High Efficiency Solutions.

CAREL

onShow

Discover our world, experience our solutions, take part of it!

Stand up for climate

committed to the development
of integrated, technologically-innovative
and **high-efficiency solutions**.

Experience our passion
for a greener future


Stand
up for
climat

Environmental sustainability, energy efficiency and IoT are all widely used terms that have become the trends in industry, not only in our sector. Challanging trends leading the continuous research and development of innovative and technologically advanced solutions.

What about us? Are we frightened by these changes? Are our solutions moving in this direction?

"CO2 red'y" and **"DC inverter technology available now"** are two of the foundations on which we aim to propose high-efficiency solutions, on one hand driven by the need to use low GWP refrigerants - as required by European F-gas regulation - and on the other our reply in advance concerning the ECO design challange by the incredible results obtained using DC inverter technology in terms of energy efficiency.

And we haven't forgotten that IoT that will have a radical impact on the HVAC/R business: the possibility to process enormous amounts of data will allow analysis of overall system performance, so as to identify energy cost factors and take action accordingly.

Our objective? To be leaders in shaping trends, so as to contribute to climate protection through smart cooling.

Hecusistema

Real capacity modulation for CO_2 condensing units

Hecu sistema has now evolved to work with natural refrigerants by integrating management of DC inverter compressors for CO_2. By using DC inverter compressors, Hecu sistema can offer real modulation of cooling capacity, so as to achieve low energy consumption above all at part loads. Such very high performance attainable with CO_2 means the system both complies with the Eco-design directive on energy performance and exceeds the limits set by the F-Gas Regulation for condensing unit applications. Hecu sistema also stands out for its real-time communication with the refrigeration units, allowing implementation of advanced system optimisation logic, with dynamic set points and extremely stable control so as to ensure perfect food preservation and reduce food waste.

New efficiency frontier

- Availability of DC inverter compressors for CO_2
- Wide and real capacity modulation to maximise efficiency at partial load
- Self-optimisation through real time communication with indoor units

CO2 READY

Innovation suitable for all

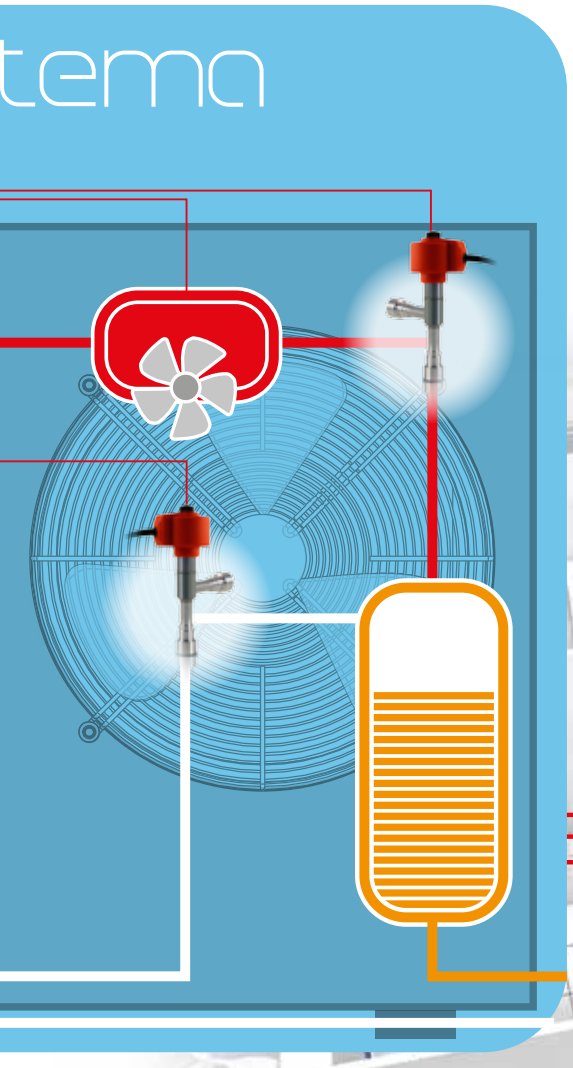
- System solution in compact, fully-integrated equipment
- Intuitive programming and fast commissioning procedure
- Compact dimensions and weight, considerable reduction in TCO

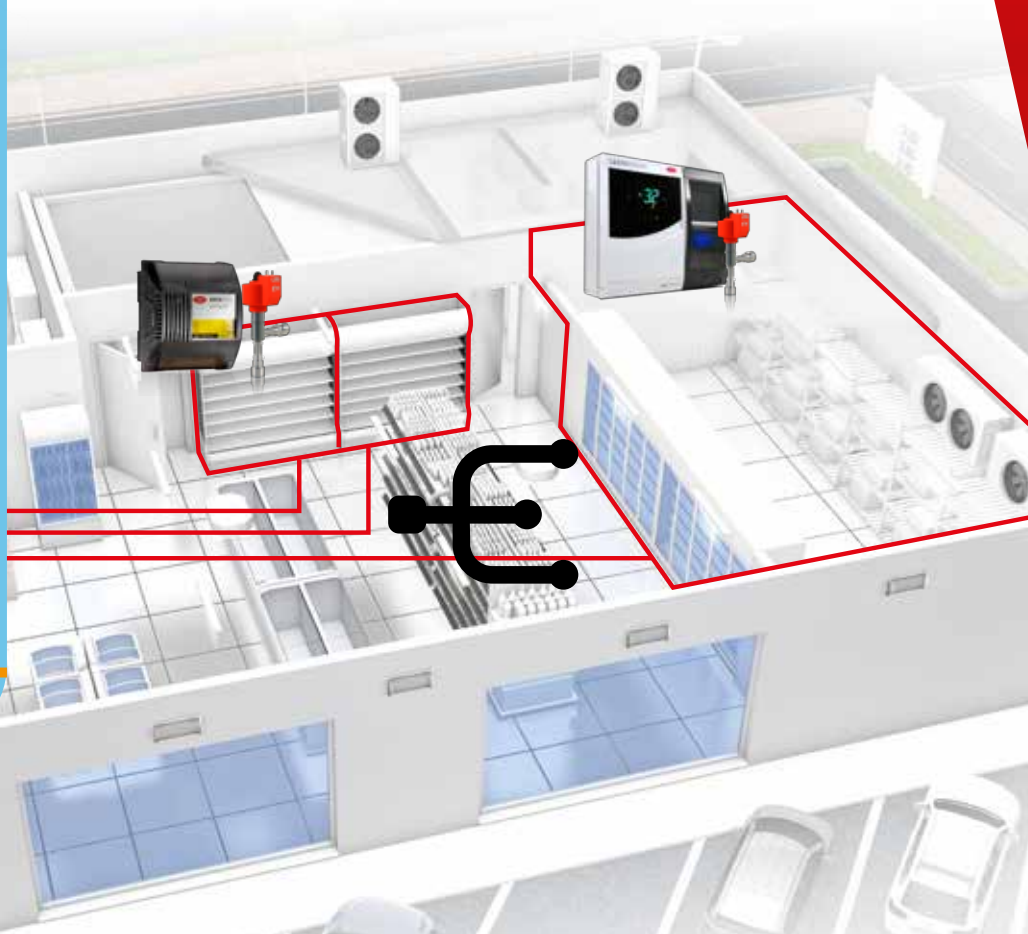
NO food waste

- Reliable performance with precise envelope compressor control
- No system down-time for oil return issues with advanced software feature
- Stable product temperature thanks to modulating device and floating setpoint

