

# Conveni-pack

Integrated refrigeration,  
heating and  
air conditioning system



SMALL TO MEDIUM FOOD RETAIL • COMMERCIAL KITCHEN APPLICATIONS  
FARM & BIO STORES • PETROL FORECOURT RETAIL SOLUTIONS

- › Energy consumption reduced by up to 50%
- › Lower associated CO<sub>2</sub> emissions
- › Applicable for small to medium-size applications
- › Space-saving and installation flexibility
- › Improved in-store comfort
- › Low noise level
- › Heat recovery
- › Integrated heat pump functionality



## Conveni-pack

is a low-noise system for medium temperature refrigeration, space cooling and heating, with heat recovery and heat pump operation. All this combined  
**in one compact system.**

## Helping retailers save energy and the environment

Retailers are faced with a growing need to provide fresh goods, prepared meals and chilled drinks ... all at the same time. Environmental and zoning requirements are stricter than ever and energy costs must be kept under control. Conveni-pack is the natural solution. It reduces total energy demand due to its unique, integrated approach to food conservation and space heating/cooling.

## A totally natural solution, for HVAC&R applications

Conveni-pack is unique in combining refrigeration and air conditioning equipment in one total solution using the latest controls and inverter technology in order to maximise energy efficiency. The system can be connected to virtually all refrigeration applications and is supplied with ducted air conditioning indoor units to respond to all shop requirements. Daikin have a separate range of Natural Refrigeration Condensing Units, available for low temperature applications.

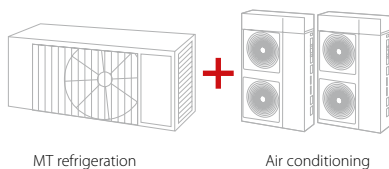
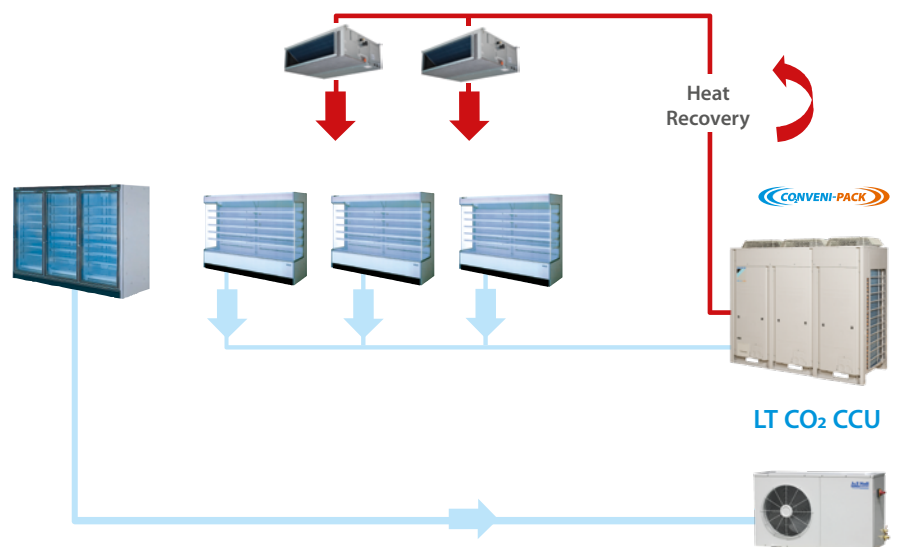
- › Inverter driven compressors perfectly match the retail environment demands, to provide optimum performance, reliability and efficiency under all conditions.
- › Conveni-pack supports a wide variety of refrigeration and cooling units.
- › By recovering the heat extracted from the connected refrigeration appliances and by using sophisticated controls energy savings of up to 50% or more can be reached.
- › Compact dimensions and low noise operation make Conveni-pack the ideal solution for densely populated & urban areas.





## Heat recovery

The heat extracted from the refrigeration showcases or evaporators can be re-used for comfort heating of the shop.



## Reduced footprint

When compared to other solutions HVAC&R, Conveni-pack outdoor units are compact.

Its footprint can be up to 40% smaller. Ideal for situations where space is limited.



# A flexible system for all kinds of applications

Conveni-pack's modular design allows it to be used for small as well as larger shops.  
One or more outdoor units can be installed throughout the building, inside or outside.

