HUSSMANN®

NATURAL REFRIGERATION SOLUTIONS

NATURAL REFRIGERATION SYSTEMS & SERVICE SOLUTIONS

2025

Innovating Climate Solutions for A Better Future

OUR COMMITMENT

At Hussmann, we are proud to lead the way toward a more sustainable future by embracing and promoting natural refrigerants.

Contents

Roadmap: **TCO2 Refrigeration Systems Range**

Small

Petrol & Convenience, Cool rooms

Panasonic

2kW **8kW** **16kW** **29kW**

2HP OCU

4HP OCU

10HP OCU

20HP OCU

Medium

Small Supermarkets & Convenience

Refra®

53kW

Refra CO2 Light
Up to 53kW

Roadmap: **R290 Heat Pump Range**

Small

Small Commercial & Industrial applications

Refra®

Heating: 20kW – 50kW

Refra Flamma
Heating: 20kW – 50kW
Cooling: 14kW – 35kW

Medium

Commercial and Industry Buildings

Refra®

Heating: 50kW – 180kW

Refra Ignis
Heating: 50kW – 180kW
Cooling: 35kW – 126kW

Large

Supermarkets & Cold Storage

Refra®

135kW **150kW** **500kW+**

CO2 Eco Pack
Up to 135kW

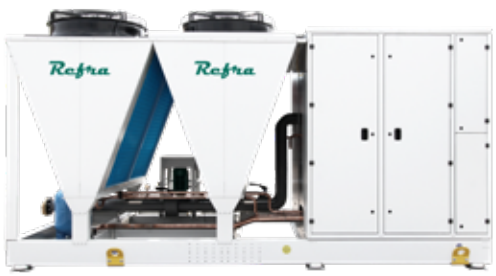
Refra CO2 Select
Up to 330kW
(Industrial version available up to 500 kW)

Large

Large Commercial & Industrial buildings

Refra®

Heating: 100kW – 500kW+



Refra Solis
Heating: 100kW – 400kW
Cooling: 70kW – 280kW

NATURAL
REFRIGERATION
SOLUTIONS

Panasonic

Transcritical CO2 Condensing Units

The Panasonic Transcritical CO2 technology (TCO2) reduces CO2 emissions by up to 67%#, ensuring optimal temperature control, preventing costly breakdowns and product wastage, while keeping food fresh for supermarkets, convenience stores, and petrol stations.

Reference Comparison of CO2 emissions: page 21.

Quality that lasts in All Sectors

Optimise your Total Cost in Ownership (TCO) and Total Value of Ownership (TVO) for the whole life of your equipment - and that's not a short time!

Panasonic Saves Your Money

- High energy efficiency
- Small floor space
- Low total operating costs
- Long service life with components designed for 10+ years of operation

Panasonic Gives You Time

- Low effort with easy-to-clean design and materials
- Maximum ergonomic efficiency for effortless work processes
- Almost maintenance-free

Panasonic Ensures Your Goods Are Operationally Efficient

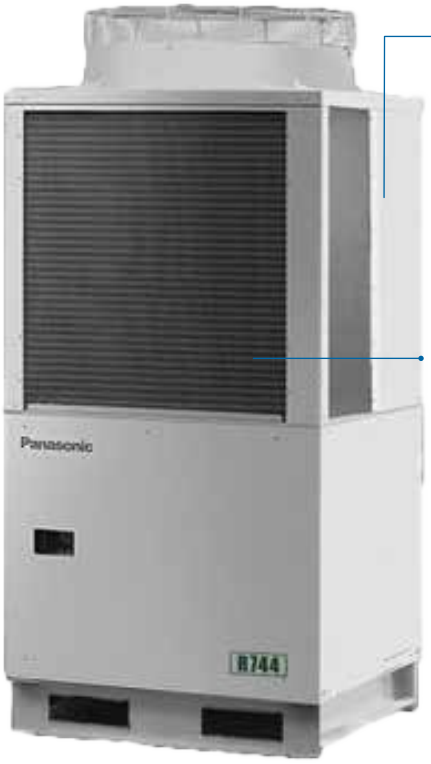
- High efficiency compressors are guaranteed to deliver high performance all year around
- Designed with low sound decibels for smaller spaces
- Optional anti corrosion coating for outdoor and high humidity applications

Panasonic Focuses On Sustainability

- Equipments with very low energy consumption
- Natural refrigerant

Features

Evaporating temperature ranges
-45C to -20C for LT
-20C to -5C for MT
Collectively -45C to -5C



The cooling capacity ranges
3.7 kW (2HP) to 28.7 kW (20HP) with evaporating temperature at -10C

1.9 kW (2HP) to 14.7 kW (20HP) with evaporating temp at -35C

2 stage Rotary CO_2 compressor

Benefits

Energy saving

Natural CO_2 / R744.
R744 refrigerant provides higher energy saving and lower CO_2 emission compared to R404A. Zero ODP and GWP=1 means natural substance.

High efficiency compressor.
Powerful 2-stage CO_2 rotary compressor by Panasonic. It delivers high performance all year around.

High performance and indoor air quality

Optional anti corrosion coating.
Selectable fin type with or without an anti corrosion coating. The anti corrosion coating prevents salt damage for a longer lifespan.

Super quiet.
Systems operate extremely quiet and lower than regulatory standards. Minimum 33dB(A) @10m with OCU-CR400VF8(SL).

Operating range up to 43 °C.
The system envelops for ambient temperature tolerance extends to 43 °C, allowing for installation in hot climates. We also offer an adiabatic solution for even hotter temperatures if required.

Automatic fan operation.
Microprocessor control automatically adjusts the outdoor fan speed in CO_2 systems for efficient operation.

Heat recovery port.
The heat recovery port is available to cut running costs as optional. By utilising exhausted heat generated by refrigeration to the energy source for heating.
Available on models:
OCU-CR400VF8A 4 HP MT/LT
OCU-CR1000VF8A 10 HP MT/LT
OCU-CR2000VF8A 20 HP MT/LT

High connectivity

BMS connectivity.
The system can by supervised with major monitoring system.

CO_2 condensing units
CR Series — 2HP

TYPICAL USAGE EXAMPLE *	MT OCU	LT OCU
	2HP (4kW)	2HP (4kW)
OCU Capacity in (kW)	3.70	1.92
OCU Capacity 70% (kW)	2.59	1.34
No. of cabinets can be connected	4	1

Medium Temperature (MT) based on 4 door cabinet PMM20F3T-4M1-1
Low Temperature (LT) based on 3 door cabinet PGL20F3R-3Z1-1

Transcritical Co2 Condensing Unit 2HP DUAL TEMP MT/LT		
Model	OCU-CR200VF5A	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	1.85 ~ 3.70
Cooling capacity at ET -35°C AT 32°C	kW	0.96 ~ 1.92
Dimensions (H x W x D)	mm	930 x 900 x 437
Weight	kg	70
Power Supply	Voltage	220/230/240
	Phase	Single phase
	Frequency	50

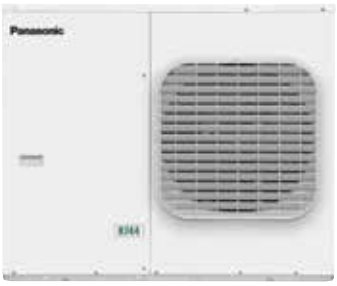
Transcritical Co2 Condensing Unit 2HP DUAL TEMP MT/LT		
Model	OCU-CR200VF5ASL	
	Salt proof coating	
Cooling capacity at ET -10°C AT 32°C:	kW	1.85 ~ 3.70
Cooling capacity at ET -35°C AT 32°C	kW	0.96 ~ 1.92
Dimensions (H x W x D)	mm	930 x 900 x 437
Weight	kg	170
Power Supply	Voltage	220/230/240
	Phase	Single phase
	Frequency	50

*Estimate Only. Simulated capacities & no of cabinets that can be connected will vary based on actual evaporator temperature of the cabinet.
Additional precautions needed for connecting multi-evaporator on 2HP unit.

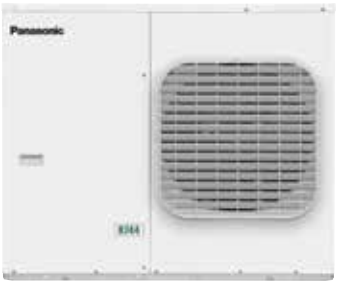
CO_2 condensing units
CR Series — 4HP

TYPICAL USAGE EXAMPLE *	MT OCU	LT OCU
	4HP (7.5 kW)	4HP (4kW)
OCU Capacity in (kW)	7.64	3.80
OCU Capacity 70% (kW)	5.35	2.66
No. of cabinets can be connected	7	2

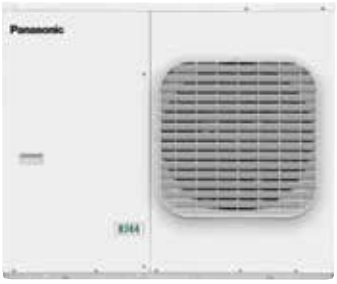
Medium Temperature (MT) based on 4 door cabinet PMM20F3T-4M1-1
Low Temperature (LT) based on 3 door cabinet PGL20F3R-3Z1-1



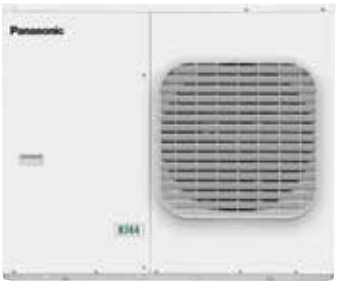
Transcritical Co2 Condensing Unit 4HP MT		
Model	OCU-CR400VF8	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	3.45 ~ 6.90
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	948 x 1143 x 609
Weight	kg	136
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50



Transcritical Co2 Condensing Unit 4HP MT		
Model	OCU-CR400VF8SL	
	Salt proof coating	
Cooling capacity at ET -10°C AT 32°C:	kW	3.45 ~ 6.90
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	948 x 1143 x 609
Weight	kg	136
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50



Transcritical Co2 Condensing Unit 4HP MT/LT		
Model	OCU-CR400VF8A	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	3.82 ~ 7.64
Cooling capacity at ET -35°C AT 32°C	kW	3.80
Dimensions (H x W x D)	mm	948 x 1143 x 609
Weight	kg	149
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50



Transcritical Co2 Condensing Unit 4HP DUAL TEMP MT/LT		
Model	OCU-CR400VF8ASL	
	Salt proof coating	
Cooling capacity at ET -10°C AT 32°C:	kW	3.82 ~ 7.64
Cooling capacity at ET -35°C AT 32°C	kW	3.80
Dimensions (H x W x D)	mm	948 x 1143 x 609
Weight	kg	149
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

CO_2 condensing units
CR Series — 10HP

TYPICAL USAGE EXAMPLE *	MT OCU	LT OCU
	10HP (15kW)	10HP (8kW)
OCU Capacity in (kW)	14.98	7.61
OCU Capacity 70% (kW)	10.49	5.33
No. of cabinets can be connected	14	5

Medium Temperature (MT) based on 4 door cabinet PMM20F3T-4M1-1
Low Temperature (LT) based on 3 door cabinet PGL20F3R-3Z1-1

Transcritical Co2 Condensing Unit 10HP MT		
Model	OCU-CR1000VF8	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	6.96 ~ 13.92
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	1941 x 890 x 890
Weight	kg	293
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Transcritical Co2 Condensing Unit 10HP MT		
Model	OCU-CR1000VF8SL	
	Salt proof coating	
Cooling capacity at ET -10°C AT 32°C:	kW	6.96 ~ 13.92
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	1941 x 890 x 890
Weight	kg	293
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Transcritical Co2 Condensing Unit 10HP DUAL TEMP MT/LT		
Model	OCU-CR1000VF8A	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	7.49 ~ 14.98
Cooling capacity at ET -35°C AT 32°C	kW	3.81 ~ 7.61
Dimensions (H x W x D)	mm	1941 x 890 x 890
Weight	kg	320
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Transcritical Co2 Condensing Unit 10HP MT/LT		
Model	OCU-CR1000VF8ASL	
	Salt proof coating	
Cooling capacity at ET -10°C AT 32°C:	kW	7.49 ~ 14.98
Cooling capacity at ET -35°C AT 32°C	kW	3.81 ~ 7.61
Dimensions (H x W x D)	mm	1941 x 890 x 890
Weight	kg	320
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

*Estimate Only. Simulated capacities & no of cabinets that can be connected will vary based on actual evaporator temperature of the cabinet.
Additional precautions needed for connecting multi-evaporator on 2HP unit.