Always connected

- Total connection with tERA system from smartphone, tablet and PC
- Performance monitoring, full settings management and periodical reports
- Benchmarks, dashboards and business intelligence tools

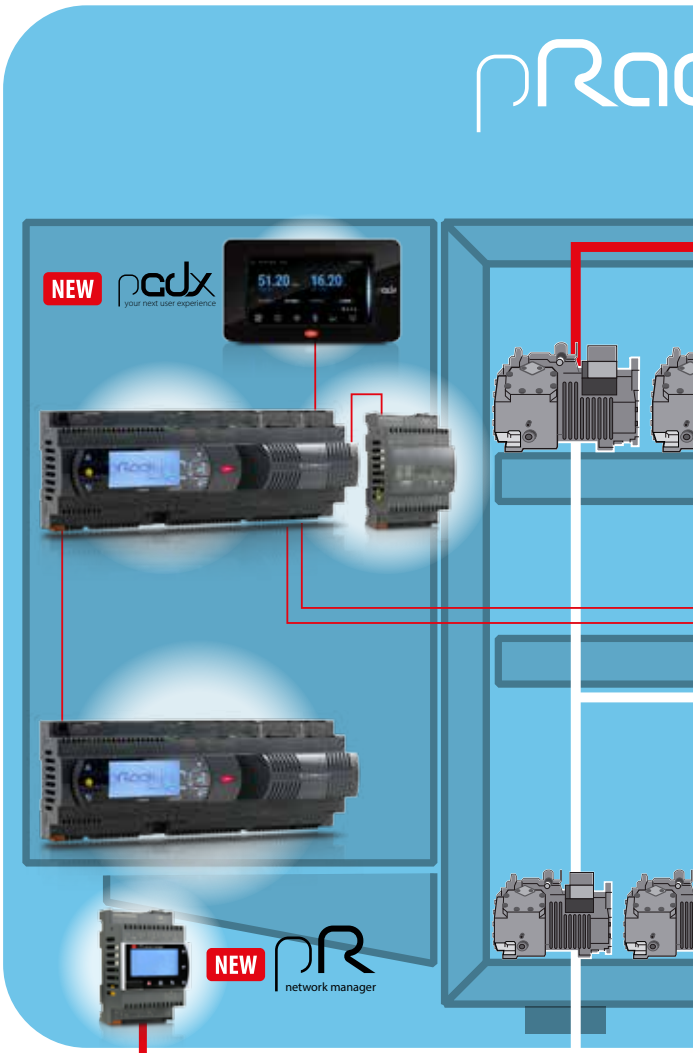




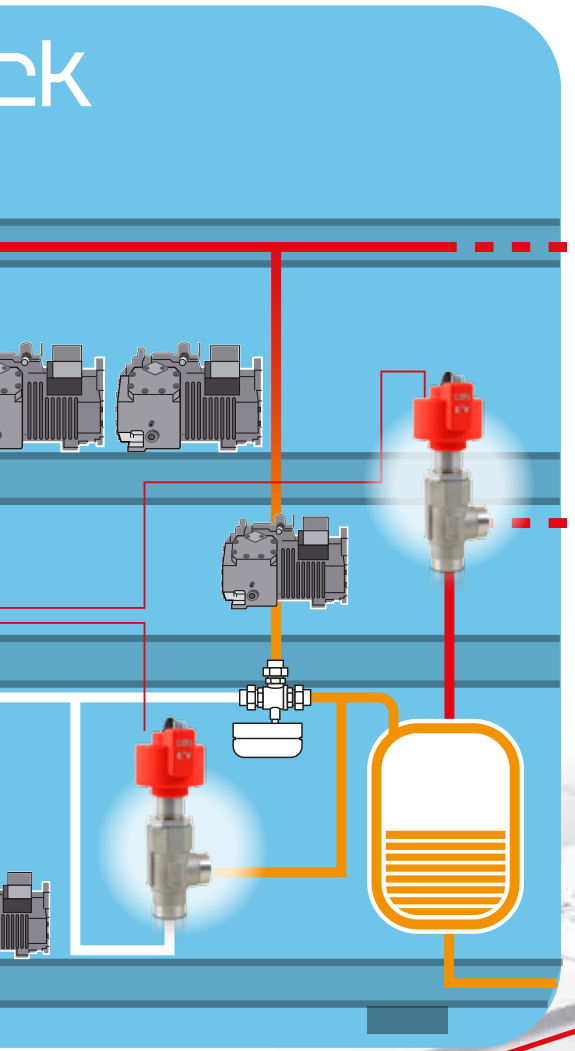
pRack

Leading control for high efficiency CO_2 racks

pRack pR300T represents the complete offering for control and management of centralised CO2 compressor racks. Its main strengths are user simplicity, energy saving and high efficiency. pRack is moreover the first controller on the market that is able to control up to three separate suction lines at the same time.
pRack is now able to provide coefficient of performance calculation, real-time heat recovery evaluation and faster synchronisation with units through connection to the new pR network manager.