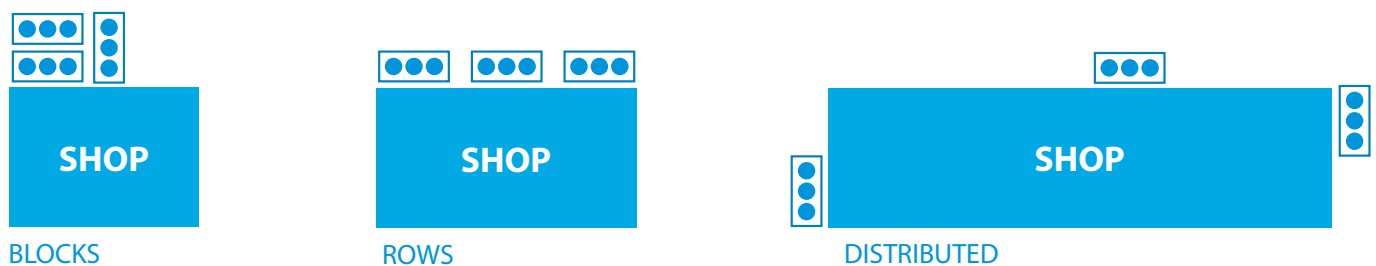




# Configuration and installation flexibility

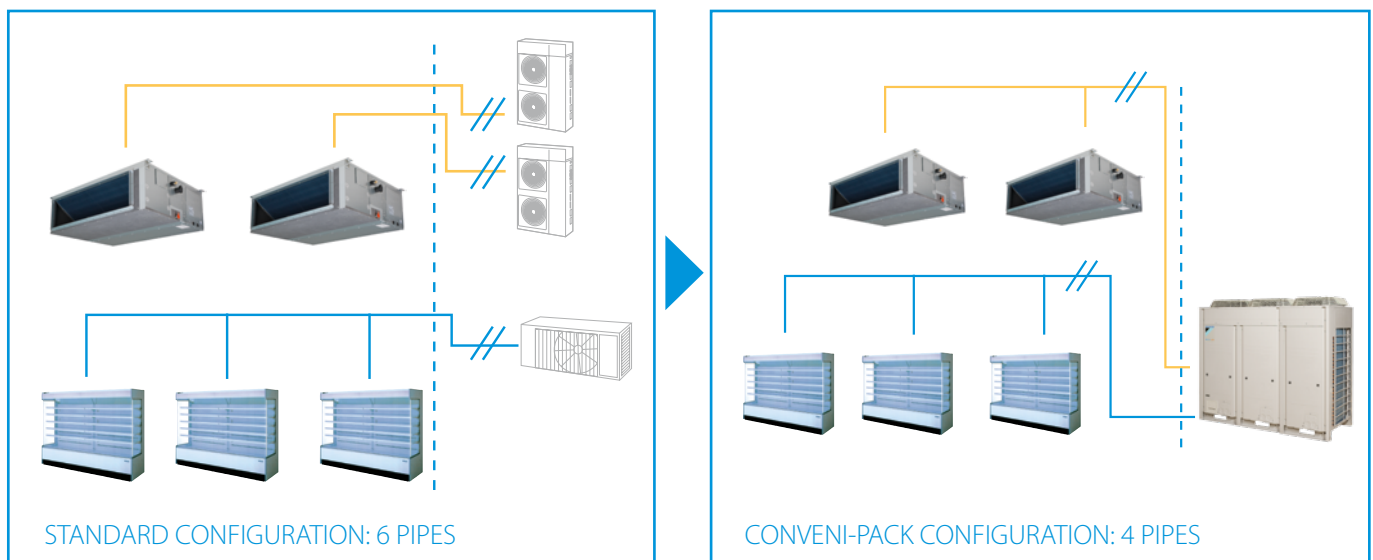
The Conveni-pack concept creates a wide range of installation possibilities.  
For ultra low noise requirements, these units can even be installed inside the building.

The modularity of Conveni-pack maximizes installation flexibility to match the individual project requirements. Conveni-pack can be grouped into blocks, rows, and for ultimate cost effective installation, distributed around the building and mounted near the evaporators.