Introducing the new **20HP** Transcritical CO_2 Condensing Unit

TYPICAL USAGE EXAMPLE *	MT OCU	LT OCU
	20HP (30kW)	20HP (16kW)
OCU Capacity in (kW)	28.76	14.61
OCU Capacity 70% (kW)	20.13	10.23
No. of cabinets can be connected	27	10

Medium Temperature (MT) based on 4 door cabinet PMM20F3T-4M1-1
Low Temperature (LT) based on 3 door cabinet PGL20F3R-3Z1-1

AVAILABLE NOW

Transcritical Co2 Condensing Unit 20HP DUAL TEMP MT/LT		
Model	OCU-CR2000VF8A	
	Normal coating	
Cooling capacity at ET -10°C AT 32°C:	kW	7.19 ~ 28.76
Cooling capacity at ET -35°C AT 32°C	kW	3.65 ~ 14.61
Dimensions (H x W x D)	mm	1941 x 1190 x 890
Weight	kg	494
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Scan for more on 20HP.

Adiabatic Cooling Solution
Outdoor refrigerant Unit

This innovative system leverages the natural refrigerant CO_2, offering an environmentally friendly and efficient solution for commercial refrigeration needs. The adiabatic cooling technology enhances performance, especially in high ambient temperature conditions, making it an ideal choice for supermarkets, convenience stores, and other commercial applications.

Features

Transcritical CO_2 Refrigerant

Utilises CO2, a natural refrigerant with low global warming potential (GWP), aligning with global sustainability goals and regulatory requirements.

Adiabatic Cooling Technology

Equipped with adiabatic cooling capabilities, the units optimise cooling efficiency by reducing the temperature of the refrigerant in high ambient conditions, ensuring reliable performance and energy savings.

High Efficiency Performance

Designed for optimal energy efficiency, reducing operational costs while maintaining effective cooling.

Robust Build Quality

Engineered to withstand outdoor conditions, the unit features durable construction and weather-resistant materials, ensuring longevity and reliable operation.

Smart Control System

Integrated smart controls provide real-time monitoring and management, enhancing system performance and simplifying maintenance.

Versatile Application

Ideal for a range of applications, including commercial refrigeration systems in supermarkets, restaurants, and food storage facilities.

Compact Design

The unit's compact footprint allows for easy installation in various settings without compromising space, making it suitable for urban environments.

Adiabatic Cooling Solution **2HP**		
Model	96E14-005	
Cooling capacity at ET -10°C AT 32°C:	kW	1.85 ~ 3.70
Cooling capacity at ET -35°C AT 32°C	kW	0.96 ~ 1.92
Dimensions (H x W x D)	mm	TBA
Weight	kg	TBA
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Adiabatic Cooling Solution **4HP**		
Model	96E14-009	
Cooling capacity at ET -10°C AT 32°C:	kW	3.45 ~ 6.90
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	TBA
Weight	kg	TBA
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Adiabatic Cooling Solution **10HP**		
Model	96E14-002	
Cooling capacity at ET -10°C AT 32°C:	kW	6.96 ~ 13.92
Cooling capacity at ET -35°C AT 32°C	kW	-
Dimensions (H x W x D)	mm	TBA
Weight	kg	TBA
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Adiabatic Cooling Solution **20HP**		
Model	TBC	
Cooling capacity at ET -10°C AT 32°C:	kW	7.19 ~ 28.76
Cooling capacity at ET -35°C AT 32°C	kW	3.65 ~ 14.61
Dimensions (H x W x D)	mm	TBA
Weight	kg	TBA
Power Supply	Voltage	380/400/415
	Phase	Three phase
	Frequency	50

Benefits

Save energy and costs

The energy-efficient design and adiabatic cooling technology lead to lower energy bills and reduced operational costs over time.

Improved Performance in High Temps

The adiabatic function ensures that the unit maintains optimal performance even in extreme weather conditions, providing consistent cooling.

Easy Integration

The compact design and smart control capabilities facilitate seamless integration into existing refrigeration systems, reducing installation time and costs.

Case studies from across the globe

INSTALLATION
Ambey's Big Apple (Fruit & Vegetables)
Sydney, Australia

UNITS AND SIZES	QUANTITY
Panasonic TCO2 10 HP Units	**2**
OCU-CR-1000VF8A	**2**


10HP Units with Adiabatic

INSTALLATION
Supermarket (Coop) Distribution Centre
Japan

UNITS AND SIZES	QUANTITY
OCU-CR1501MVF	**1**
OCU-CR2001MVF	**3**
Cooling Coil	**6**
Freezer 30Kw	
Chiller 20Kw	


Freezer Room


Condensing Unit

INSTALLATION
Supermarket
Japan

UNITS AND SIZES	QUANTITY
OCU-CR2001MVF	**1**
OCU-CR3000MVF	**2**
OCU-CR4000MVF	**2**

Condensing Unit

INSTALLATION
Supermarket
Japan

UNITS AND SIZES	QUANTITY
OCU-CR1001VF	**5**
OCU-CR1501MVF	**2**
OCU-CR2001MVF	**8**

Condensing Unit

Choose the sustainable green solution by Panasonic

Environmentally friendly CO_2 condensing units - CR Series and medium temperature solutions.

CO_2 condensing units - CR Series

2HP MT/LT Type	4HP MT Type	4HP MT/LT Type	10HP MT Type	10 HP MT/LT Type	NEW 20HP MT/LT Type
					
Capacity range (kW)					
4 (MT) / 2 (LT)	7.5	8 (MT) / 4 (LT)	15	16 (MT) / 8 (LT)	29 (MT) / 15 (LT)
Low temperature					
✔	–	✔	–	✔	✔
Medium temperature					
✔	✔	✔	✔	✔	✔
High Temperature					
–	–	–	–	–	–
Heat recovery port					
–		✔	–	✔	✔
ET (evaporation temperature) set points range					
-45 ~ -5 °C	-20 ~ -5 °C	-45 ~ -5 °C	-20 ~ -5 °C	-45 ~ -5 °C	-45 ~ -5 °C
Room size example (m^3)*					
40 (MT) / 10 (LT)	80	80 (MT) / 20 (LT)	200	200 (MT) / 50 (LT)	300 (MT) / 75 (LT)

* Room size is reference. Please contact to authorized Panasonic dealer for calculation.

Why CO_2?: **Natural refrigerant**

The Ozone protection and synthetic greenhouse Gas Management Act 1989 (OPSGG), along with the Kigali Amendments, supports the international climate commitments on greenhouse gases leads the transition to climate friendly, HFC-free technologies.

Carbon dioxide (R744) is regaining its place in the refrigeration world. Driven by environmental concerns, legislation now requires increased adoption of 'alternative' refrigerants, such as CO_2.

CO_2 is an environmentally-friendly solution, with zero 0DP and "GWP" (Global Warming Potential)=1 means natural substance in the atmosphere.

In Europe a step-by-step HFC reduction has been in place since the F-Gas regulation was introduced in 2015.

Countries all over the world have actively been preparing to enact the necessary domestic legislation to implement the agreement to reduce the use of HFCs. In Australia, step by step HFC reductions have been implemented since the Kigali Amendments were enacted in 2017.

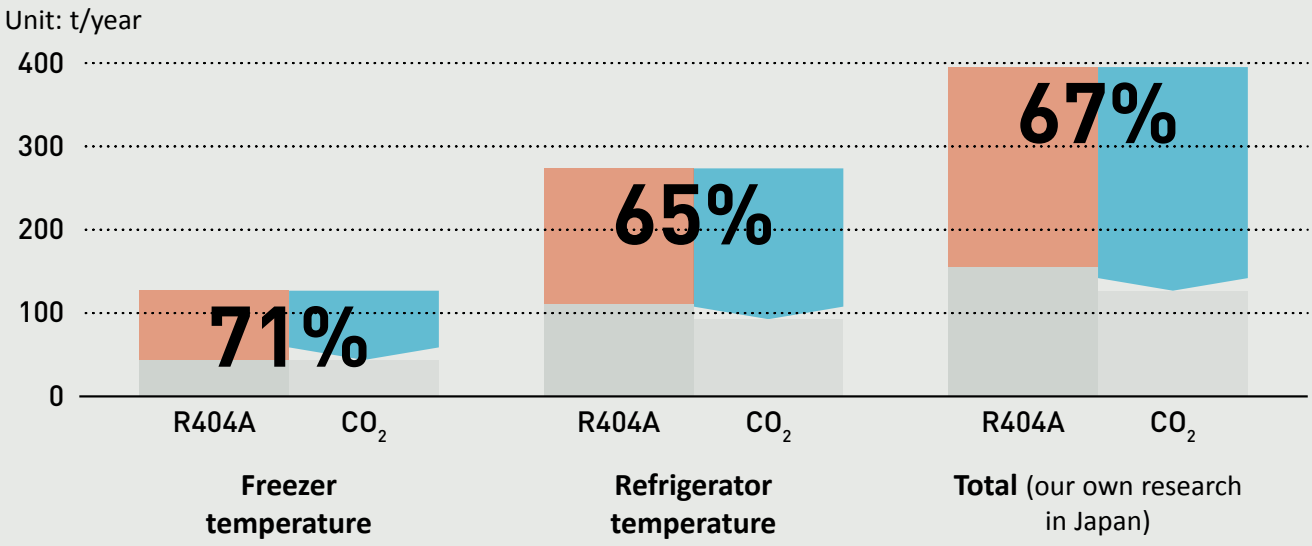
Panasonic is now able to provide a solution globally with CO_2 refrigeration systems to prevent global warming and to support environment-friendly retail operations.

The following table shows how well R744 (CO_2) performs regarding environmental impact and safety.

ODP (Ozone Depletion Potential) = 0 - GWP (Global Warming Potential) = 1

	Next generation refrigerant			**Current refrigerant**	
	CO_2	Ammonia	Isobutane	R410A	R404A
ODP	**0**	0	0	0	0
GWP	**1**	0	4	2 090	3 920
Flammability	**Non flammable**	Light flammable	Flammable	Non flammable	Non flammable
Toxicity	**No**	Yes	No	No	No

Comparison of CO_2 emissions



Direct influence [1)] Indirect influence [2)]

1) Direct influence presents the effect of refrigerant leakage comparing R744 (CO_2) with R404A.
2) Indirect influence presents CO_2 emissions linked to power consumption of CO_2 unit and conventional units.
By Panasonic research in Japan. Comparing 6 shops average for R404A Inverter multi condensing unit.

Energy saving
25,4% freezer
16,2% refrigeration

CO_2 emission
67% reduction

Natural solutions with high energy savings

Panasonic's range of CO_2 condensing units - CR Series with natural refrigerant, offer a reliable solution for a wide range of applications, including convenience stores, supermarket, petrol stations and cool rooms.

Supermarkets and food retail

Convenience stores

Liquor stores

Petrol station

Cool room and preparation rooms

Distribution centres

Restaurant cold rooms

Industrial storage (refrigerated warehouses and producing areas)

Food processing plants

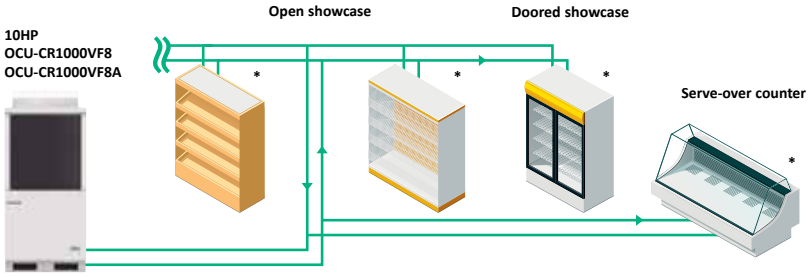
Healthcare

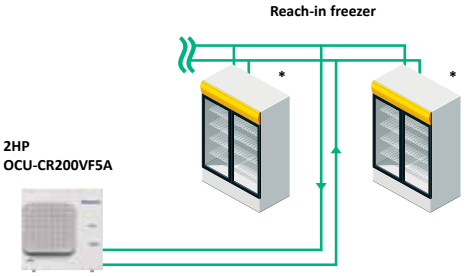
Aged Care

Agriculture / Floral / Greenhouses

Showcases

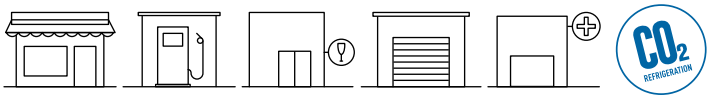
Convenience stores, supermarkets, gas-stations.