CO2 REDY



Optimal medium pressure

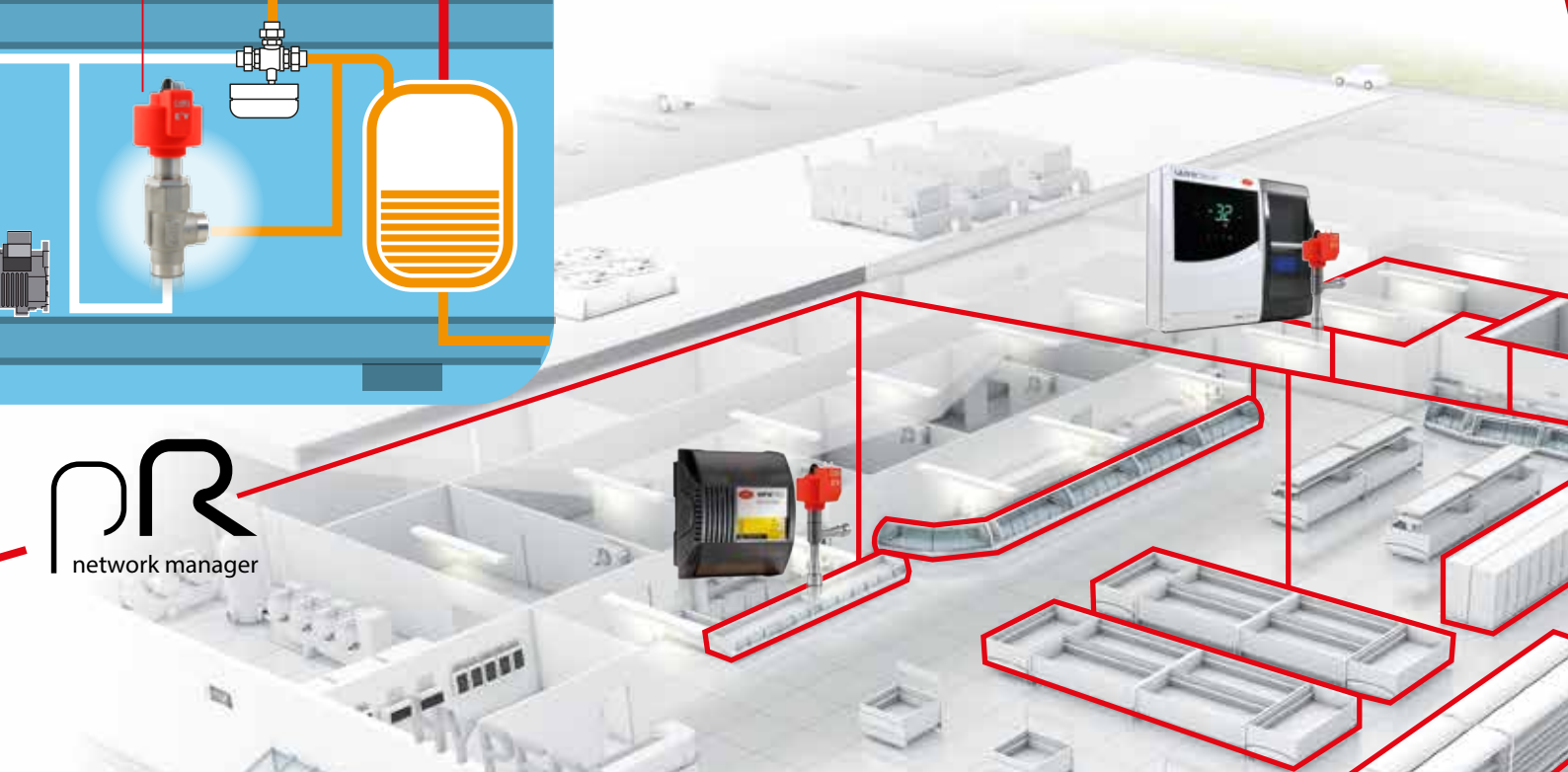
- Self-optimisation of ECO compressor set point
- Operating conditions to match seasonal conditions
- Increased ECO compressor efficiency

Interactive triple suction

- Integrated management of the parallel suction line
- ECO compressor able to run as MT compressor
- Direct communication between MT, LT and ECO compressors

pR network manager

- Coefficient of Performance calculation
- Real-time heat recovery evaluation
- Faster synchronisation with units



pR network manager

High efficiency showcase controller for waterloop systems

HEOS – our latest offering for the supermarket sector – is as a new way of designing supermarket refrigeration systems.

The concept underlying HEOS is based on the development of refrigeration systems for the food cold chain that, rather than using long lines of copper pipes carrying refrigerant to the cabinets, involves equipping the cabinets themselves with their own compressor. These cabinets are then connected together and to the outside by plastic pipes, which carry the water needed to take away the heat produced by the refrigeration unit. This latter system is known as a water loop, and is the concept typically associated with HEOS. This aspect alone allows customers who choose HEOS to already meet the 2020 goals for reducing the use of environmentally-harmful refrigerants (i.e. F-GAS regulation).

By using this system, around 80% less refrigerant is needed, a figure that grows even further when taking into consideration the consequent reduction in refrigerant leaks - 96%. Cabinet installation using plastic tubing rather than copper pipes is much simpler and faster, as are the maintenance or replacement of existing cabinets, or frequent changes to store layout.

With HEOS, CAREL has brought back the use of water loop technology while solving all the existing problems by investing in technological innovation: the HEOS water loop is in fact fitted with our E^2V expansion valves and our Power+ inverters for DC compressors.

This "injection of CAREL DNA" into the water loop application has transformed an energy "deficit" into energy savings of up to 25% compared to traditional systems, with an incredible increase in performance in terms of food preservation quality, due to the precision of the EEV and the Power+, and with low noise levels equivalent to traditional systems.

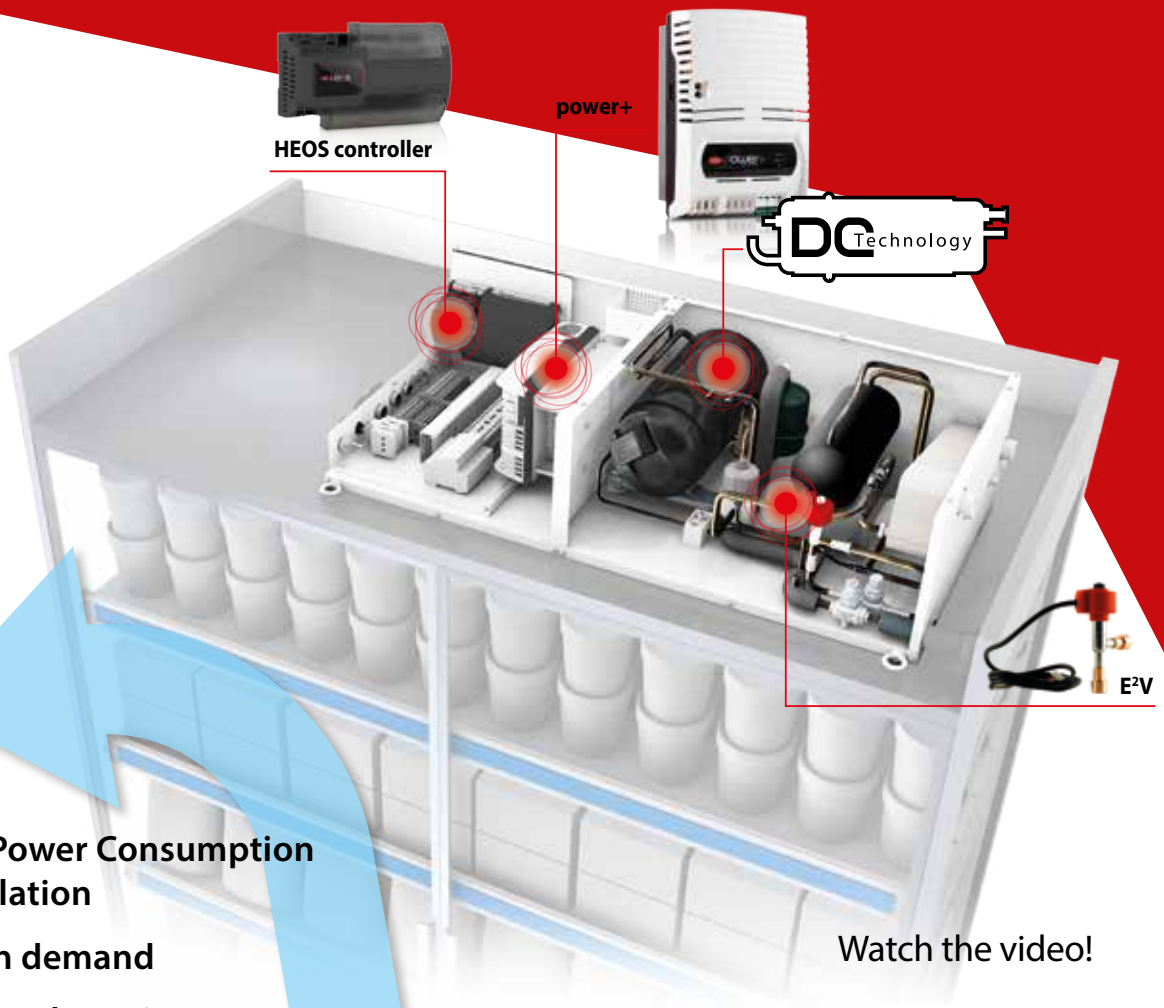
Full monitoring of the complete refrigeration unit and all of its components, combined with cutting edge electronic controllers means innovative algorithms can be applied to maximise energy efficiency and food temperature control, as well as preventive diagnostics and cabinet-by-cabinet reporting that is not available with traditional systems.