## Distance: Simplified piping

Typically you would have to install up to 6 pipes to the MT Evaporators and HVAC systems.  
With Conveni-pack, this reduces to only 4 pipes to full-fill the same requirements.



## Benefits distributed vs central system

- ✓ Increased redundancy, mitigating risks to owners
- ✓ Optimised design to reduce refrigerant charge
- ✓ Reduced pipework services, allowing quicker installation and reducing costs
- ✓ Increased heat recovery potential and comfort cooling capacity

# System placement

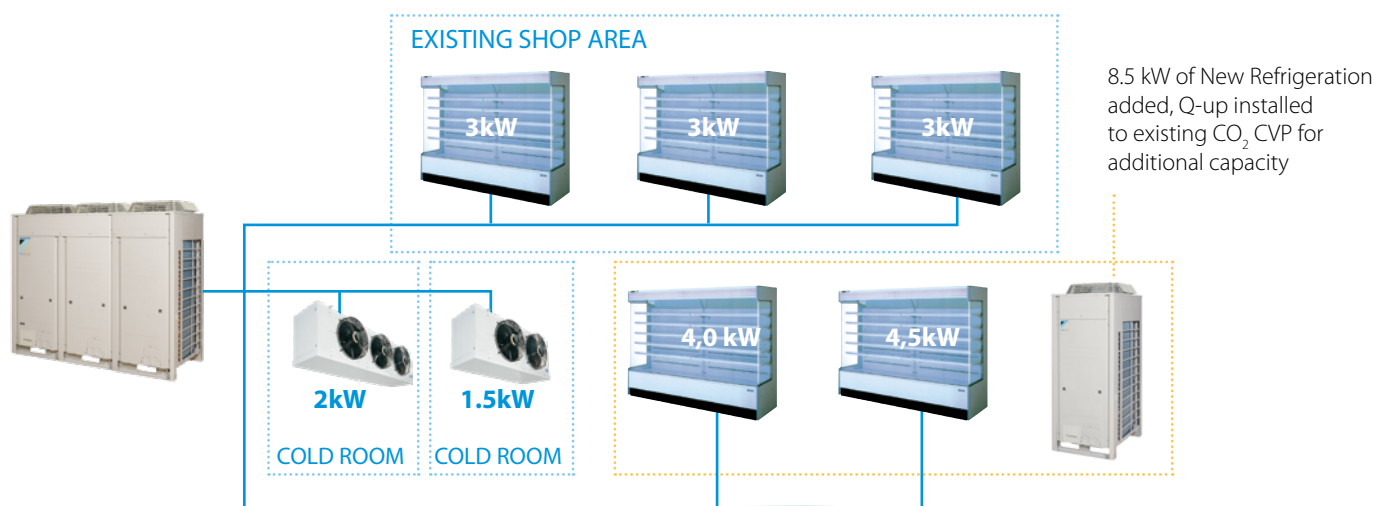
- ✓ A limited amount of ducts can be connected to the Conveni-pack unit in order to allow installation inside a building
- ✓ Possibility to install the Conveni-pack in a technical room\*
- ✓ Static condenser fan pressure can be increased up to 78Pa
- ✓ Connection of ducts to the condensing unit is allowed
- ✓ Installation possible below or above evaporators

Up to 35 metres **above** indoor unit or cabinet  
 Up to 130 metres **from furthest** indoor unit or cabinet  
 Up to 10 metres **below** indoor unit or cabinet

\* A grill needs to be foreseen for the fresh air supply, and ducts need to be mounted on the Conveni-pack unit(s)



- ✓ Expansion capability, if your original refrigeration requirements were 14.5kW (or below). Adding a Q-up Module will increase capacity to 21.0kW. An increase of 45% refrigeration load added to the original CO<sub>2</sub> Conveni-pack.
- ✓ New energy efficient cooling requires lower minimum refrigeration capacity to ensure stable temperature regulation.
- ✓ Future proof. Concerned about increasing climate temperatures? You can depend on Daikin's innovation by using a Q-up module. Q-up provides the ultimate in reassurance, as it will guarantee the refrigeration capacity of the system, even in high ambient conditions.