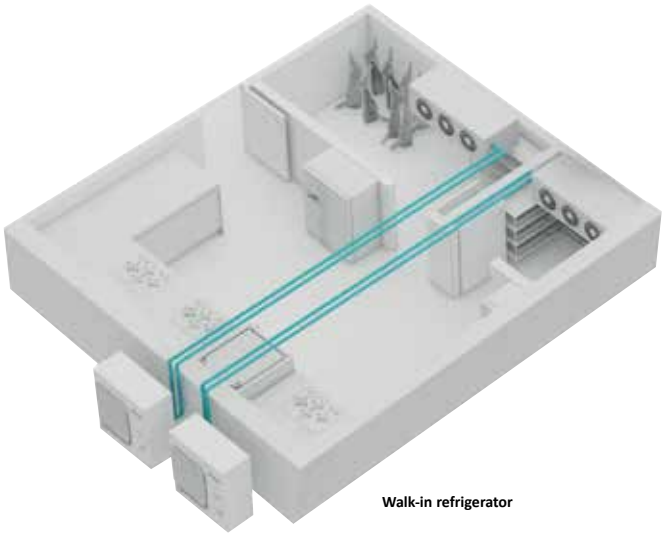
* Controllers: PAW-CO2-PANEL-C or local supply.

Coolroom application to keep food fresh



Multiple installation capabilities. Unparalleled flexibility:

- Food retail applications (convenience store, supermarkets, gas-stations)
- Food service applications (restaurants, canteens, schools)
- Non-food applications (warehousing, industrial storage, healthcare)

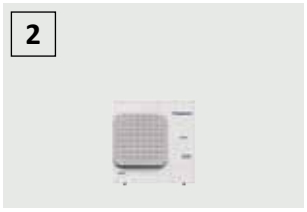


Walk-in refrigerator

Sustainable refrigeration systems for your **food retail**

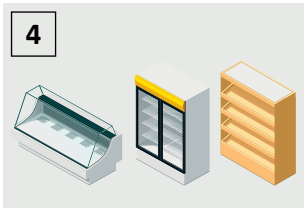
CO_2 refrigerant is the choice to curb carbon footprint of any business organization, especially to food retailers, to whom it brings key advantages.

10 HP MT TYPE (OCU-CR1000VF8).

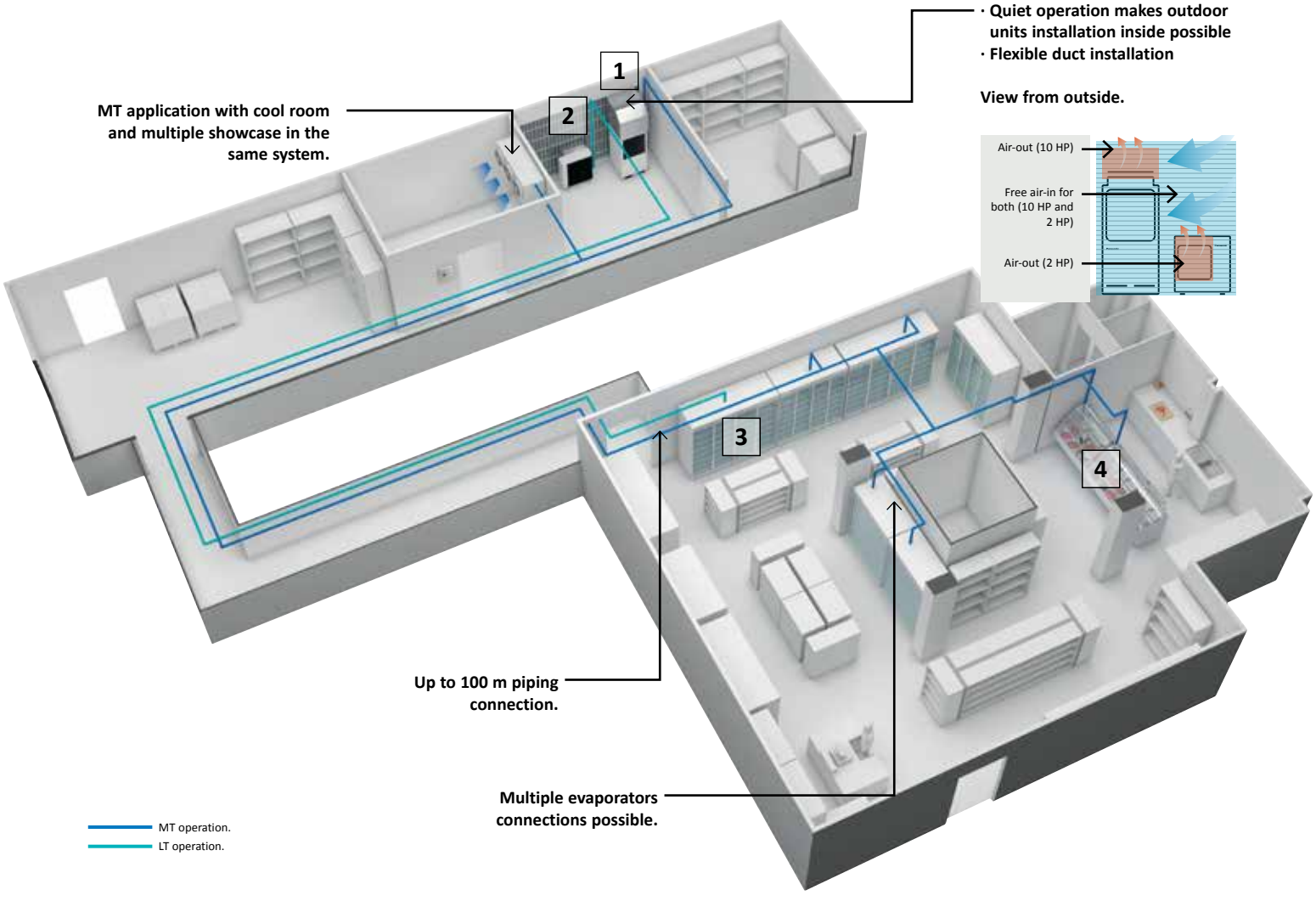


2 HP MT/LT TYPE (OCU-CR200VF5A).

Reach-in freezer (field supplied).



Serve-over counters, showcase and walk-in refrigerator (field supplied).



Nolan's Supermarket.
Nolan's Supermarket celebrated its 60th year in business with an extension and full refurbishment which completely overhauled the existing store.
A particular focus of the project was to create a state-of-the-art refrigeration system operating on the 'Zero Ozone Depletion' plus ultralow GWP of 1 natural refrigerant CO_2 and as part of the scheme. Panasonic CO_2 condensing units - CR Series have been chosen because of the high performance and reliable quality.

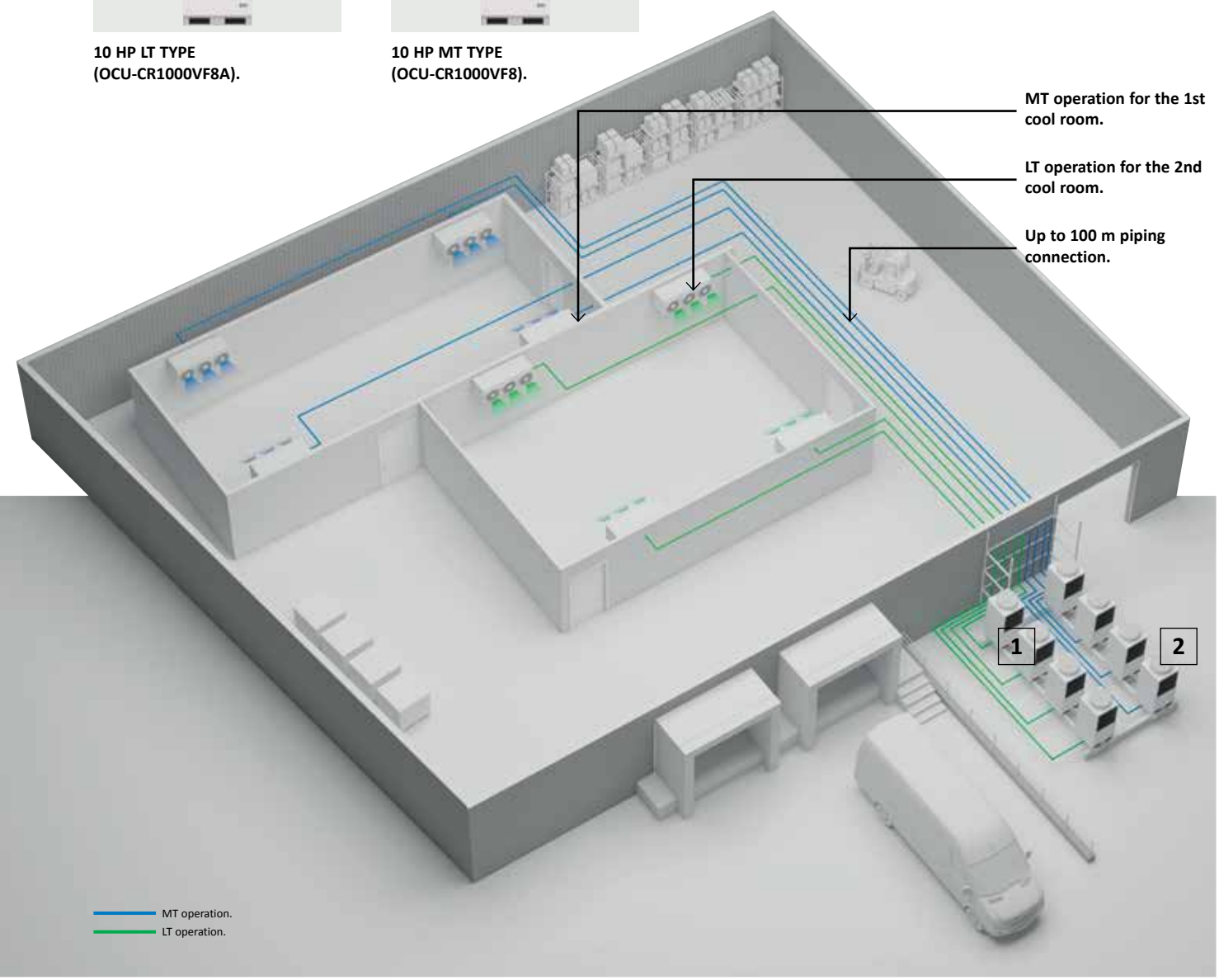
Hussmann Australia

The safe refrigeration systems for your **healthcare business**

CO_2 is the right refrigerant to curb carbon footprint of any business organization. In addition, there are advantages specially for healthcare business. This project example shows one of the warehouse in the healthcare laboratory which requires several cool rooms there to keep bio-products safely.

10 HP LT TYPE (OCU-CR1000VF8A).

10 HP MT TYPE (OCU-CR1000VF8).



STEMCELL Technologies.
STEMCELL Technologies is a global biotechnology company that develops, manufactures and sells products and provides services that support academic and industrial scientists.
Panasonic CO_2 condensing units - CR Series have been chosen to fulfill the expectation of environmental-friendly and safety requirements. The products with reliable quality and high performance was also an essential point.

The Panasonic CR Series offer a wide range of refrigeration systems, meeting the specific needs of small retail stores.

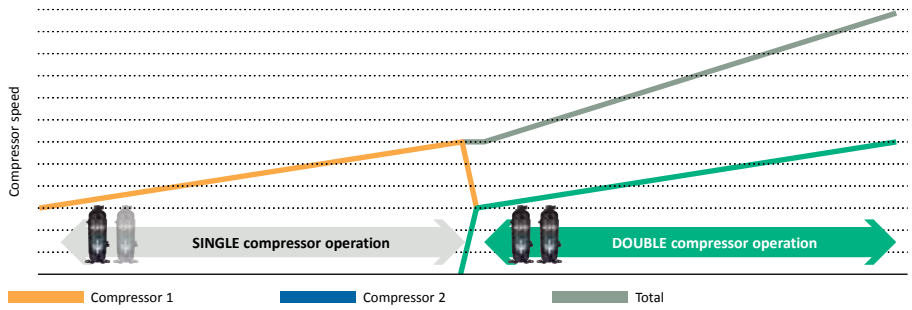
New CR Series 20 HP MT/LT model.