AHR EXPO INNOVATION AWARDS 2016 WINNER

96%
Refrigerant leaks reduction

80%
Refrigerant charge reduction

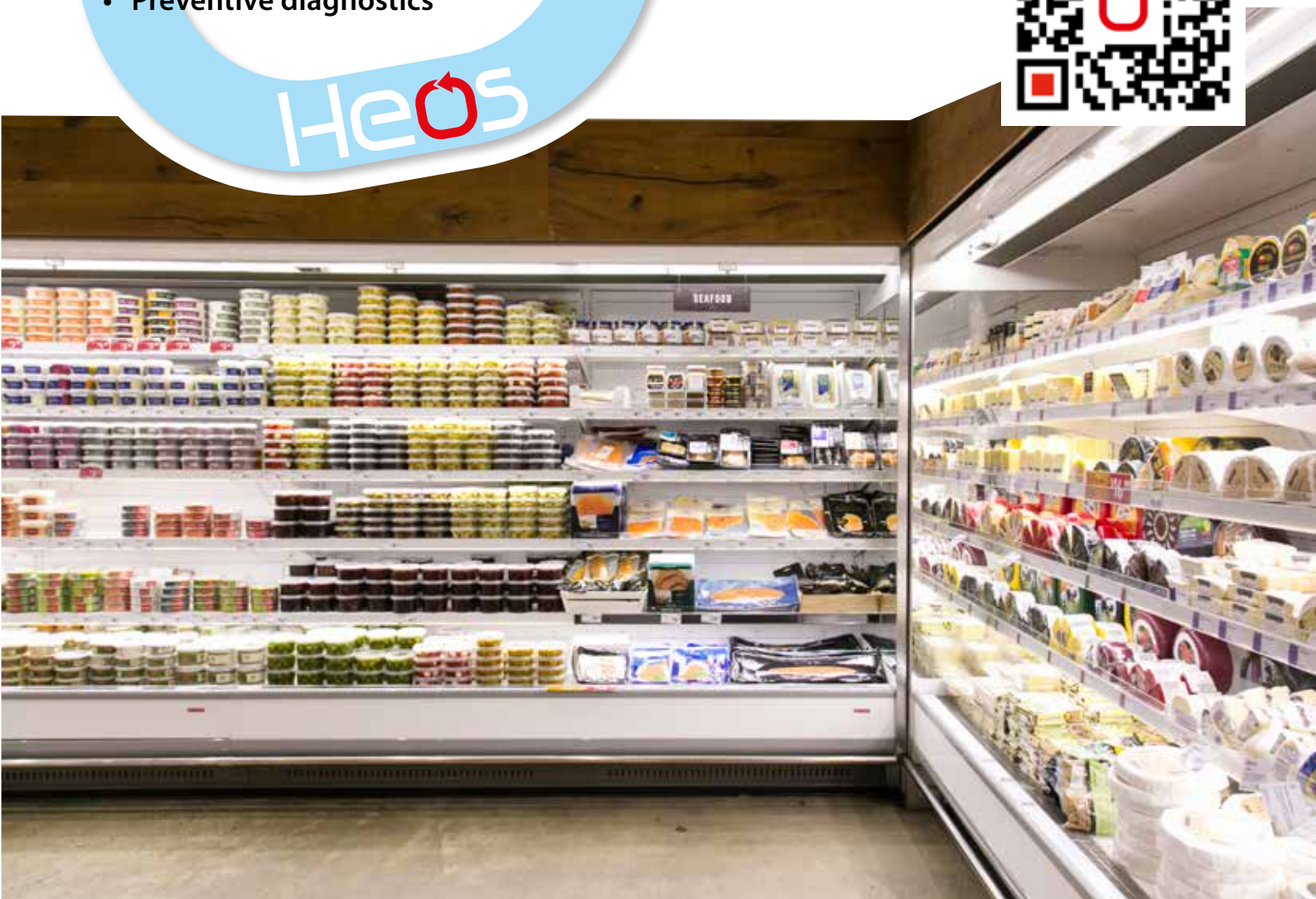
25%
Cost savings

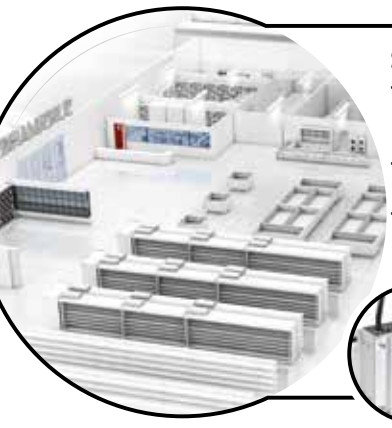


- Independent Power Consumption and COP calculation
- Real defrost on demand
- Indirect leakage detection
- Best perfomance always ensured
- Preventive diagnostics

Heos

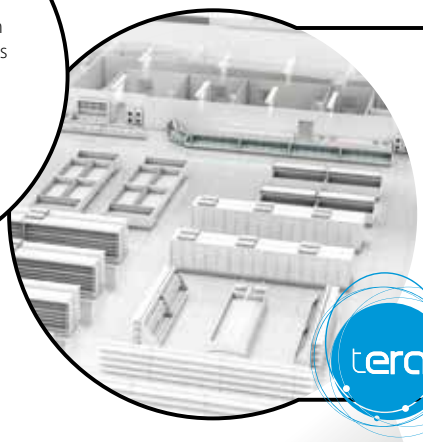
Watch the video!