Model	Refrigeration Capacity*	HR Capacity
DAIKIN CO <sub>2</sub> CVP AC10	3 - 14.5kW	22kW

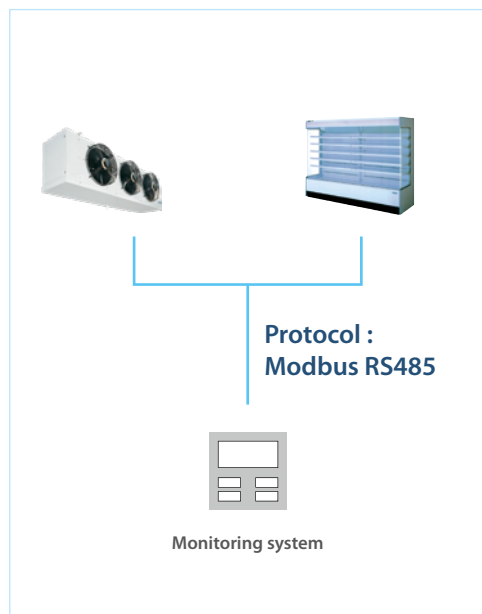
Q-up can also easily be added later, as part of a system upgrade

Model	Refrigeration Capacity*	HR Capacity
DAIKIN CO <sub>2</sub> CVP AC10 + Q-up	3- 21kW	22kW

\* Refrigeration capacity given under following conditions: Te = -10°C, 10 K SH and Tambient = 32°C



# Refrigeration control systems

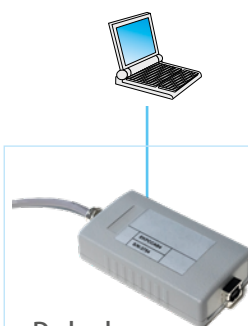


Featuring a 3x7 segment display on the main circuit board allowing to quickly and easily see the operation data of the unit.



## Diagnostic tool

Handy tool providing easy access to main operating data, error codes, error history and main PCB settings.



## D-checker

Powerful service tool allowing monitoring and logging of all operating parameters providing all necessary information for efficient and effective troubleshooting.

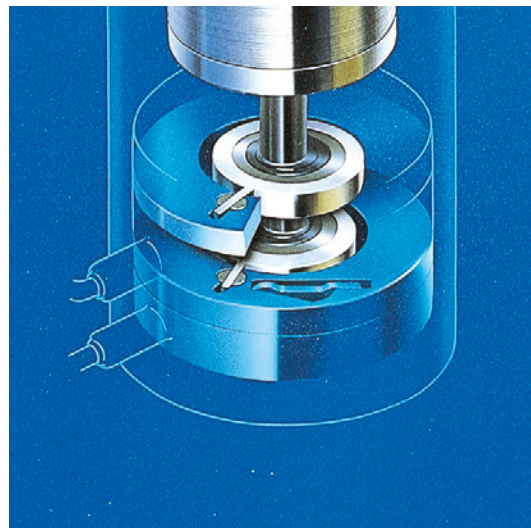
Service tool	Description
D-checker	A powerful service tool used to monitor, record, playback, chart, import and export operational data, as well as edit data labels, customer detail info and language.
Daikin Configurator	Used to upload settings and user interface language, download all settings from the unit for direct or offline consultation.
Mobile Monitoring Tool	Used to gather real time data as well as record, playback and export.
E-doctor	Mobile application that guides service technicians during troubleshooting, component check and repair.

# Conveni-pack System Features



## Swing compressor

- ✓ Daikin's unique CO<sub>2</sub> **SWING** compressor provides the highest isentropic efficiency of 69.5%, the best performing hermetic compressor available in the market
- ✓ Protected by **4 global patents**
- ✓ **Large operating envelope** and used on the low and high stage of the CO<sub>2</sub> CVP
- ✓ **Oversized DC motor** to allow the compressor to operate in any climate conditions
- ✓ **Built-in suction accumulator** to overcome any possible wet operating conditions
- ✓ **Two built-in mufflers** to attenuate possible pressure pulses
- ✓ **No foaming effect**: the oil pan as well as the oil distribution is on the high pressure side





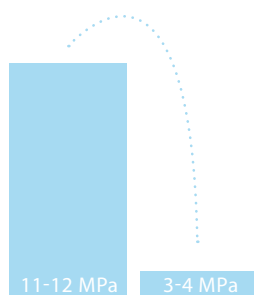
# Energy savings up to 50%

By using heat recovery, optimised controls and state of the art compressor technology, Conveni-pack can reduce annual energy consumption by up to 50%, compared to other manufactures solutions .