The CR Series now includes 20 HP MT/LT model, a highly efficient multi compressor solution.

- Multi-compressor systems
- Smaller footprint
- Maximum piping length of 100 m
- Cooling capacity can be controlled from 25% to 100% under partial load
- Flexible and precise control capabilities with digital input/output

Energy efficient multi compressors operation.
By distributing the workload between two compressors, the system operate efficiently, adjusting capacity to match the varying cooling demands.
Compressors 1 and 2 alternate every 10 days to ensure even load distribution.

Example of compressor operation.



OCU-CR2000VF8A/SL

Superior cooling capacity at each evaporating temperature.

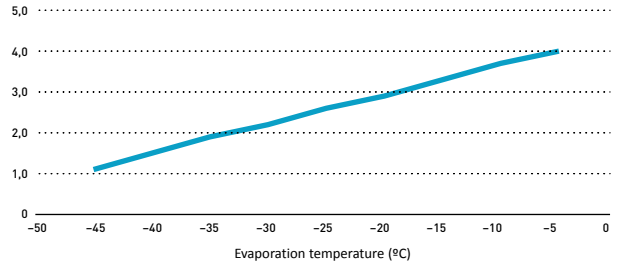
CO_2 transcritical condensing units - CR Series have a high cooling capacity at each set point. The CO_2 2-stage compressor developed by Panasonic is designed to compress CO_2 refrigerant twice; it reduces the load in operation by half (compared to 1-stage refrigerant compression) and delivers increased durability and reliability.
Units can be programmed to run at low and medium temperatures at initial set-up. These settings can then be modified by turning a simple and user friendly rotary switch to further enhance energy savings.

MT/LT Type: 200VF5A - 4 / 2 kW.

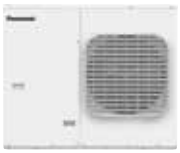
3.83 SEPR cooling.
1.92 SEPR freezing.

* SEPR values has been tested at 3-part laboratory.

OCU-CR200VF5A(SL) [1].
Cooling capacity (kW)



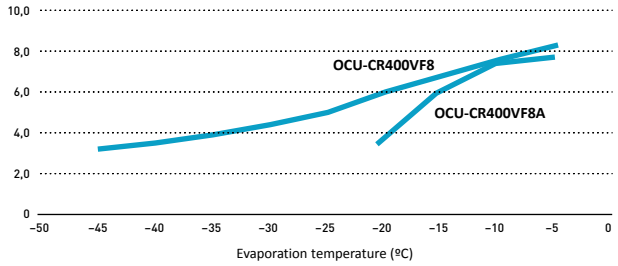
MT Type: 400VF8 - 7,5 kW. MT/LT Type: 400VF8A - 8 / 4 kW.



2.45 SEPR cooling.
1.56 SEPR freezing.

* Model 400VF8A.

OCU-CR400VF8(SL) / OCU-CR400VF8A(SL) [2].
Cooling capacity (kW)

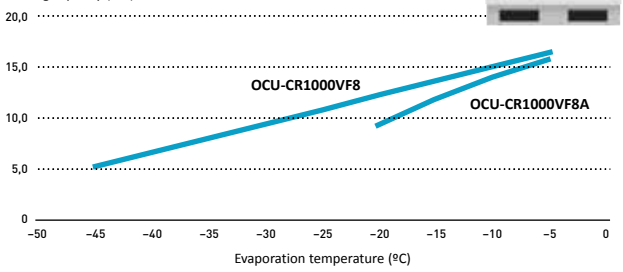


MT Type: 1000VF8 - 15 kW. MT/LT Type: 1000VF8A - 16 / 8 kW.

2.86 SEPR cooling.
1.49 SEPR freezing.

* Model 1000VF8A.

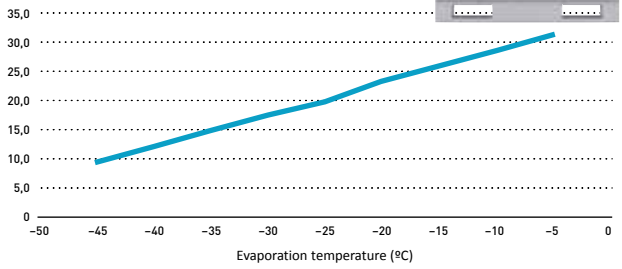
OCU-CR1000VF8(SL) / OCU-CR1000VF8A(SL) [2].
Cooling capacity (kW)



NEW MT/LT Type: 2000VF8A - 29 / 15 kW.

3.10 SEPR cooling.
1.64 SEPR freezing.

OCU-CR2000VF8A(SL) [1].
Cooling capacity (kW)



1) Ambient temperature: 32 °C, 230 V, refrigerant: R744, suction gas temperature: 18 °C. 2) Ambient temperature: 32 °C, 400 V, refrigerant: R744, suction gas temperature:18 °C.

1 Superior efficiency with reliable quality

- Panasonic has combined the 2-stage compressor with the split cycle for increased efficiency
- High seasonal performance. SEPR: Maximum 3.83 in cooling, 1.92 in freezing [1]
- High COP at high ambient temperature

1) 200VF5A.

2 Heat recovery port [1] as renewable energy

- Maximum 16,7 kW [2] of heating for free
- Optional possibility to get subsidy (depending on location)
- Easy connection process

1) For models 1000VF8A and 2000VF8A. 2) For model 1000VF8A.

3 Flexible installation

- Set-points at medium or low temperature available depending on applications
- Compact unit
- Silent operation
- Long piping length: Maximum 100 m [2]
- High external static pressure
- Transfer pressure control for stable electric expansion valve control in showcases [2]

2) For models 1000VF8A and 2000VF8A.

Technology by Panasonic

Excellent quality control established by skilled factory team.
Reliability is our main target and therefore offer warranties for 1 year for parts.

Reliable CO_2 technology by Panasonic

- Reliable quality: Made in Japan
- 19,500 units sold and installed in more than 25,000 retail operations such as convenience stores and supermarkets in Japan*
- Excellent quality control established by skilled factory team

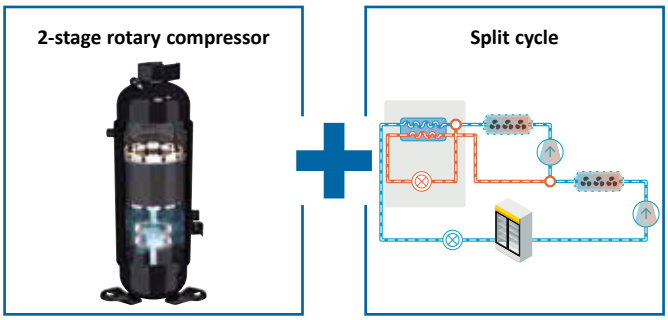
* As of the end of December 23.

Panasonic's combined technology of the 2-stage compressor with the split cycle

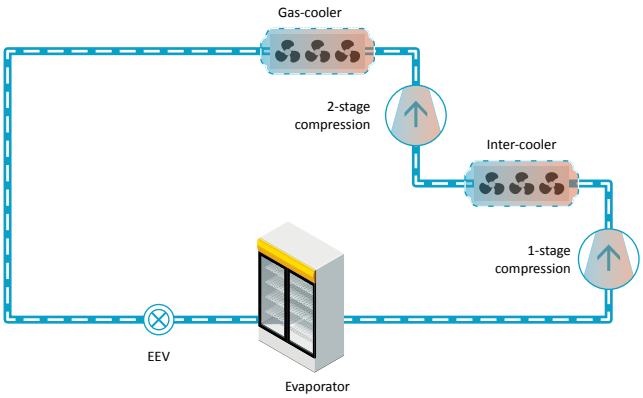
- Panasonic 2-stage rotary compressor delivering powerful performance for more than 20 years
- Split cycle* enhances cooling effect

* Available for 200VF5A, 400VF8A, 1000VF8A and 2000VF8A models.
** In the case that the standard cycle with 1-stage rotary compressor was compared.

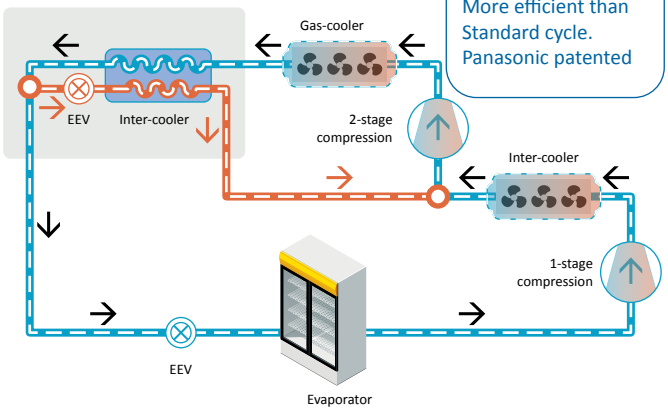
Watch the highlighted technology video.



Standard cycle.



Split cycle.



Up to 50%** More efficient than Standard cycle. Panasonic patented

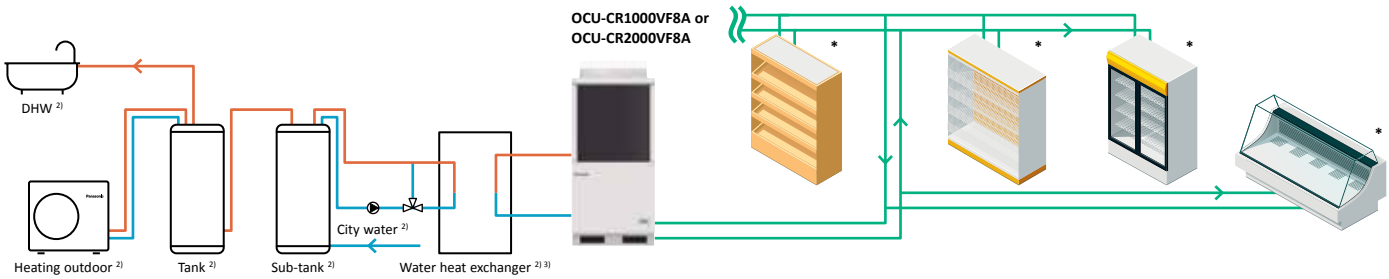
Heat recovery function for heating

This function offers refrigeration combined with heating all in one system. The ground-breaking solution allows for increased opportunity to cut running costs by utilising exhausted heat from refrigeration and transferring to the energy source for heating.

16.7 kW [1] Of hot water for free

What is heat recovery function?

Solution example.
Heat recovery system can produce both heating and refrigeration.



1) Example for 10 HP MT/LT. Tested with OCU-CR1000VF8A. Under the condition: ambient temperature 32 °C, evaporation temperature -10 °C. 100% Partial load.
2) Local supply.
3) Heat Recovery requires an external heat exchanger to be selected and delivered by the installer to the end user.
* Controllers: PAW-CO2-PANEL-C or local supply.

Control and connectivity

Panasonic CO_2 condensing units - CR Series is optimized with Panel-C intelligent controller and a service checker for professionals. It can be easily integrated with major monitoring systems.

Recommended Expansion Valves

Manufacture of showcase control's	Saginomiya	Carel	Danfoss	Eliwell	Dixell/Emerson
Valve available for R744	Yes	Yes	Yes	No	No
Design pressure of valve	120bar	Up to 140bar	90bar	-	-
Controls available	Yes by others, no showcase controls	Yes	Yes	Yes	Yes
Supervision speak with Panasonic condensing unit	Have no supervision system available in Australia	Yes	Yes	No, can be developed	Yes
Superheat control for driving valves.	Yes	Yes	Yes	Yes	Yes
Superheat control for driving competitor valves	No	Yes, most available valves	Yes, can drive Saginomiya valve	No information	Yes
Complete system available for all 4/10/20HP MT OCUs	No, showcase control missing	Yes, E2V-Z*, E2V-CW, E2V-CS series	Yes, AKVP* series with minimum 4 evaporators per OCU	No	Yes
Complete system available for 2HP/4HP/10Hp/20HP LT OCUs	No, showcase control missing	Yes, E2V-CW, E2V-CS series	No, valve missing for 120 bar design pressure and / or high MOPD applications	No	Yes

*Applicable if the evaporator and liquid line pressure difference does not exceed the valve's MOPD of 35 bar.