Supermarket

- Extreme ease of use for complete management of the whole system
- Advanced algorithms for system optimisation and energy analysis
- Full access and complete logs for maintenance and service

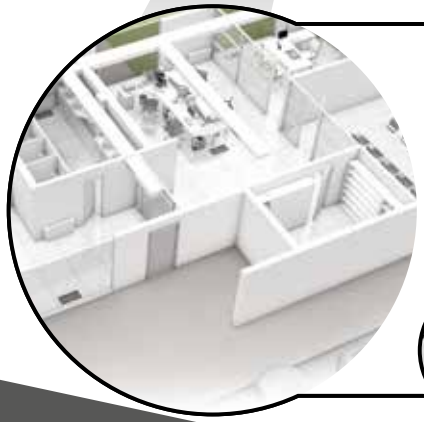


Compressor Racks
Condensing units

- Total independent access for different user levels
- Remote analysis of system performance and full management of settings
- Cloud services via LAN or mobile connection

A world of applications, our range of solutions

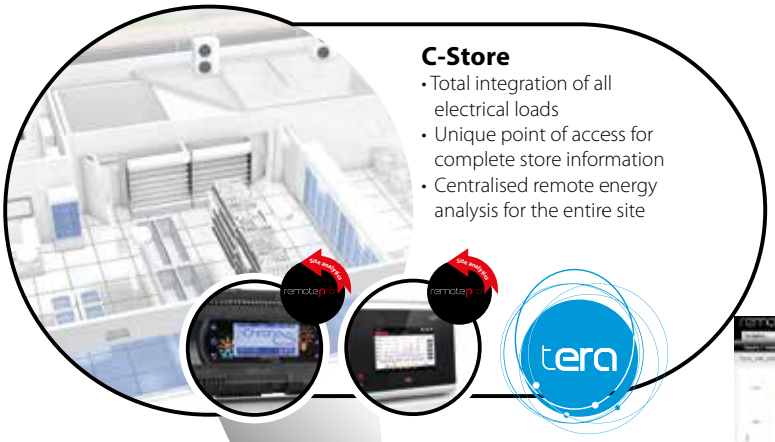
Big data analytics is becoming an increasingly important and indeed critical aspect for our customers. The possibility to quickly check trends in overall performance by analysing the variables that affect system operation is a need shared by all those who work in HVAC/R. Comparative analysis between systems that have the same operating characteristics and structural layout is fundamental for promptly identifying energy cost areas or critical behaviour, and consequently implement suitable counter measures and plan potential investments. Reducing energy consumption and maintenance also means cutting running costs, giving the solution significant added value. Value that gives a competitive advantage over market rivals and signifies respect for our environment.



Offices

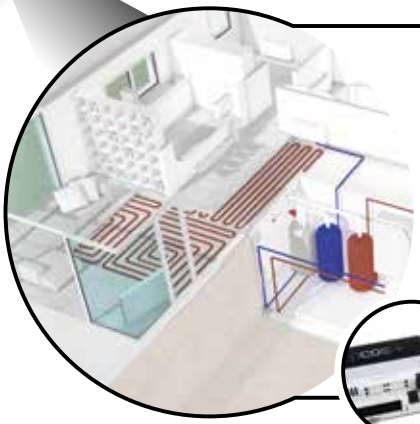
- Centralised control
- Parameter modification control
- Calendar for automatic unit ON/OFF and change set point
- Easy integration of devices with Ethernet connection

Analytics insigth

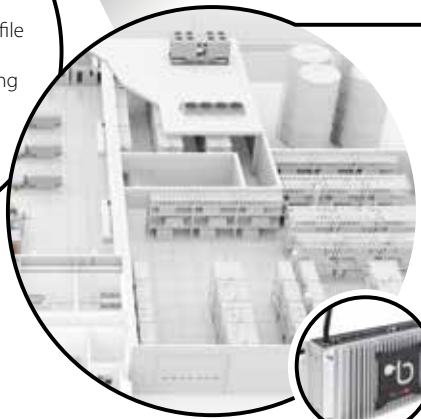


C-Store
- Total integration of all electrical loads
- Unique point of access for complete store information
- Centralised remote energy analysis for the entire site

CAREL offers system analytics solutions using logic that derives from our significant experience acquired in the refrigeration and air-conditioning sectors. The focus is now shifting more and more from individual systems to the set of managed sites, and it is here that CAREL, with its new Analytics Insight solution, once again fulfils the need to have a partner that not only offers technological solutions, but also added value, allowing its customers/partners to in turn create solutions and packages that generate new business..



Domestic Heat pumps
- Easy user interface
- Remote update of software application
- Alarm management by user profile
- Historical data for remote performance and troubleshooting analyses



Commercial
- Integration with BACnet™ systems and devices
- Control of air quality for HVAC optimisation

Industrial
- Unit consumption monitoring
- Alarm managements
- Maintenance scheduling

boss

The new mobile ready local supervisor

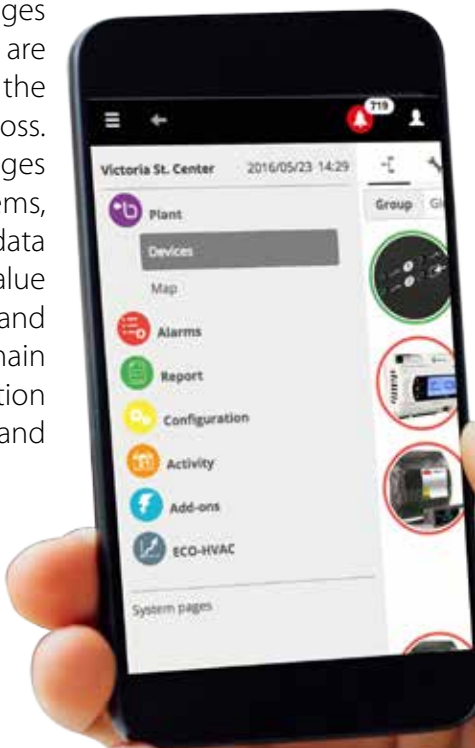
This supervisor is completely browsable from all mobile devices, for both daily access and system maintenance, right from commissioning.
The responsive design means all of the **boss** pages, both programming and day-to-day use, can be accessed from different mobile devices. The graphics on the pages adapt automatically to the device they are displayed on, making the content easy to use.
Typical operating system functions can also be accessed using the web interface, the first time ever for a supervisory system. This means maintenance operations can be performed via a remote connection.

Secure browsing and BACnet™ protocol
The HTTPS protocol is used to ensure secure data transfer over the web from **boss** to the external devices, guaranteeing data confidentiality.
A customised operating system further ensures system reliability. Implementation of the BACnet™ protocol, the leader in HVAC supervision applications, increases the possibility to integrate third party devices. boss can thus interact with the widest range of devices in the HVAC/R sector.

System optimisation
boss can automatically synchronise data and alarms with CAREL RemotePRO, so as to keep the situation on all connected systems under control from just one interface. Centralised system management also increases reliability, through alarm analysis and scheduling of service. It also allows increased energy efficiency by comparing energy consumption and performance between the different sites and identifying possible cost reduction actions.