Higher efficiency allowing you to keep the ENERGY BILL LOW

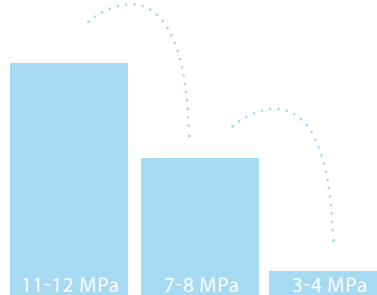
## CONVENTIONAL: ONE-STAGE TECHNOLOGY

- ✓ High compression ratio
- ✓ Higher energy consumption
- ✓ High discharge temperature
- ✓ Higher stress on the compressor
- ✓ Lower lifetime expectations



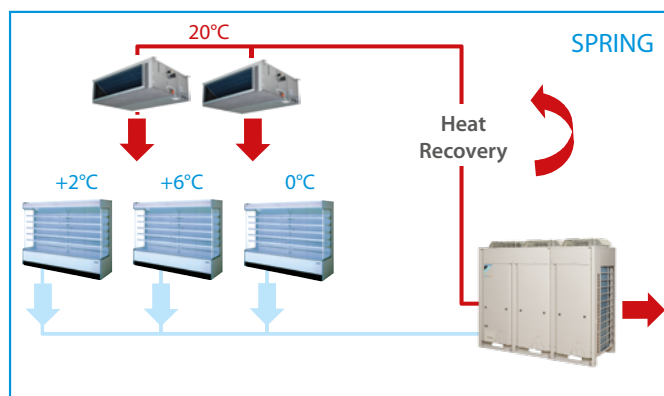
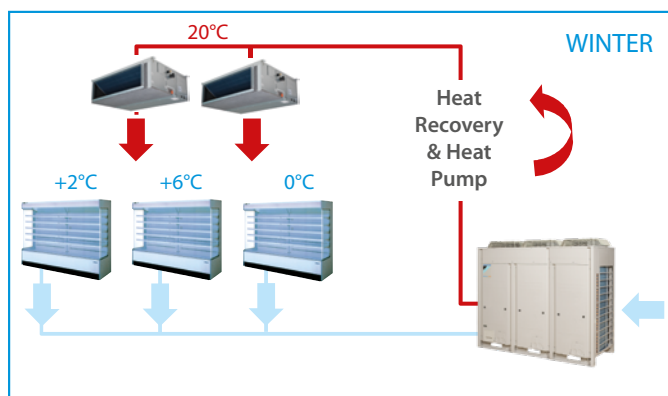
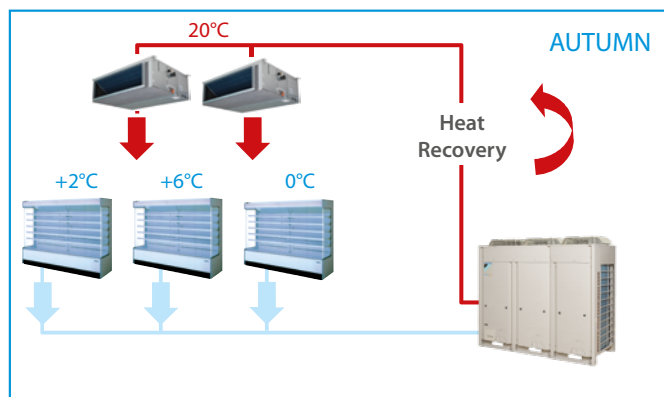
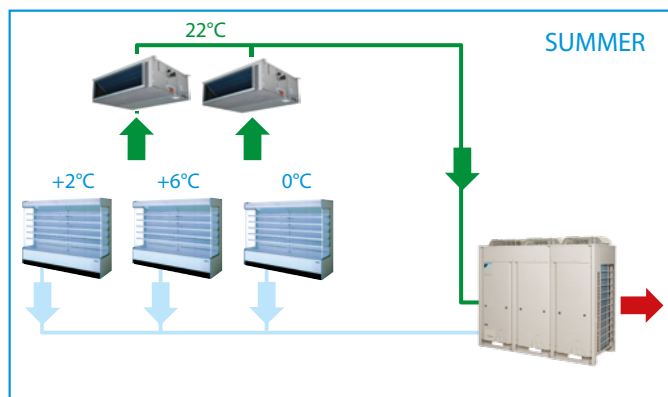
## DAIKIN: TWO-STAGE TECHNOLOGY