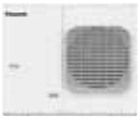
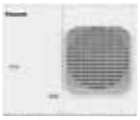
Modbus compatibility with monitoring system

Panasonic CO_2 condensing units - CR Series can be supervised by major monitoring system such as CAREL, Eliwell, COPELAND, Danfoss, RDM and Pego. Monitoring system ensures the recording, monitoring and reporting of temperature conditions etc… of entire CO_2 condensing units - CR Series system at shops.

Monitoring system					
CAREL	Danfoss	eliwell by Schneider Electric	Resource Data Management	Pego	COPELAND
Standard boss & boss-mini	AK-SM Series*	TelevisGo	DMTOUCH	TeleNET	Site Supervisor

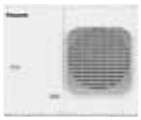
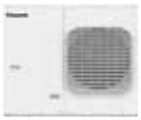
* M2M1-10 gateway (Model code: FDS021) is required in addition to the monitoring system. M2M1-10 gateway is a local supply.

CR Series guide

Outdoor units	MT	4.0 kW	7.0 kW	8.0 kW	15.0 kW	16.0 kW	29.0 kW
	LT	2.0 kW		4.0 kW		8.0 kW	15.0 kW
2 HP MT / LT (200VF5A)		 OCU-CR200VF5A OCU-CR200VF5ASL					
4 HP MT (400VF8)			 OCU-CR400VF8 OCU-CR400VF8SL				
4 HP MT / LT (400VF8A)				 OCU-CR400VF8A OCU-CR400VF8ASL			
10 HP MT (1000VF8)					 OCU-CR1000VF8 OCU-CR1000VF8SL		
10 HP MT / LT (1000VF8A)						 OCU-CR1000VF8A OCU-CR1000VF8ASL	
NEW 20 HP MT / LT (2000VF8A)							 OCU-CR2000VF8A OCU-CR2000VF8ASL

Scan to access selection guide

Condensing units index

Standard outdoor unit			OCU-CR200VF5A	OCU-CR400VF8	OCU-CR400VF8A
Anti corrosion coating outdoor unit			**OCU-CR200VF5ASL**	**OCU-CR400VF8SL**	**OCU-CR400VF8ASL**
Type (MT: medium temperature, LT: low temperature)			**MT (4 kW) / LT (2 kW)**	**MT (7,5 kW)**	**MT (8 kW) / LT (4 kW)**
Power supply	Voltage	V	220 / 230 / 240	380 / 400 / 415	380 / 400 / 415
	Phase		Single phase	Three phase	Three phase
	Frequency	Hz	50	50	50
Cooling capacity at ET -10 °C AT 32 °C		kW	3.70	6.90	7.64
Cooling capacity at ET -35 °C AT 32 °C		kW	1.92	—	3.80
SEPR cooling at ET -10 °C AT 32 °C			**3.83**	**3.17**	**3.20**
SEPR freezing at ET -35 °C AT 32 °C			**1.92**	**—**	**1.73**
Annual electricity consumption at ET -10 °C AT 32 °C		kWh/a	6 797	13 384	14 488
Annual electricity consumption at ET -35 °C AT 32 °C		kWh/a	8 021	—	16 255
Evaporator connection			Multiple	Multiple	Multiple
Evaporation temperature	Min ~ Max	°C	-45 ~ -5	-20 ~ -5	-45 ~ -5
Ambient temperature	Min ~ Max	°C	-20 ~ +43	-20 ~ +45	-20 ~ +45
Without Adiabatic Solution					
Cooling Capacity at -5°C AT 43°C (kW) – MT			3.46	5.83	4.11
Cooling Capacity at -29.5°C AT 43°C (kW) – LT			1.98	N/A	3.63
Without Adiabatic Solution					
Cooling Capacity at -5°C AT 32°C (kW) – MT			4.04	7.42	7.27
Cooling Capacity at -29.5°C AT 32°C (kW) – LT			2.32	N/A	4.45
Refrigerant			R744	R744	R744
Design pressure liquid line		MPA	12	8	8
Design pressure suction line		MPA	8	8	8
User system external alarm. Digital input. Non-voltage contact			Yes	Yes	Yes
Liquid tube electromagnetic valve		Vac	220 / 230 / 240	220 / 230 / 240	220 / 230 / 240
Showcase operation ON / OFF signal. Digital input. Non-voltage contact			Yes	Yes	Yes
Modbus communication line (RS485)		Ports	Yes	Yes	Yes
Compressor type			2- stage rotary	2- stage rotary	2- stage rotary
Dimension	H x W x D	mm	930 x 900 x 437	948 x 1 143 x 609	948 x 1 143 x 609
Net weight		Kg	70	136	149
Piping diameter [1]	Suction pipe	Inch (mm)	⅜ (9.52)	½ (12.70)	½ (12.70)
	Liquid pipe	Inch (mm)	¼ (6.35)	⅜ (9.52)	⅜ (9.52)
Length of connection piping		m	25	50 [2]	50 [2]
PED		CAT	I	II	II
Air flow		m³/min	54	59	59
External static pressure		Pa	17	50	50
Heat recovery port			—	—	Yes
Standard performance	Ambient temperature	°C	32	32	32
	Evaporating temperature	°C	-10 / -35	-10	-10 / -35
	Cooling capacity	kW	3.70 / 1.92	6.90	7.64 / 3.80
	Power consumption	kW	1.79 / 1.65	4.00	4.51 / 3.69
	Nominal load ampere	A	7.94 / 7.26	6.14	7.20 / 6.20
	Sound pressure	dB(A)	35.5 [4] / 35.5 [4]	33.0 [5]	36.1 [5] / 36.1 [5]
Necessary accessories					
Drier filter liquid line, Ø6,35 mm		**D-152T / DCY-P12**	Yes (included)	Yes (included)	Yes (included)
Drier filter liquid line, Ø15,88 mm		**D-155T / DCY-P8**	—	—	—
Suction filter, Ø19,05 mm (outer Ø welding)		**S-008T / S-008T1**	—	Yes (included)	Yes (included)
Charging pipe		SPK-TU125	Yes (included)	Yes (included)	Yes (included)

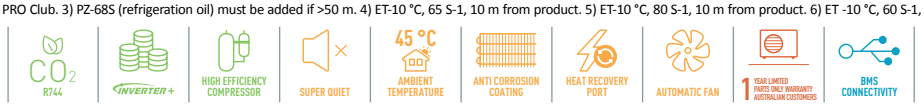
1) These diameters correspond to the output of the unit. The required diameter must be calculated with Refrigeration designer available on PRO Club. 2) PZ-68S (refrigeration oil) must be added according to Refrigeration designer available on PRO Club. 3) PZ-68S (refrigeration oil) must be added if >50 m. 4) ET-10 °C, 65 S-1, 10 m from product. 5) ET-10 °C, 80 S-1, 10 m from product. 6) ET -10 °C, 60 S-1, 10 m from product.

CO2 R744 | INVERTER+ | HIGH EFFICIENCY COMPRESSOR | SUPER QUIET | 43 °C AMBIENT TEMPERATURE | ANTI CORROSION COATING | HEAT RECOVERY PORT | AUTOMATIC FAN | 1 YEAR LIMITED PARTS ONLY WARRANTY AUSTRALIAN CUSTOMERS | BMS CONNECTIVITY



Standard outdoor unit			**OCU-CR1000VF8**	**OCU-CR1000VF8A**	**OCU-CR2000VF8A***
Anti corrosion coating outdoor unit			**OCU-CR1000VF8SL**	**OCU-CR1000VF8ASL**	**OCU-CR2000VF8ASL***
Type (MT: medium temperature, LT: low temperature)			**MT (15 kW)**	**MT (16 kW) / LT (8 kW)**	**MT (29 kW) / LT (15 kW)**
Power supply	Voltage	V	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415
	Phase		Three phase	Three phase	Three phase
	Frequency	Hz	50	50	50
Cooling capacity at ET -10 °C AT 32 °C		kW	13.92	14.98	28.76
Cooling capacity at ET -35 °C AT 32 °C		kW	—	7.61	14.61
SEPR cooling at ET -10 °C AT 32 °C			**2.62**	**2.86**	**3.10**
SEPR freezing at ET -35 °C AT 32 °C			**—**	**1.49**	**1.64**
Annual electricity consumption at ET -10 °C AT 32 °C		kWh/a	32 815	32 409	57 076
Annual electricity consumption at ET -35 °C AT 32 °C		kWh/a	—	39 985	66 760
Evaporator connection			Multiple	Multiple	Multiple
Evaporation temperature	Min ~ Max	°C	-20 ~ -5	-45 ~ -5	-45 ~ -5
Ambient temperature	Min ~ Max	°C	-20 ~ +43	-20 ~ +43	-20 ~ +45
Without Adiabatic Solution					
Cooling Capacity at -5°C AT 43°C (kW) – MT			9.41	13.73	27.89
Cooling Capacity at -29.5°C AT 43°C (kW) – LT			N/A	7.72	15.69
Without Adiabatic Solution					
Cooling Capacity at -5°C AT 32°C (kW) – MT			15.33	16.34	31.37
Cooling Capacity at -29.5°C AT 32°C (kW) – LT			N/A	9.19	17.65
Refrigerant			R744	R744	R744
Design pressure liquid line		MPA	8	8	8
Design pressure suction line		MPA	8	8	8
User system external alarm. Digital input. Non-voltage contact			Yes	Yes	Yes
Liquid tube electromagnetic valve		Vac	220 / 230 / 240	220 / 230 / 240	—
Showcase operation ON / OFF signal. Digital input. Non-voltage contact			Yes	Yes	Yes
Modbus communication line (RS485)		Ports	Yes	Yes	Yes
Compressor type			2- stage rotary	2- stage rotary	2- stage rotary
Dimension	H x W x D	mm	1 941 x 890 x 890	1 941 x 890 x 890	1 941 x 1 190 x 890
Net weight		Kg	293	320	494
Piping diameter [1]	Suction pipe	Inch (mm)	⅜ (19.05)	⅜ (19.05)	1 (25.40)
	Liquid pipe	Inch (mm)	⅝ (15.88)	⅝ (15.88)	⅜ (19.05)
Length of connection piping		m	100 [3]	100 [3]	100 [3]
PED		CAT	II	II	II
Air flow		m^3/min	220	220	220
External static pressure		Pa	58	58	58
Heat recovery port			—	Yes	Yes
Standard performance	Ambient temperature	°C	32	32	32
	Evaporating temperature	°C	-10	-10 -35	-10 -35
	Cooling capacity	kW	14.00	15.10 8.00	28.74 14.73
	Power consumption	kW	8.20	8.20 7.57	15.67 13.45
	Nominal load ampere	A	12.60	12.60 11.60	24.31 20.49
	Sound pressure	dB(A)	36.0 [6]	36.0 [6] 36.0 [6]	38.9 [6] 38.9 [6]
Necessary accessories					
Drier filter liquid line, Ø6,35 mm		**D-152T / DCY-P12**	—	—	—
Drier filter liquid line, Ø15,88 mm		**D-155T / DCY-P8**	Yes (included)	Yes (included)	Yes (included)
Suction filter, Ø19,05 mm (outer Ø welding)		**S-008T / S-008T1**	Yes (included)	Yes (included)	Yes (included)
Charging pipe		SPK-TU125	Yes (included)	Yes (included)	Yes (included)

1) These diameters correspond to the output of the unit. The required diameter must be calculated with Refrigeration designer available on PRO Club. 2) PZ-68S (refrigeration oil) must be added according to Refrigeration designer available on PRO Club. 3) PZ-68S (refrigeration oil) must be added if >50 m. 4) ET-10 °C, 65 S-1, 10 m from product. 5) ET-10 °C, 80 S-1, 10 m from product. 6) ET -10 °C, 60 S-1, 10 m from product. * Available in Summer 2024. Tentative data.



Refra®

Transcritical CO2 Refrigeration Systems | Natural Cooling

Hussmann Australia have an exclusive distribution partnership with Refra to supply Refrigeration Systems to the Australian market. Aligned in goals and direction, Hussmann sees this partnership to combine our most efficient refrigeration merchandisers with refrigeration systems focusing on natural solutions.

CO2 refrigeration systems have gained widespread popularity as a sustainable solution in the air conditioning and refrigeration industries for their energy efficiency and environmentally friendly characteristics. Refra has been producing both transcritical and subcritical CO2 refrigeration systems for over 10 years, providing the expertise and experience needed to deliver high-quality products.

