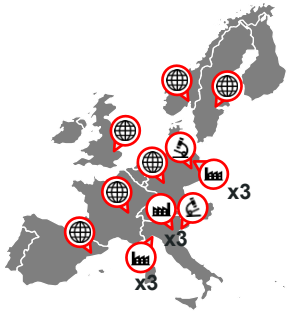


307 Employees

104 Sales force

2 R&D Centre

WESTERN EUROPE



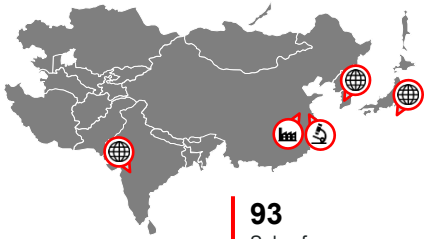
9 Plants

1,431 Employees

495 Sales force

3 R&D Centre

NORTH APAC



93 Sales force

327 Employees

1 R&D Centre

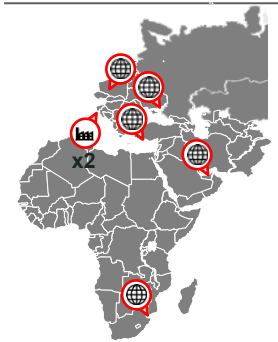
SOUTH AMERICA



64 Employees

23 Sales force

RoEMEA



497 Employees

133 Sales force

SOUTH APAC



83 employees

83 Sales force

R&D centres Plants Sales subsidiaries

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Solutions for Heat Pumps





Programmable controller (µPC3*)



Pressure transducers (SPKT* / SPKS*)



HMI user interface





Electronic expansion valve (E²V-F)



Power+ inverter (PS2*)

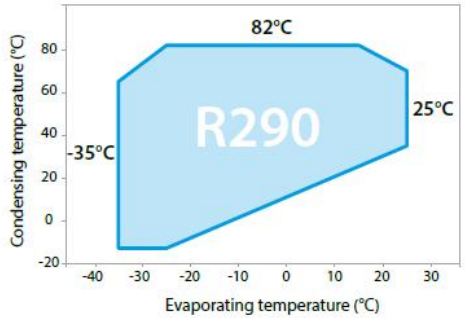


AVIC rotary compressor

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DC compressor technology

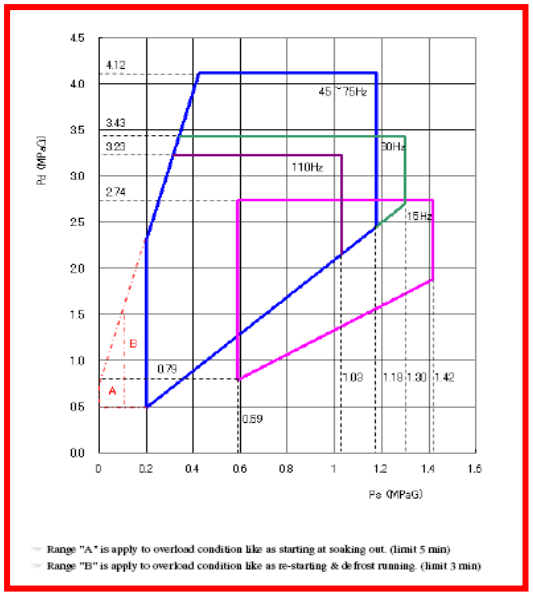
R290 compressor verification software





Compressor real-time control:

- Min/Max compressor ratio
- Min pressure differential
- Max motor current
- Max/min discharge pressure
- Max/min suction pressure
- Max discharge temperature
- Min/Max compressor speed
- Oil warm-up and recovery
- Suction/discharge superheat
- Start-up/shut-down phases
- Speed ramps and timings