- ✓ Lower compression ratio at each step
- ✓ Lower energy consumption
- ✓ Lower discharge temperature
- ✓ Lower stress on the compressor
- ✓ Longer lifetime expectations



## Heat recovery improved comfort

The heat recovery function provides large energy savings by taking the waste heat from the refrigeration system and providing it to the indoor AC units. This way comfort in the shop is improved. Conveni-pack is able to provide comfort all year round. Depending on the outdoor temperature, the system can operate in 4 different modes:



# Low noise

The technology at the heart of Conveni-pack is borrowed from our market leading VRV. These have been installed in residential and noise-sensitive areas since 1993.

Noise is minimised by:

- › the use of Swing compressors, much quieter than piston compressors;
- › inverter control, allowing compressors to match the loads exactly; reduced overall noise levels and elimination of constant compressor start and stop;
- › specially designed sound-absorbing compressor jackets;
- › inverter operated, variable speed fans, complete with optimised blades and grills to reduce turbulence and noise; fans rotate at the lowest possible speeds and fluctuate without noisy start and stop;
- › automatic enabling of night mode, along with several noise reduction modes available as standard.

## Natural HVACR 4 life

Project for demonstration of innovative, integrated HVACR installations with natural refrigerant.



### OBJECTIVES

- **Remove barriers** in the market for introducing integrated refrigeration and air conditioning systems that use natural refrigerants which have a lower Global Warming Potential.
- **Raise awareness** among installers, engineers, customers and general public on the potential of a combined air conditioning and refrigeration system that uses CO<sub>2</sub> as a natural refrigerant.
- **Contribute** to the implementation of the EU F-gas Directive.

### ACTIONS

#### 1. Demonstrate viability

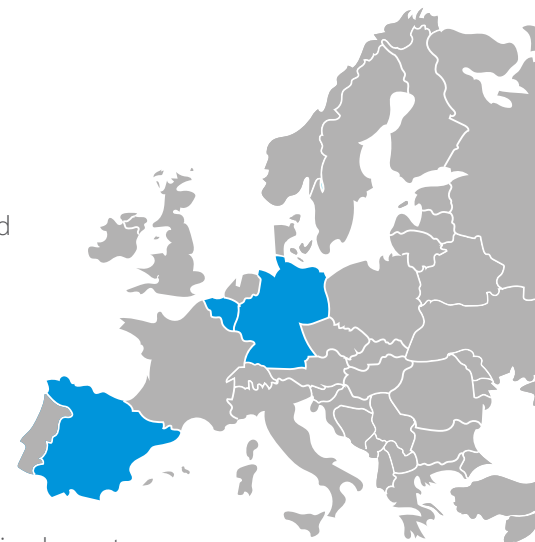
- test prototype in **Belgium** that integrates air conditioning and refrigeration with heat recovery in real life settings;
- install, operate and monitor the new concept in European supermarkets, located in both temperate and warm climate zones (**Germany** and **Spain, respectively**)

#### 2. Organise training sessions for installers and customers

#### 3. Help update the definitions of standards and energy labelling schemes for multi-functional products by providing information on tested risk management, procedures regarding flammability and toxicity of natural refrigerants

#### 4. Develop a cassette-type indoor unit using CO<sub>2</sub> that best provides comfort cooling and heating

#### 5. Research the potential of cold storage for improving the Total Equivalent Warming Impact



For more information refer to the website: [naturalhvacr4life.eu](http://naturalhvacr4life.eu)