CO2 refrigeration systems are an environmentally sustainable solution that use carbon dioxide (R744) as a natural refrigerant, offering low global warming potential and high efficiency. Refra specializes in producing both transcritical and subcritical CO2 systems, tailored for a range of industrial and commercial applications.

The benefits of CO2 refrigeration system include energy efficiency, reduced greenhouse gas emissions, compliance with evolving environmental regulations, and a long-term cost advantage. Additionally, CO2 systems provide both versatility and safety, as they are adaptable to various climates and suitable for a wide range of applications. The non- flammable and non-toxic properties enhance safety by reducing incident risk and simplifying maintenance.

Green Solutions

We are on a mission to make a positive impact in the refrigeration industry since 2011 – that‘s when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.

Transcritical CO2 Systems
CO2 Light

Natural refrigerant available #R744

Description

CO2 Light is perfectly suitable for small food retail stores or gas stations because of its small scale. It can provide up to 53 kW of cooling capacity, split between medium temperature and low temperature refrigeration. These rack systems are designed with reliable refrigeration technologies that are well tested and proven in the market. Assembled with maximum of 3 compressors on a welded and powder coated frame with reliable insulation material to ensure proper unit protection and noise reduction.

CO2 Light can be manufactured with two different frame types - open type and closed type. The open type frame construction is designed to house the system indoors. It is a conveniently assembled refrigeration unit that can be easily brought in and installed inside the premises. If there is no room for the refrigeration system indoors, the CO2 Light model can be made with a special protective frame, which allows you to install the equipment outdoors and connect it to the premises.

This type of system can be easily serviced as it is equipped with both front and side doors.

GREEN SOLUTIONS | This unit is a part of Refra's environmentally friendly product group, as it is made using CO2 refrigerant. Such low GWP solutions are designed to have better efficiencies and capacities, as well as less environmental damage.

Available systems

- CO2 transcritical rack MT 2x0
- CO2 transcritical booster MT+LT 2x1

Standard Equipment

- Open type welded, powder coated frame;
- Anti-vibration legs;
- Carel controllers;
- Reciprocating Bitzer compressors;
- Frequency inverters on lead compressor;
- Low level liquid switch;
- Filters (strainers);
- Filter (drier) on LL (liquid line);
- 75L Liquid receiver;
- Safety valves;
- Manometers;

Conditional Equipment

- Internal heat exchanger, if required by conditions;
- Liquid injection with AKV valve, only in booster systems.

Technical Parameters — CO2 Light

Calculations are made for basic units without additional options

Model		CL 140	CL 204	CL 274	CL 422	CL 530
Standard version						
Refrigerant	Type	R744				
Maximum MT capacity	kW	14	20,4	27,4	42,2	53
Number of MT compressors	n	2	2	2	2	2
Receiver volume	L	75	75	75	75	75
Design pressure						
High pressure	bar	120	120	120	120	120
Receiver pressure	bar	80	80	80	80	80
MT suction pressure	bar	80/60/52/45	80/60/52/45	80/60/52/45	80/60/52/45	80/60/52/45
LT suction pressure	bar	80/60/30	80/60/30	80/60/30	80/60/30	80/60/30
Sound pressure level in 10m	dB	45	45	45	52	52
Power supply						
Max. power consumption	A	30,2	41,2	49,8	70	85,2
Open frame dimensions						
Length	mm	1090	1090	1090	1090	1090
Width	mm	670	670	670	670	670
Height	mm	1845	1845	1845	1845	1845
Operating weight	kg	800	800	850	920	940

Technical parameters of additional options

Enclosed frame dimensions						
Length	mm	1200	1200	1200	1200	1200
Width	mm	800	800	800	800	800
Height	mm	2120	2120	2120	2120	2120
Operating weight	kg	920	920	970	1040	1060
Heat recovery module 30 plates						
10-60 °C	kW	12	16	21	29	34
25-45 °C	kW	11	15	20	28	33
Heat recovery module 50 plates						
10-60 °C	kW	15	21	27	38	45
25-45 °C	kW	14	19	25	36	43

*Ambient temperature +35 °C, Gas Cooler outlet +37 °C, Evaporating temperature MT/LT -10/-30 °C.
*Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).
*Heat recovery simulation based on 60% mass flow, 110 °C, 80 bar. Capacity may vary with actual compressor pack.

Power Range Sheet — CO2 Light

Technical data for power selection | CO2 Light					
LT Capacity kW		**-10°C MT Capacity kW***			
-30	**Model**	**32°C**	**33°C**	**34°C**	**35°C**
0 kW	CL 140	15,9	15,5	15,0	14,7
0 kW	CL 204	23,0	22,5	21,9	21,4
0 kW	CL 274	31,2	30,4	29,5	28,8
0 kW	CL 422	47,3	46,2	45,1	44,1
0 kW	CL 530	59,8	58,4	56,9	55,6
4,2 kW	CL 140	10,9	10,5	10,1	9,7
4,2 kW	CL 204	18,1	17,5	16,9	16,3
4,2 kW	CL 274	26,3	25,4	24,6	23,8
4,2 kW	CL 422	42,4	41,2	40,1	39,0
4,2 kW	CL 530	54,8	53,3	51,8	50,4
6,7 kW	CL 204	15,2	14,6	14,0	13,5
6,7 kW	CL 274	23,3	22,5	21,7	20,9
6,7 kW	CL 422	39,5	38,3	37,2	36,1
6,7 kW	CL 530	51,9	50,4	49,0	47,6
9,1 kW	CL 204	12,3	11,8	11,2	10,7
9,1 kW	CL 274	20,4	19,6	18,8	18,0
9,1 kW	CL 422	36,5	35,4	34,2	33,2
9,1 kW	CL 530	49,0	47,5	46,1	44,7
11,9 kW	CL 274	17,4	16,5	15,8	15,0
11,9 kW	CL 422	33,4	32,2	31,1	30,1
11,9 kW	CL 530	45,9	44,4	43,0	41,6
14 kW	CL 422	30,9	29,7	28,6	27,6
14 kW	CL 530	43,4	41,9	40,5	39,1
17,8 kW	CL 422	26,6	25,4	24,4	23,3
17,8 kW	CL 530	39,0	37,6	36,2	34,8

*Data depends on the outlet temperature of the gas cooler kW.

Power Range Sheet — CO2 Light

LT Capacity kW		-10°C MT Capacity kW*			
-30	Model	36°C	37°C	38°C	40°C
0 kW	CL 140	14,3	14,0	13,7	13,0
0 kW	CL 204	20,9	20,4	19,9	18,9
0 kW	CL 274	28,1	27,4	26,7	25,4
0 kW	CL 422	43,1	42,2	41,2	39,3
0 kW	CL 530	54,3	53,0	51,9	49,5
4,2 kW	CL 140	9,4	9,0	8,7	x
4,2 kW	CL 204	15,8	15,3	14,8	13,9
4,2 kW	CL 274	23,1	22,4	21,6	20,3
4,2 kW	CL 422	37,9	36,9	35,9	34,1
4,2 kW	CL 530	49,1	47,7	46,5	44,2
6,7 kW	CL 204	13,0	12,5	12,0	x
6,7 kW	CL 274	20,2	19,5	18,8	x
6,7 kW	CL 422	35,1	34,1	33,1	31,2
6,7 kW	CL 530	46,2	44,9	43,6	41,2
9,1 kW	CL 204	10,1	9,7	x	x
9,1 kW	CL 274	17,3	16,6	15,9	x
9,1 kW	CL 422	32,2	31,2	30,2	28,4
9,1 kW	CL 530	43,4	42,1	40,8	38,4
11,9 kW	CL 274	14,3	13,5	x	x
11,9 kW	CL 422	29,0	28,1	27,1	25,3
11,9 kW	CL 530	40,3	39,0	37,8	35,3
14 kW	CL 422	26,6	25,6	24,6	22,8
14 kW	CL 530	37,8	36,5	35,3	32,9
17,8 kW	CL 422	22,3	21,3	20,4	x
17,8 kW	CL 530	33,5	32,2	31,0	28,6

*Data depends on the outlet temperature of the gas cooler kW.

Additional Options

Available additional options for CO2 light

LT SL Compressor

SL compressor series offer improved energy efficiency and optimal performance. In addition, the application limits are pushed to a higher condensing temperature, whilst the admissible pressure load is expanded on the high and low pressure side (53/30 bar).

LT ME Compressor

ME compressor series combine high standstill pressures, high efficiency, smooth running and high reliability in combination with the CO2 refrigerant (100/100 bar).

MT Compressor with LSPM

Offers enhanced efficiency and reliable performance of transcritical CO2 systems. Equipped with advanced Line-Start Permanent-Magnet (LSPM) technology that fully exploits the high motor efficiency and low heat input into the refrigerant, this reciprocating compressor delivers efficient performance and 14% higher SEPR.

Wurm Animus controller

Monitors and regulates the temperature of refrigeration system providing advanced features such as energy management, remote monitoring, and data logging. This allows to optimize performance, reduce energy consumption, and troubleshoot issues.

Danfoss MiniPack controller

AK-PC 572 MiniPack controller provides a reliable, compact and cost-effective set of solutions for CO2 systems. All essential functionality comes with a with a pre-configured wizard, optimized for the fast and simple setup of CO2 systems, resulting in reduced complexity and ease of use.

Eliwell EWCM controller

EWCM 9000 PRO (HF) controller is designed for temperature and humidity control applications. Advanced features and flexible programming options allow precise regulation and monitoring of environmental conditions, thus helping identify issues and maintain optimal operation of CO2 systems.

Energy meter kit

Measures the electrical energy consumption of the compressor and other electrical components in a refrigeration system. It provides valuable data on the system's operating efficiency and can help identify opportunities for energy savings.

High level liquid switch

Designed to detect the liquid level of CO2 refrigerant to help maintain proper system operation. The switch works by using a float that rises and falls with the liquid level and sends a signal to a control system, when the level reaches a certain point.

Additional Options

Available additional options for CO2 light

Enclosed AB frame

Galvanized steel frame, with epoxy-polyester powder coating and reliable insulation material protects the refrigeration system and reduces noise levels. Two access points at the front and from the side enables fast and convenient service while additional, elongated legs provide anti-vibration features and can be mounted by the customer on demand.

Heat recovery module

Consisting of a heat exchanger, on/off three-way valve and heat temperature sensors the module efficiently captures and utilizes waste heat from a refrigeration system, maximizing energy efficiency by recovering and repurposing waste heat, reducing energy consumption and promoting sustainability.

Safety Valve Collector

Helps to protect the system from overpressure and ensures safe operation by collecting the discharge from multiple safety relief valves and routes it to a safe location, preventing damage to the system and ensuring safe venting of refrigerant.

Gas Cooler

Wide capacity range gas cooler series, created for transcritical CO2 systems with high pressure. Available heat capacity is up to 500 kW upon nominal conditions (when Tin is 115°C, Tout is 33°C and Tamb is 35°C and pressure is 91,7 bar). Sound pressure level is <=45 dB(A) at 10 m.

HT Discharge Line Insulation

Additional protection for the discharge line and work safety. The insulation reduces the risk of corrosion under insulation (CUI) and has a built-in UV-resistance for long service life. It is a flexible closed-cell elastomeric foam insulation for use in high-temperature applications of up to 150°C.

UD Full Unit Insulation

Flexible technical insulation material with fire class BL-s1,d0 that exhibits 10 times less smoke in a fire than a standard elastomeric foam. Because of its low thermal conductivity and high resistance to water vapour diffusion, it ensures reliable condensation control and high energy savings in the long-term.

Varipack

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.

Transcritical CO2 Systems

CO2 Ecopack

Natural refrigerant available #R744

Description

CO2 ECOPACK is a customizable transcritical rack, designed mainly for commercial application. Built on a low and narrow frame, it is designed for small spaces and easy maintenance. This model can be assembled with maximum 4 MT and 3 LT reciprocating compressors and provide cooling capacity up to 135 kW. Due to its simple, small frame design, this unit is the optimal choice for installing a medium size refrigeration system.

GREEN SOLUTIONS | This unit is a part of Refra's environmentally friendly product group, as it is made using CO2 refrigerant. Such low GWP solutions are designed to have better efficiencies and capacities, as well as less environmental damage.