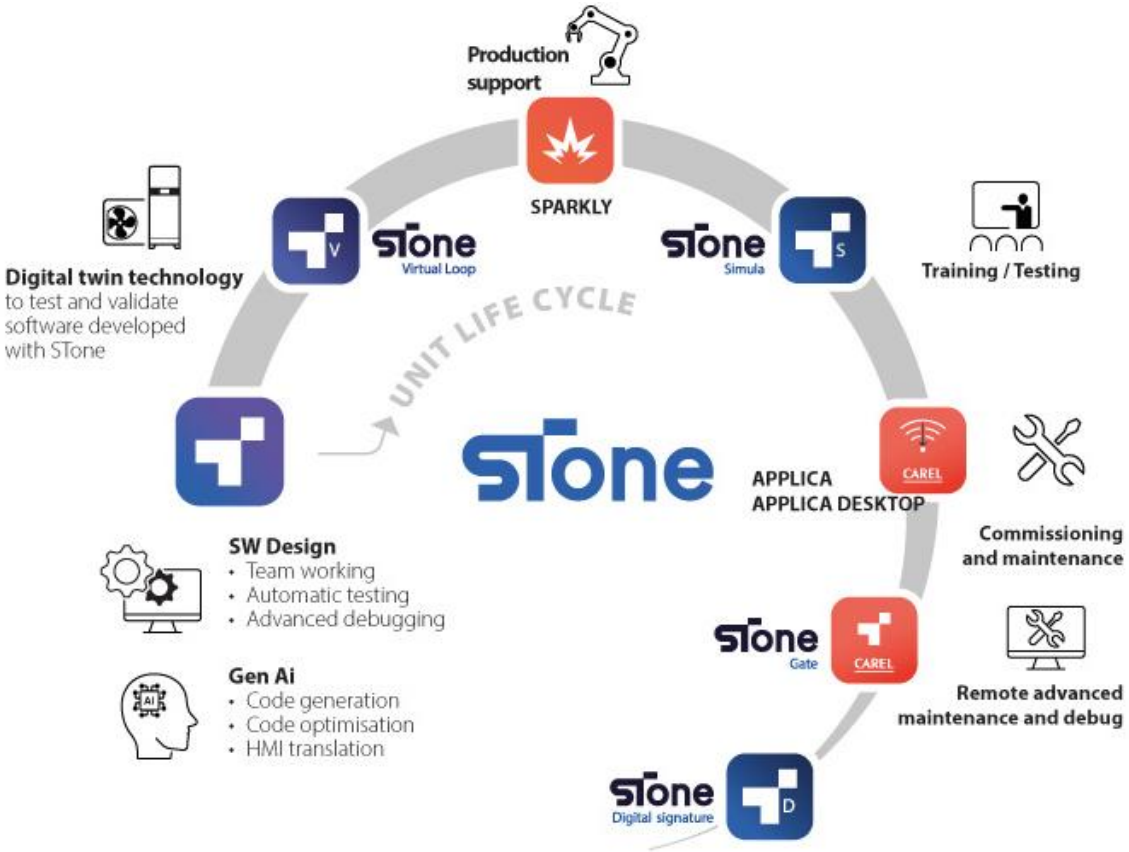
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DC compressor technology



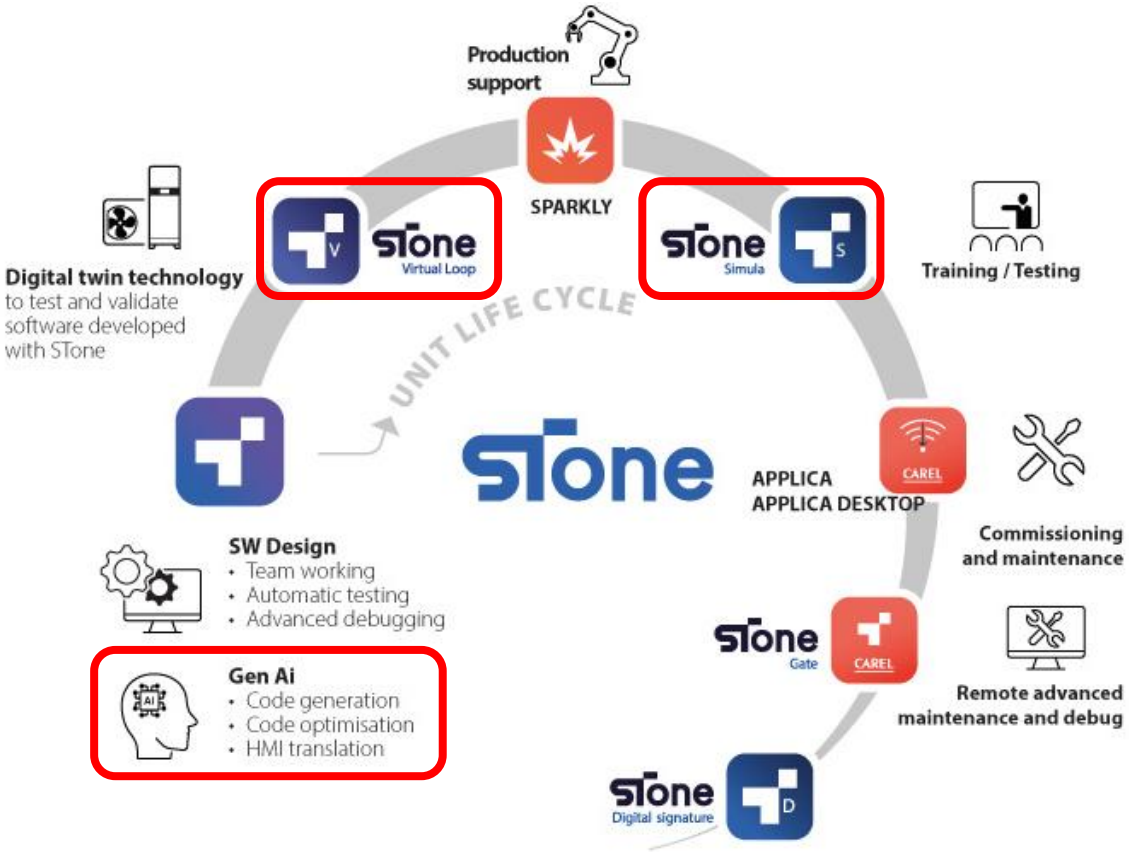
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STone software development ecosystem