# Product benefits for end-users



## Why choose Conveni-pack?

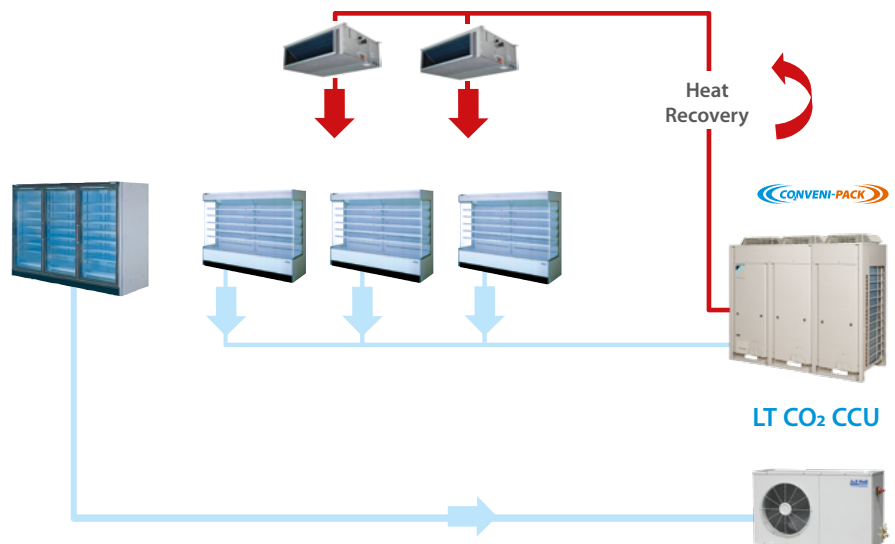
- ✓ DX Refrigeration, Heating & Space cooling by CO<sub>2</sub>, for those whom demand a totally natural solution
- ✓ Heat recovery, and for those colder days automatic heat pump operation
- ✓ Fully assembled & packaged unit, providing low noise levels
- ✓ Mass produced in Daikin Europe's award winning factory
- ✓ Each unit is fully factory & run tested
- ✓ All units in stock, fast delivery
- ✓ Hermetic swing compressor, complete with two stage compression, for lower running temperatures
- ✓ Oversized DC Brushless motor technology for improved reliability & efficiency
- ✓ Automatically balances refrigeration & space heating / cooling loads
- ✓ "Plug and Play" technology, reduced "On site" commissioning
- ✓ Optimized control logic for reliability and efficiencies
- ✓ Adaptable evaporation temperature control

## Low Temperature Showcases

Optional CO<sub>2</sub> CCU's are also available for Remote LT applications (not connected to Conveni-pack)



Plugin LT showcases with propane or LT condensing units with CO<sub>2</sub> are available to satisfy also freezer capacity needs.



# Daikin Refrigeration – United in cold



Hubbard Products Ltd., is one of the UK's leading designers, manufacturers and suppliers of commercial cooling equipment and has earned an enviable Global reputation for innovation and design-led excellence.



Daikin Europe N.V. is a major European producer of air-conditioners, heating systems and refrigeration equipment, with approximately 5,500 employees throughout Europe and major manufacturing facilities based in Belgium, the Czech Republic, Germany, Italy, Turkey and the UK. Globally, Daikin is renowned for its pioneering approach to product development and the unrivalled quality and versatility of its integrated solutions.



AHT develops, manufactures and sells refrigerating and freezing showcases specifically suited for food retailers. Leading the "plug-in" type showcases segment, AHT leads the market by the active launch of new products corresponding to evolving store layouts. Furthermore, utilising its technological capabilities and business resources, AHT serves large accounts which include major food retail chains worldwide.



Tewis is a leading company in the design and engineering of refrigeration systems. Along with their expertise in customising controls (including monitoring), Tewis offers total comprehensive solutions for Refrigeration and Climate applications. Over the last few years, Tewis has focused on developing a range of CO<sub>2</sub> based refrigeration systems and has established a long-lasting relationship with key Spanish and Portuguese food retailers. Its mission and philosophy to date has been to achieve high reliability and realise remarkable energy savings for their customer base.



Daikin Chemicals is one of the world's foremost manufacturers of fluorochemical products and is a leading expert in that field. We strive to find new possibilities for living and industry by making the most of fluorine characteristics using our own exclusively developed technologies.



Zanotti is a refrigeration specialist founded in 1962. With over 50 years of experience in food storing services covering the needs of commercial and industrial refrigeration, but also the needs of the transportation of fresh and frozen products. Zanotti changed the refrigeration world from the early days with the introduction of the Uniblock, an all in one plug and play refrigeration unit for cold rooms. Today they employ more than 600 people, with three production facilities and an annual turnover of approx 130 million euros.

[www.daikin.eu/building-a-circular-economy](http://www.daikin.eu/building-a-circular-economy)

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