Transcritical CO2 Systems
CO2 Vertical

Natural refrigerant available #R744

Description

The CO2 vertical rack is constructed as a single unit on a powder coated steel frame. Vertically build to reduce the footprint, this product has a sufficiently high power potential. This is the unit with the highest power capacity per square meter. Therefore it is ideal for the demands of small food retail stores. Vertical rack system is designed with a well-known refrigeration technologies that have been reliably tested. This frame can be assembled with maximum of 4 compressors and manufactured for medium and low temperature cooling, providing up to 75 kW of refrigeration capacity.

GREEN SOLUTIONS | This unit is a part of Refra's environmentally friendly product group, as it is made using CO2 refrigerant. Such low GWP solutions are designed to have better efficiencies and capacities, as well as less environmental damage.

Transcritical CO2 Systems
CO2 Select

Natural refrigerant available #R744

Description

CO2 Select is a customizable transcritical rack, designed for commercial and industrial applications. It is built on a rigid frame, designed for easy maintenance and durability. A special “reach-in” container option for outdoor installation provides convenient installation and efficient unit service. The cooling capacity of this product ranges from 50 kW to 330 kW, meaning that it can be designed for various applications.

GREEN SOLUTIONS | This unit is a part of Refra‘s environmentally friendly product group, as it is made using CO2 refrigerant. Such low GWP solutions are designed to have better efficiencies and capacities, as well as less environmental damage.

Transcritical CO2 Systems

CO2 Container

Natural refrigerant available #R744

Description

CO2 Container is a new generation solution that covers most refrigeration needs. It combines both transcritical and subcritical CO2 systems with a unique AR frame, designed exclusively by Refra. Cooling capacity of this product ranges from 50 kW to 600 kW, meaning that it can be designed for various applications.

The special design of the walk-in container is ideal for buildings where indoor installation is not possible. It can be placed right next to the building or on the roof, which will not only reduce installation costs, but will also allow easy unit maintenance. For maximum safety, the container is equipped with a special leak detector that responds to gas leaks quickly and lets prevent malfunctions. Additional options, such as illumination, ventilation and cooling can be installed inside the container to make the service of the unit even more convenient.

Modular assembled container size ranges from 2,4 meters to 13 meters in length and can be insulated with polyurethane foam or 50 mm rock wool material for a super silent unit operation. On request, these units can be equipped with supplementary hydraulic module, additional water storage tanks, heat recovery options inside the container and a gas-cooler on top of it.

Transcritical CO2 Systems

CO2 Industrial

Natural refrigerant available #R744

Description

CO2 Industrial is a customizable transcritical rack, designed mainly for industrial application. Special “reach-in” container option for outdoor installation provides convenient and efficient unit service. This type can be assembled with maximum of 6 reciprocating compressors per stage (MT/LT) and provide cooling capacity ranging from 50 kW to 500 kW. This model is assembled with 6-cylinder compressors, resulting in bigger dimensions and larger power supply.

Transcritical CO2 Systems
CO2 Galaxy

Natural refrigerant available #R744

Description

CO2 Galaxy units are among the most versatile racks in the transcritical system. Designed on a V-shaped frame, these systems offer a wide power range. Created for industrial applications, the power of these units can reach up to 800 kW.

Due to the wide range of assembly options, the CO2 Galaxy rack comes with an integrated gas cooler. This simplifies installation and equipment selection work and reduces overall costs of the project. Special modular assembly system provides extensive power selection options and the ability to integrate a wide range of useful solutions such as a built-in hydraulic module, additional water storage tanks or heat recovery options.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. The galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection as well as noise reduction and can be produced up to 13 meters in length. An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.

Refra®

Subcritical CO2 Systems

Subcritical CO2 refrigeration systems are designed to function efficiently in lower ambient temperatures, ranging from -10°C to +15°C. Utilizing CO2 in its subcritical state and maintaining high performance with lower pressures and temperatures, these systems are ideal for cold storage and industrial cooling. Subcritical CO2 systems offer significant energy savings and reliable performance compared to traditional refrigeration systems, particularly in regions with stable, cooler temperatures.

When designed as a cascade system, using a combination of CO2 and Propylene refrigerants, the unit is able to achieve low cooling temperatures and maintain high coefficient of performance (COP), even under higher ambient temperatures. This makes the system particularly effective in warmer regions, where traditional refrigeration systems struggle with energy efficiency

Green Solutions

We are on a mission to make a positive impact in the refrigeration industry since 2011 – that‘s when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.

Subcritical CO2 Systems
CO2 Cascade

Natural refrigerant available #R744

Description

CO2 Cascade units are perfectly suited for high temperature climate. This system consists of two refrigeration systems connected via heat exchanger, where one evaporates, the other condenses. Such combination provides either low temperature refrigeration or both: low and medium temperature refrigeration with different refrigerants. Low temperature units can be designed with CO2 and a flooded system to ensure better heat exchange, while medium temperature units obtain a truly cost-effective and environmentally friendly solution when produced with HFC and HC refrigerants. At high ambient temperatures, conventional refrigeration systems require a large amount of energy, whilst propane works perfectly in such conditions.

Subcritical CO2 Systems

CO2 LT Liquid Cooled

Natural refrigerant available #R744

Description

LT Liquid cooled systems are designed to supplement the existing refrigeration arrangement with an already installed chiller. This unit can be cooled by glycol provided from a currently existing chiller and provide additional low temperature cooling. It is perfect for achieving particularly low refrigeration temperatures that can go down to -35 °C degrees. Such solutions are mostly used for warehouse cooling and other industrial applications.

Refra®

R290 Heat Pump

Heat pumps efficiently transfer heat between different environments, offering both heating and cooling solutions in a single machine. Refra specializes in producing reversible heat pumps that seamlessly switch between heating and cooling modes, making them ideal for year-round

operation. This dual capability makes heat pumps an exceptionally efficient solution, eliminating the need for separate systems. By reducing energy consumption and utilizing environmentally friendly refrigerants, Refra heat pumps play a crucial role in lowering greenhouse gas emissions, offering a sustainable and forward-thinking choice for modern buildings and industrial operations

Propane Heat Pumps

Propane heat pumps, using refrigerant R290, are an advanced and eco-friendly option for heating and cooling in commercial, and industrial applications. R290, a natural refrigerant, has a very low global warming potential, ensuring compliance with stringent European F-gas regulations and helping businesses avoid future regulatory costs. In addition to being environmentally sustainable, propane heat pumps are highly energy-efficient, providing substantial operational cost savings over time. Refra, with over 10 years of experience in producing propane refrigeration systems, ensures that its R290 heat pumps meet all EN378 safety standards and incorporate the latest technology for reliability and superior performance. With continuous product innovation, Refra's propane heat pumps are not only a sustainable choice but also deliver high efficiency and long-term durability, offering a future-proof solution for businesses aiming to reduce energy consumption and environmental impact. investment.

Green Solutions

We are on a mission to make a positive impact in the refrigeration industry since 2011 – that's when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.

R290 Heat Pump Systems
Flamma

Description

Small capacity reversible heat pumps with the heating power from 20 kW to 55 kW are designed for small commercial or industrial applications. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These single circuit heat pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 20 kW to 50 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans;
- Muffler.

Technical Parameters — Flamma

Calculations are made for basic units without additional options

Model		FLM 103	FLM 104	FLM 105
Standard version				
Heating capacity[1]	kW	40,8	46,6	52,9
Power consumption	kW	11,1	12,3	14,1
COP		3,7	3,8	3,7
SCOP		4,2	4,6	4,6
SSHEE	%	165	181	181
Refrigeration capacity[2]	kW	35,8	41,8	46,3
Power consumption	kW	11,8	13,3	15,1
EER		3,0	3,1	3,1
System data				
Refrigerant	Type	R290		
Number of compressors	n	1	1	1
Refrigerant quantity per circuit[3]	kg	7,0	7,8	7,8
Inlet/Outlet connection	DN	40	40	40
Sound pressure level in 10m[4]	dB	42	42	42
Fan				
Type		EC		
Number of fans	n	3	3	3
Air flow	m³/h	19919	19919	19919
Plate heat exchanger				
Number of plate heat exchangers	n	1	1	1
Flow rate heating[1]	m³/h	7,6	8,7	9,9
Pressure drop heating	kPa	22,9	29,2	37,1
Flow rate cooling[2]	m³/h	6,8	8,0	8,8
Pressure drop cooling	kPa	24,1	30,2	35,1
Power supply				
Voltage		3-400V / 50Hz		
Max. power consumption	A	26,8	28,9	32,8
Dimensions and weight				
Length	mm	2620	2620	2620
Width	mm	1110	1110	1110
Height	mm	1690	1690	1690
Operating weight	kg	710	730	750

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Heat Pump Systems
Ignis

Description

Medium power range reversible heat pumps with the heating power from 30 kW to 145 kW are designed for commercial and industrial buildings with medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 30 kW to 125 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans;
- Muffler.

Technical Parameters — Ignis

Calculations are made for basic units without additional options

Model		IGN 107	IGN 108	IGN 109	IGN 110	IGN 111
Standard version						
Heating capacity[1]	kW	68,1	75,1	86,7	98,5	111,2
Power consumption	kW	19,3	21,8	24,9	28,1	31,9
COP		3,5	3,5	3,5	3,5	3,5
SCOP		4,2	4,4	4,4	4,5	4,5
SSHEE	%	165	173	173	177	177
Refrigeration capacity[2]	kW	62,2	67,9	78,2	87,5	97,5
Power consumption	kW	19,4	22,2	26,2	29,7	33,7
EER		3,2	3,1	3,0	2,9	2,9
System data						
Refrigerant	Type	R290				
Number of compressors	n	1	1	1	1	1
Refrigerant quantity per circuit[3]	kg	10,9	10,9	10,9	10,9	12,2
Inlet/Outlet connection	DN	50	50	65	65	65
Sound pressure level in 10m[4]	dB	52	52	52	52	52
Fan						
Type		EC				
Number of fans	n	2	2	2	2	2
Air flow	m³/h	47284	47284	47284	47284	47284
Plate heat exchanger						
Number of plate heat exchangers	n	1	1	1	1	1
Flow rate heating[1]	m³/h	12,7	14,0	16,1	18,4	20,7
Pressure drop heating	kPa	13,1	15,6	20,3	25,8	17,4
Flow rate cooling[2]	m³/h	11,9	12,9	14,9	16,7	18,6
Pressure drop heating	kPa	14,3	16,6	21,3	25,9	17,5
Power supply						
Voltage		3-400V / 50Hz				
Max. power consumption	A	36,5	41,0	47,9	55,2	65,2
Dimensions and weight						
Length	mm	3105	3105	3105	3105	3105
Width	mm	1363	1363	1363	1363	1363
Height	mm	2340	2340	2340	2340	2340
Operating weight	kg	1100	1120	1150	1170	1200

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Heat Pump Systems
Ignis+

Description

Medium power range reversible heat pumps with the heating power from 20 kW to 155 kW are designed for commercial and industrial buildings with medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 25 kW to 145 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters — Ignis+

Calculations are made for basic units without additional options

Model		IGN 209	IGN 210	IGN 212	IGN 213
Standard version					
Heating capacity[1]	kW	93,4	105,1	115,8	123,6
Power consumption	kW	26,5	29,7	32,6	35,1
COP		3,5	3,5	3,6	3,5
SCOP		4,5	4,5	4,6	4,6
SSHEE	%	177	177	181	181
Refrigeration capacity[2]	kW	81,4	93,6	103,6	108,8
Power consumption	kW	26,2	30,4	35,0	37,4
EER		3,1	3,1	3,0	2,9
System data					
Refrigerant	Type	R290			
Number of compressors	n	2	2	2	2
Refrigerant quantity per circuit[3]	kg	7,4	7,4	7,4	8,2
Inlet/Outlet connection	DN	65	65	65	65
Sound pressure level in 10m[4]	dB	52	52	54	54
Fan					
Type		EC			
Number of fans	n	2	2	2	2
Air flow	m³/h	47916	47916	47916	47916
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate heating[1]	m³/h	17,4	20,1	21,6	23,0
Pressure drop heating	kPa	18,5	24,3	27,6	21,2
Flow rate cooling[2]	m³/h	15,5	17,8	20,3	23,6
Pressure drop heating	kPa	18,3	23,1	29,2	21,2
Power supply					
Voltage		3-400V / 50Hz			
Max. power consumption	A	51,4	59,2	66,2	75,2
Dimensions and weight					
Length	mm	3715	3715	3715	3715
Width	mm	1363	1363	1363	1363
Height	mm	2340	2340	2340	2340
Operating weight	kg	1550	1560	1580	1620