Skilled in refrigeration and air-conditioning
In addition to all the functions of a standard supervisor, boss includes functions for managing refrigeration units and interaction between units, meaning not only is the system controlled, but also optimised in terms of thermodynamic performance and energy consumption. CAREL's extensive and in-depth knowledge of these applications has also led to the development of user interfaces that are configured based on the type of user (installer, maintenance personnel, system manager, etc.) and the type of use, so as ensure simpler and faster commissioning.

Extensive configurability, customisation of maps, the introduction of new protocols and the possibility to communicate with other devices via Ethernet®, make boss ideal also for HVAC applications. The supervisor can also interface with other BMS systems, for example in large buildings where the main BMS manages those systems that are not included among the functions handled by boss. In this case, boss manages the HVAC systems, providing specific data that creates added value for the end customer, and then sharing with the main BMS only the information needed to understand system status.



C-Store solutions

Integration, optimisation and complete management for small systems

The CAREL solution for convenience stores involves one complete system, designed to integrate and manage all the data generated by the different energy consuming areas of the store and provide valuable information quickly and simply.
The system provides specific functions to ensure active optimisation of the main areas of energy consumption, such as refrigeration, air-conditioning and lights. This centralised smart controller increases system efficiency and reduces the hidden waste resulting from normal manual control, cutting running costs so as to increase profits.

The efficiency achieved can be maintained using a centralised data analysis system that helps decision makers choose the best actions. The data acquired represents useful information for defining the right strategy to achieve the main objectives, such as system optimisation, energy saving and food quality.

Flexibility, usability, simple installation and configuration are the key defining points of our proposal.

Detailed data for analysis

Monitoring and optimisation

Complete and intelligent control

Optimised and centralised control

up to
30%
Energy savings

The new frontiers of cold rooms

CellaRange

Cella Range represents the new generation of cold room controllers based on the latest CAREL technology, the result of in-depth analysis and knowledge of the food cold storage market. This comprises a vast range of controllers to meet the needs of cold rooms in terms of type, performance and size.

Cella Range stands out for the modularity of the solutions available: from single/three-phase power management with savings in installation costs, to expansion valve management for higher performance and energy savings.

UltraCella

UltraCella is an innovative and modular solution, both for temperature and humidity management, that is easily expandable with additional features, thanks to the new concept of mechanical modularity. An "open" platform, ready for future developments.

UltraCella optimises cold room management by allowing connection of a high number of devices (more probes and more loads than other standard solutions) and adopting innovative control algorithms.

Special attention has been devoted to usability in the various different stages: installation, configuration and everyday use. With UltraCella, the user experience is improved for all operators involved thanks to the unique functions in the cold room controller segment. The innovative mechanical modularity concept ensures significant flexibility in the product offering by simplifying the addition of extra features, both for door-side and remote installations, as well as streamlining logistics for distributors..

SmartCella

SmartCella is the compact and smart solution for small cold rooms that provides the essential functions needed by simple refrigeration systems in restaurants, resorts, butchers' shops and greengroceries.

SmartCella is based on the widely-marketed ir33 platform+. In terms of usability, SmartCella features highly visible controls and a large display, as well as a standard DIN rail for fast assembly.

It shares the same mechanical modularity as UltraCella, making it compatible with the UltraCella function expansions.

Smartcella will also be available as an all-in-one solution for three-phase load management, thanks to the new **Smartcella 3PH**.

HACCP INTERNATIONAL FOOD SAFETY PROGRAMME CERTIFICATION

Both UltraCella and Smartcella have obtained voluntary HACCP International certification, the first example in Italy regarding refrigeration control components, proving their suitability for guaranteeing quality food preservation.

Watch the UltraCella installation video!

evd ice

Invented for cold environment

No fear of extreme conditions

EVD ice is the new solution for CAREL ExV proportional electronic valve management that can be installed directly on evaporators in cold rooms or other applications; it is a revolutionary device, having been specifically engineered for operation down to low temperatures.

Zero welding, zero cabling

EVD ice is ideal for factory installation, as all the accessories are already wired, including the electronic expansion valve and the sensors.

All the energy and performance benefits of proportional electronic valves are thus available in the field without wiring, welding or complex configuration, while at the same time ensuring the quality, reliability and final testing typical of the manufacturer's production processes.

EVD ice can be integrated with other CAREL systems, in particular "Ultracella", the high-end solution for cold rooms in the "CAREL Cella range".

Moreover, considering the market demands for integration and flexibility, EVD ice can also work with third party controls and supervisors, using standard communication protocols, or alternatively in stand-alone mode, in cold rooms or other applications that require a compact solution and versatile installation.

The system is completed by the "UltraCap" function, which guarantees refrigeration system safety in the event of power outages, and compatibility with natural and environmentally-friendly refrigerants such as the recent HFOs.

EVD ice has received an honourable mention at the AHR Expo Innovation Awards, in the refrigeration category. The AHR Expo Innovation Awards recognise the most innovative, effective and original HVACR products and technologies available on the market.

up to
+30%
Energy savings

down to
zero
field wiring &
field welding

just
three
parameters
for the set up

up to
50%
pulldown time
reduction

The meeting point between performance and energy savings

humiSonic family upgraded and expanded

The humiSonic family has been upgraded and extended: the product for fan coils and showcases (humiSonic compact), already widely available on the market, has been joined by a version for direct room humidification (humiSonic direct) and another for air handling unit (humiSonic ventilation).

humiSonic is a compact plug & play solution. The extension of the range also coincides with an improvement in performance: 10,000 operating hours guaranteed, 10% energy consumption and 1 µm water droplet size. This means maximum reliability and minimum maintenance, 90% energy savings compared to a steam humidifier, and almost instant complete absorption of the atomised droplets.

humiSonic ventilation
humiSonic for air handling units provides adiabatic humidification even in compact-sized ducts.
Installed directly in the air stream, humiSonic atomises water into very fine droplets (1 µm), which are instantly absorbed.
When supplying humiSonic with demineralised water by reverse osmosis, the piezoelectric transducers operate for more than 10,000 hours before needing replacement!

humiSonic compact
Alongside the small version for fan coils and showcases (up to 1 kg/h) are the versions for direct humidification in rooms (up to 8 kg/h) and for application in ducts (up to 18 kg/h).

humiSonic direct
The features of the new humiSonic for rooms highlight its versatility, being suitable for every type of application: datacenters, museums, offices, printing facilities and cold stores are some of the compact and efficient unit's typical uses.
humiSonic is a single solution comprising both the control panel/power supply and the air humidity probe. It can also be easily integrated into a BMS via an external signal (for example 0 to 10 V, 4 to 20 mA) or via a serial connection using the Modbus® protocol.

CO_2
34t
Less
compared to Steam

Highest fidelity humidity control

heaterSteam titanium

heaterSteam Titanium, the world's only humidifier with titanium heaters, extends the CAREL range of high-precision heater humidifiers, available in models from 2 to 80 kg/h.