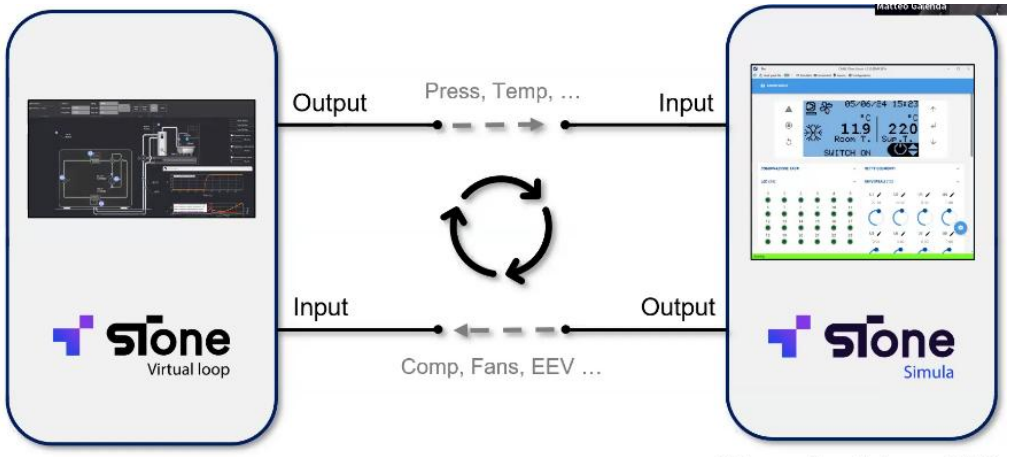
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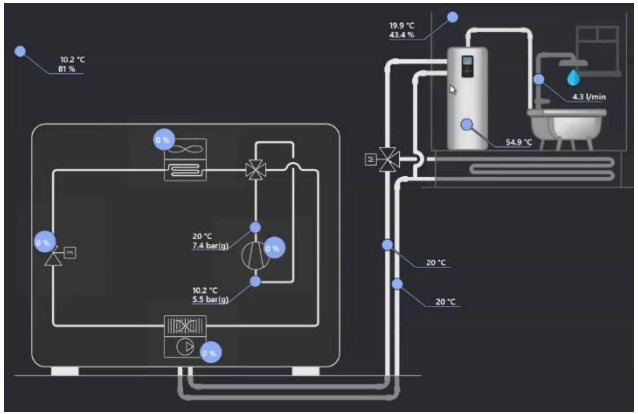
STone software development ecosystem

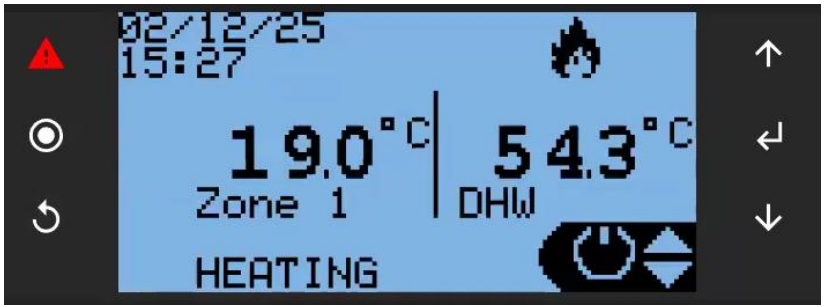


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STone SIMULA & VIRTUAL LOOP







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Fault detection with machine learning



Machine Learning-Based Fault Detection in a R-290 Residential Heat Pump Unit

Daniele Scapin[a*], Matteo Galenda[a], Riccardo Pengo[a],
Chiara Corazzol[a], Mirco Rampazzo[b]

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Fault detection with machine learning







Fouling

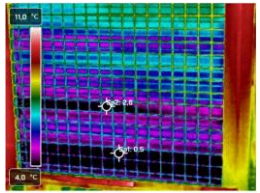
- coils (dirt, dust, ice)
- water circuits
- refrigeration circuit



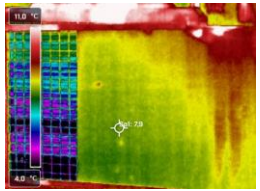
Refrigerant

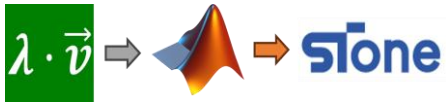
- undercharge (leaks)
- overcharge

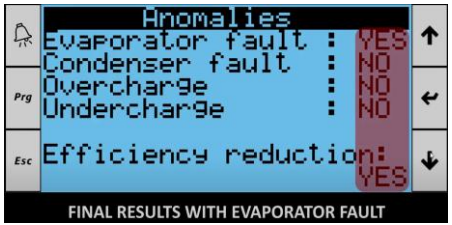
Fault Free



Fouled







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