Reliability

heaterSteam Titanium has been developed for the most critical applications, in which guaranteed service continuity is the highest priority. Cleanrooms, research laboratories or operating theatres are just some of the situations in which an interruption to humidity control could jeopardise the entire process.

The heaterSteam Titanium humidifier is the only unit in the world to have titanium heaters: these guarantee unprecedented resistance to wear, representing the state-of-the-art for this humidification technology. Thermal protection against excess temperatures is incorporated into all the heaters, further assurance of the solution's reliability.

The backup and rotation functions mean steam production is never interrupted during routine maintenance operations. The inside Kevlar cylinder lining and the heater thermal shock function minimise maintenance operations, which are both less frequent and faster.

Performance

Precise relative humidity control is the main driver of heaterSteam Titanium. This humidifier stands out for its "high fidelity" in responding to the control signal, with an accuracy of ±1%: combined with a high-precision probe it guarantees the desired humidity at all times.

Complete extension of the range of modulation (0 to 100%) ensures that heaterSteam Titanium can maintain the same precision even when humidity demand is quite low and when most humidifiers would see a significant decline in performance. The modulating limit probe and preheating function with NTC sensor assure the fastest response to changes in ambient conditions, allowing the humidifier to start steam production practically instantly. The possibility to create systems comprising a series of units (up to 20) in Master/Slave configuration further extends the scope of possible applications.

Connectivity

The new-generation electronic controller provides standard functions that today are becoming essential, allowing heaterSteam Titanium to seamlessly interact with and integrate into any BMS system. Modbus® and BACnet™ protocols as standard permit the humidifier to communicate with any interface, while the innovative Webserver means the entire humidification system can be managed from a tablet or PC: real-time management of production, monitoring of trends, verification of unit status and routine maintenance support. The USB port, available on the entire range, can be used to quickly and easily update the software when new releases become available.

Finally, its extensive connectivity features mean heaterSteam Titanium is already equipped to receive signals from wireless sensors, thus increasing flexibility during installation.

±1%
Guaranteed Accurancy

Short Absorption Manifold

UltimateSAM

UltimateSAM is a steam distributor for short absorption distances suitable for steam from both pressurised distribution networks and humidifiers.

Minimum absorption distance

UltimateSAM is designed to minimise the steam absorption distance thanks to uniform distribution of the holes over the entire height of the uprights.
A "tailored-made" solution to match the dimensions of the AHU / ducts!

Energy Saving

The pipes with air cushion insulation reduce condensate formation by 30% compared to a traditional distributor and decrease heat gain of the air flow.

Hygiene

All components fitted in the AHU / ducts are made from AISI 304 steel to meet the highest requirements in terms of hygiene and operating life.

High pressure atomizer for direct room applications

humiFog direct

humiFog DIRECT is the new CAREL solution for adiabatic room humidification. It extends the family of high pressure water atomisers that produce a spray of very fine droplets, easily absorbable by the surrounding environment, with low energy consumption.
The technical specifications of the new pumping units and blowers means solutions can be developed that are simple to install, flexible and adaptable to every environment. System hygiene is ensured by automated washing cycles and the use of demineralised water, while the new unique features of the electronic controller add all the benefits of connectivity for system monitoring and supervision.
humiFog DIRECT is thus the ideal solution for controlling relative humidity in industrial applications, such as paper mills, printing facilities and timber processing, as well as for preserving produce and in barrel cellars.

E^{x}V sistema and Power+

the CAREL products for high-efficiency HVAC/R applications

In the last 15 years Carel has introduced numerous control systems for refrigeration and air-conditioning units and systems onto the market.
Many of these are based on two technologies whose value is now widely consolidated: electronic expansion valves and inverters for DC compressors.
Both of these components have the purpose of optimising refrigeration unit operation. Their benefits? Power consumption reduced by up to 40%, fine temperature control and constant control and optimisation of operating conditions to maximise compressor reliability and performance.

E^{x}V electronic expansion valves

The ExV family valves, together with their control systems, represent the first example in the world of using stepper motor technology in refrigeration applications. CAREL has scaled down the size, capacity and price of technology that was already used in medium and high capacity air-conditioning systems (hundreds of kW). The result is the introduction of a reliable high-tech product into a market dominated by mechanical expansion systems. Compared to the latter, ExV valves provide fine control and optimisation of evaporator operation and lower superheat, prevent temperature swings, reach steady operation much faster, and above all bring enormous benefits in terms of maximising efficiency. Tests conducted in the field have demonstrated how energy savings of 30% can be obtained when compared to traditional mechanical expansion systems, with a return on investment of less than one year. To certify the scientific authenticity of its measurement methods, CAREL has partnered important organisations, such as the CNR (Italian Research Council) and the University of Padova, as well as major international supermarket chains.
Finally, it is worth mentioning the air-conditioning market again: in these applications, the ExV family offers the widest range of stepper valves in terms of cooling capacity, from 1 to more than 2000 kW, with the reliability of each model guaranteed for over one billion steps. The most significant features include perfect tightness for protecting the compressor, a closing time of 3.2 seconds and optimised resolution according to the control position, thanks to the equipercentile profile designed for variable-capacity systems (fine control at low refrigerant flow-rates and high reactivity at high flow-rates).

Power+ inverters for DC compressors

Compressors with permanent magnet motors controlled by DC inverters are one of the most efficient technologies available in the world for HVAC/R applications. For almost 10 years, CAREL has been helping to disseminate this technology in both refrigeration and air-conditioning applications, especially the most energy-hungry of these, such as heat pumps, air-conditioners for data centers, condensing units and refrigerated showcases. The results are astonishing: energy savings of up to 40% thanks to the capacity to

adapt to cooling demand in real time, with minimum power consumption. All of this would not be possible however without the Power+ family of inverters, the only devices available on the market that can control more than 100 different models of DC compressors, made by the world's leading manufacturers, with cooling capacities up to 50 kW. That's not all, when combined with the pCO and c.pCO series controllers, the CAREL system integrates the compressor's electrical and thermodynamic characteristics, and is engineered based on in-depth lab tests conducted in collaboration with the compressor manufacturers. Maximum efficiency and total reliability are further guaranteed by dynamic control of the compressor envelope, the area in which correct operation is guaranteed.

CAREL's experience in this sector has allowed the Power+ to be upgraded with exclusive functions to protect the compressor and optimise the entire refrigeration system: the new Power plus integrates "class B" safety software that allows customers to certify the unit in accordance with international safety standards, without requiring additional components. The "crankcase heater" function maintains a compressor crankcase temperature that prevents the oil from freezing, without requiring an actual heating element in the crankcase.
The entire CAREL control system is integrated into the final application, for example a heat pump, so as to ensure the technology meets the needs of the end user.

power+
speed drive

CLASS B

Safety software to protect the compressor
The certified class B software protects the compressor in the event of overload or locked rotor, without requiring additional components.

SAFE STOP

STO - Safe Torque OFF
The STO input can be used to protect the compressor (thermal overload) and the unit (high pressure).
"Certification according to EN60335-1 and EN60730-1".

Complete control of several bldc compressors
Thermodynamic and electrical control of more than 100 BLDC compressors approved by CAREL, available for immediate selection.

Crankcase Heater function
This function keeps the compressor crankcase at a sufficient temperature to prevent the oil from cooling.

pGDx

your next user experience

pGD compatible | T/H sensor | Bar notification | Front USB | IP65

The new touch screen user interface

The evolution of the CAREL pGD family displays, the new pGD EXPERIENCE version - pGDX for short - has been designed to provide a better user experience. From aesthetics to performance, user simplicity and consistency with the past, everything on this display has been designed to simplify access to the information available.

LED Bar notification

The display's neat and elegant aesthetics conceal a major new innovation: a LED bar featuring different coloured notifications. At any time, and without needing to move close to the display, users can clearly see unit status. Each colour can in fact be associated with a different state or alarm, allowing the user interface to "speak" visually. Even when the display is in standby, users can at a quick glance check unit status and verify any alarms, with a maximum of eight different notifications available.

Built-in sensor & front USB port

pGDX also stands out from other displays due its built-in temperature and humidity sensor. This new feature offers important benefits for a room terminal: rather than two separate devices, the display alone can manage both functions.

Another innovative feature is the positioning of the USB port at the front, simplifying connections without requiring special tools. The elegant design however means the USB port is hidden from view, neatly concealed behind the faceplate, while still being easy to access.

CAREL tradition

The innovations introduced on pGDX have been developed in such a way as to ensure continuity with tradition: the mounting arrangement allows simple replacement of the current pGD solution, while the new touch graphics also incorporate the interface developed for the previous generation of displays.

+30%
Higher efficiency

Residential HP

The new CAREL solution for residential heat-pump units with heating and cooling operation, with integrated domestic hot water control and system management function.

This solution has been designed based on the c.pco programmable controller platform:

- Benefiting from the features of the new c.suite development environment;
- Real time operating system for high performance;
- Exploits CAREL know-how for DC chiller and High Efficiency solutions, with the focus on residential applications.

CAREL has developed a complete platform for the management of advanced units that can fulfil today's market demands for energy saving and better performance:

- Integration of DC compressor management as part of complete unit management;
- E^{x}V Sistema provides unique and integrated logic to drive a wide range of valve models for different refrigerants and conditions, from 5 to 100 kW cooling capacity;
- Modular pump and fan management coordinated with compressor and valve operation, to keep the end unit working safely and guarantee comfort.

The software is ready to use "as is", so that any manufacturer can quickly create and start an efficient heat pump.
The flexibility of the c.pco control platform moreover allows CAREL customers to adapt our control system to their preferred unit layout, in just a few simple steps.
The main functions provided by the software include:

- Primary water (heating/cooling) and domestic hot water
- Temperature control;
- Air-to-Water / Water-to-Water / Brine-to-Water models supported;
- Up to 3 compressors for each circuit (max 1 BLDC compressor for circuit), with up to 2 circuits.
- CAREL energy saving devices: power+ DC inverters, EEV;
- Modulating control of external devices (fans, pumps, heaters);
- Dynamic control of operating limits for high efficiency;
- Defrost, antifreeze, antilegionella, climate curves and other specific functions for the residential unit market;
- Compatible with our pGD[1], pLDPRO, pGDX user interfaces.

ci solutions

DC Technology driven by CAREL

A solid foundation

c.|solutions are control systems developed based on the application experience and know-how that CAREL has built-up over many years, one of our company's outstanding features. They are conceived and designed to be a solid foundation that CAREL's customers can use to build their own innovative proposals.

The CAREL application provides more than 100 models of DC compressors made by different manufacturers, all tested and certified by CAREL in its own labs. This guarantees complete control of the compressor at different frequencies, so as to ensure it operates in the ideal conditions at all times, with maximum reliability.

Engineered for
100+
BLDC compressors

Heat Recovery Units and compact AHUs

The new CAREL standard application solutions for heat recovery units, compact AHUs and chillers/heat pumps with scroll or DC compressors has been developed around the new c.pCO family range of programmable controllers.

>90%
Recovery efficiency

c.pCO Sistema is ideal for controlling the most modern active heat recovery units, innovative units that perfectly fulfil the comfort and air quality requirements in new buildings. The latest building insulation techniques in fact require careful control of ventilation, so as to ensure adequate air change. Integrating heat recovery into the variable-capacity refrigerant circuit brings noteworthy results. The distinctive feature of the solution is high efficiency.

High Efficiency solutions for Air Handling Units

Evaporative cooling and active recovery system

CAREL High Efficiency technologies provide advanced solutions for optimising heat recovery in AHUs, through better temperature control, bringing overall energy savings.
Specific products have been developed based on the needs of both OEMs and installers: systems that can be easily integrated into new units, and pre-configured solutions to improve the performance of existing units.

Active recovery with power+

A refrigerating circuit controls the set temperature with an evaporator on the supply air, while the condenser is installed on the exhaust air duct. The exhaust air temperature (cooling mode) is lower than the outside air, meaning the circuit and system efficiency are higher (Active Recovery). Variable load conditions require a variable speed compressor: Power+ can control more than 80 models of BLDC compressors, allowing the right one to be chosen for the application, with optimal motor control in any condition and the highest energy efficiency.
Active Recovery can work also in HP mode to increase heating performance.

IEC with KEC

The KEC water atomiser provides a cooling effect, adding moisture to exhaust air approaching the heat exchanger; a lower exhaust air temperature means more energy recovery (Indirect Evaporative Cooling). Contact evaporation further increases this effect.

IEC with active recovery

The highest efficiency comes from synergy between the technologies: IEC is used to increase static energcy recovery on the heat exchanger, but its effect is also a lower exhaust temperature, which in turn reduces condensing pressure. This effect, combined with reduced compressor speed, increases the efficiency of the entire refrigerant circuit: this synergy can bring energy savings of over 50% with the same supply temperature.

Evaporative cooling solution

The NEW evaporative cooling solution designed for OEMs responds to specific needs for flexibility, simplicity and compactness. The product's modularity allows easier integration into the unit design for any type of installation.

All-in-one solution: adiabatic humidification & indirect evaporative cooling

Humidification control is a key factor to ensure wellbeing of people in comfort application Indirect Evaporative Cooling as a complentary solution for traditionalmechanical cooling system topursue energy savings.

Hum
Adiabatic humidification

iEC
Indirect Technology

Less
14t
CO_2
Than traditional mechanical cooling

Energy saving
optiMist guarantees overall energy savings in the AHU of 68 kW each 100 l/h of evaporated water, with very low power consumption and pressure drop (30 Pa).

Precision
optiMist can continuously and precisely modulate the production of atomised water. This means the potential of evaporative cooling can be fully exploited without wasting water.

Integrated solution
optiMist is a single solution that efficiently manages direct evaporative cooling (DEC), indirect evaporative cooling (IEC) and adiabatic humidification.

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