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Heat Pump Systems
Ignis+

Description

Medium power range reversible heat pumps with the heating power from 35 kW to 195 kW are designed for commercial and industrial buildings with low to medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 35 kW to 180 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters — Ignis+

Calculations are made for basic units without additional options

Model		IGN 216	IGN 217	IGN 219	IGN 220
Standard version					
Heating capacity[1]	kW	149,6	173,6	197,2	223,8
Power consumption	kW	43,7	49,9	56,3	65,5
COP		3,4	3,5	3,5	3,4
SCOP		4,4	4,4	4,6	4,6
SSHEE	%	173	173	181	181
Refrigeration capacity[2]	kW	132,2	155,4	175,1	195,4
Power consumption	kW	44,3	52,2	59,4	70,2
EER		3,0	3,0	2,9	2,8
System data					
Refrigerant	Type	R290			
Number of compressors	n	2	2	2	2
Refrigerant quantity per circuit[3]	kg	11,2	12,4	12,8	12,8
Inlet/Outlet connection	DN	65	80	80	80
Sound pressure level in 10m[4]	dB	54	54	54	54
Fan					
Type		EC			
Number of fans	n	4	4	4	4
Air flow	m³/h	94568	94568	94568	94568
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate heating[1]	m³/h	27,9	32,4	36,8	41,7
Pressure drop heating	kPa	30,3	25,3	32,2	40,8
Flow rate cooling[2]	m³/h	25,2	29,8	33,4	37,2
Pressure drop heating	kPa	29,7	25,6	31,3	37,9
Power supply					
Voltage		3-400V / 50Hz			
Max. power consumption	A	82,0	95,8	110,4	130,4
Dimensions and weight					
Length	mm	5385	5385	5385	5385
Width	mm	1363	1363	1363	1363
Height	mm	2340	2340	2340	2340
Operating weight	kg	2150	2250	2300	2420

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Heat Pump Systems
Solis

Description

High power reversible heat pumps with the heating power from 55 kW to 310 kW are designed for industrial and commercial buildings with large power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. With high cooling capacity and many possible extra features these products are widely used in various factories, immense supermarkets and warehouses. These pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 60 kW to 290 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Larger, raised coils are set to simplify the defrosting process and allow water to drain freely. TGalvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters — Solis

Calculations are made for basic units without additional options

Model		SOL 219	SOL 225	SOL 226	SOL 229
Standard version					
Heating capacity[1]	kW	236,2	246,6	271,2	298,2
Power consumption	kW	66,6	69,4	77,0	86,0
COP		3,5	3,6	3,5	3,5
SCOP		4,7	4,7	4,7	4,6
SSHEE	%	185	185	185	181
Refrigeration capacity[2]	kW	204,4	215,2	235,2	249,6
Power consumption	kW	69,7	73,1	82,7	90,5
EER		2,9	2,9	2,8	2,8
System data					
Refrigerant	Type	R290			
Number of compressors	n	2	2	2	2
Refrigerant quantity per circuit[3]	kg	14,9	15,5	15,5	16,0
Inlet/Outlet connection	DN	80	100	100	100
Sound pressure level in 10m[4]	dB	56	57	58	57
Fan					
Type		EC			
Number of fans	n	4	4	4	4
Air flow	m³/h	111964	111964	111964	111964
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate heating[1]	m³/h	44,0	46,0	50,6	55,6
Pressure drop heating	kPa	45,2	30,9	36,8	43,8
Flow rate cooling[2]	m³/h	38,2	41,1	44,9	47,6
Pressure drop heating	kPa	39,6	29,1	34,1	38,1
Power supply					
Voltage		3-400V / 50Hz			
Max. power consumption	A	129,6	137,0	160,4	201,0
Dimensions and weight					
Length	mm	4440	4440	4440	4440
Width	mm	2378	2378	2378	2378
Height	mm	2401	2401	2401	2401
Operating weight	kg	2400	2600	2800	3100

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Heat Pump Systems
Solis+

Description

High power reversible heat pumps with the heating power from 55 kW to 550 kW are designed for industrial and commercial buildings with large power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. With high cooling capacity and many possible extra features these products are widely used in various factories, immense supermarkets and warehouses. These pumps can be used for heating purposes at ambient temperature of -15°or higher as well as for cooling purposes with the capacity of 60 kW to 480 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

Solis+ heat pumps are made with three circuits to ensure continuous system operation in case of emergency – if one circuit is damaged, the others can still use the remaining unit capacity to service the end user. When the unit is in the defrost stage, two circuits operate in heating mode and the third operates in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Larger, raised coils are set to simplify the defrosting process and allow water to drain freely. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;
- 4-way valve for reversible operation;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters — Solis+

Calculations are made for basic units without additional options

Model		SOL 335	SOL 336	SOL 340	SOL 344
Standard version					
Heating capacity[1]	kW	356,1	370,5	421,5	462,6
Power consumption	kW	98,9	103,1	119,9	133,7
COP		3,6	3,6	3,5	3,5
SCOP		4,8	4,7	4,7	4,6
SSHEE	%	189	185	185	181
Refrigeration capacity[2]	kW	312,3	327,9	362,1	382,2
Power consumption	kW	105,4	109,0	125,2	134,2
EER		3,0	3,0	2,9	2,8
System data					
Refrigerant	Type	R290			
Number of compressors	n	3	3	3	3
Refrigerant quantity per circuit[3]	kg	15,6	16,4	16,4	17,2
Inlet/Outlet connection	DN	100	100	125	125
Sound pressure level in 10m[4]	dB	58	59	59	59
Fan					
Type		EC			
Number of fans	n	6	6	6	6
Air flow	m³/h	167946	167946	167946	167946
Plate heat exchanger					
Number of plate heat exchangers	n	3	3	3	3
Flow rate heating[1]	m³/h	66,4	69,1	78,6	86,3
Pressure drop heating	kPa	19,7	14,7	18,8	22,3
Flow rate cooling[2]	m³/h	59,6	62,6	69,1	72,9
Pressure drop heating	kPa	19,6	15,1	17,9	19,6
Power supply					
Voltage		3-400V / 50Hz			
Max. power consumption	A	194,4	205,5	240,6	301,5
Dimensions and weight					
Length	mm	6010	6010	6010	6010
Width	mm	2378	2378	2378	2378
Height	mm	2401	2401	2401	2401
Operating weight	kg	4200	4250	4300	4350

[1] Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.
[2] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[3] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[4] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Additional Options

Pump on/off 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. “On/Off” function is used in applications where the pump only needs to operate when there is a demand for fluid flow.

Pump on/off 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. “On/Off” function is used in applications where the pump only needs to operate when there is a demand for fluid flow.

Pump inverter 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.

Pump inverter 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.

Twin Pump on/off 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances. One pump serves as the base-load pump, while the second pump can serve as a reserve in the event of a fault.

Twin Pump inverter 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances, ensures reliable operation in case of an emergency and precise control over the fluid flow rate.

Additional Options

Flow switch

Detects the flow of liquid medium in HVAC systems. Used as a safety device to ensure there is an adequate flow of the fluid, and to trigger an alarm or shut down the system in case of low flow.

Flow meter

Utilises ultrasonic transit-time technology to provide accurate and repeatable water-flow measurement and insures the correct measured flow. Monitors the performance and efficiency of the system, ensures the adequate flow of fluid.

Check valve

Allows fluid to flow in one direction only, and prevents backflow in the opposite direction. Recommended for systems with more than one heat pump, to prevent backflow and ensure proper fluid flow.

Desuperheater

Utilizes the high-temperature energy of the superheated refrigerant gas to heat water. By using the waste heat generated during the cooling process, desuperheater can improve the overall energy efficiency of the system.

Thick insulation frame

Additional 30-50 mm rock wool material for a super silent unit operation with double insulation reduces the sound level and strengthens the frame construction. **Not possible with additional buffer tank.**

Antivibration mounts

Reduces and isolates the transmission of vibrations from the unit by using a rubber element with a metal casing.

Additional Options

Trace heating

Maintains or raises the temperature of pipes and vessels through specially engineered cables to protect it from freezing at sub-zero temperatures. **Not possible with additional buffer tank.**

Aqua Aero

Helps to lower energy consumption by reducing airside fouling in cooling coils, thus improving the overall energy efficiency of the system. The hydrophobic coating acts as a barrier which prevents corrosive agents from infiltrating the underlying metal surface.

Siemens cloud + modem GSM

This kit provides remote access to the unit controller. The cloud provides all relevant equipment data and allows to evaluate and control it efficiently using leading IoT analytics tools.

Smart Grid (SG) Ready

Allows the controller to communicate with smart grid infrastructure, responding to signals from the grid to optimize energy usage. It supports demand response, energy management, and grid stabilization by enabling real-time monitoring, automated load adjustments, and integration with energy systems.

Keypad

Offers data point access and system configuration for Climatix controllers, featuring 240x128 dpi resolution display and 6 easy-to-use keys. Equipped with Alarm, Info, and Cancel functions, it supports multiple languages and local HMI settings.

Touch screen

High-resolution, 7-inch touch display offers an intuitive operator interface, quick connection to controllers via Ethernet or RS485/422. It minimizes engineering, lifecycle costs and commissioning, ensuring local control in production, process, and building automation.

Additional Options

Electric energy meter

Monitors and records active, reactive, and apparent energy consumption, displaying the data with real-time visualization. Integrates seamlessly with power monitoring systems via Modbus and calculates average consumption over time.

Thermal energy meter

Measures heat energy in heating and cooling systems by combining an electric energy meter and an ultrasonic flow meter. Utilizes transit-time technology for accurate, repeatable water flow measurement, ensuring precise energy monitoring, optimal system performance, and efficiency.

Varipack

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.

Refra®

R290 Chillers

Chillers are vital components in modern air conditioning and refrigeration systems, providing efficient temperature control for industrial and commercial applications. Refra specializes in producing customized chillers that meet the specific requirements of the customer, ensuring optimal performance and energy efficiency. Backed by years of experience developing environmentally-friendly solutions for large-scale properties, Refra delivers reliable and sustainable cooling systems.

Propane Chillers

Propane chillers, renowned for their high efficiency and minimal environmental impact, utilize refrigerant R290, one of the most effective natural refrigerants. These R290 chillers deliver superior cooling performance and energy savings, making them an optimal choice for industrial and commercial applications. With over 10 years of experience in producing propane refrigeration systems, Refra offers unparalleled expertise in ensuring reliable and safe solutions. Our propane chillers comply with all safety requirements according to the EN378 standard and incorporate the latest technological advancements. Selecting refrigerant R290 not only benefits the environment but also adheres to the latest European F-gas regulations, thereby mitigating future costs. Additionally, the low global warming potential of refrigerants naturally contributes to sustainability, while the enhanced efficiency of these systems provides significant cost savings, making them a prudent and economical investment. only a sustainable choice but also deliver high efficiency and long-term durability, offering a future-proof solution for businesses aiming to reduce energy consumption and environmental impact.investment.

Green Solutions

We are on a mission to make a positive impact in the refrigeration industry since 2011 – that‘s when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.

R290 Chillers
Galaxy Mini

Natural refrigerants available! #R290

Choose propane or propylene and contribute to the environment!

Description

Galaxy Mini air-cooled chiller has the cooling capacity of 25 kW to 45 kW and is designed for commercial refrigeration and air conditioning applications with small power demand. Such systems are widely used in various factory cooling processes, supermarkets, gas stations and many other applications. Galaxy Mini chiller is made with one circuit to service the end user.

Galaxy Mini can be integrated with a built-in hydraulic module or a heat recovery system and other useful additional options. Refra manufactures modern devices using plug-and-play ideology, making the installation and use of the devices as easy as possible. In this case, the customer can start using the device quickly and easily after installment.

Comprehensive frame is assembled with high-quality EC fan motor technology, microchannel heat exchangers, reciprocating compressors. The galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/ differential pressure switch;
- Polymer powder painted RAL7035 frame;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Air cooled microchannel condenser;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters — Galaxy Mini

Calculations are made for basic units without additional options

Model		GAL101	GAL102	GAL103
Standard version				
Refrigeration capacity [1]	kW	27,90	33,20	38,10
Power consumption	kW	7,90	8,90	10,30
EER		3,5	3,7	3,7
SEPR		6,43	6,88	6,61
SEER		4,69	4,98	4,90
System data				
Refrigerant	Type	R290		
Number of compressors	n	1	1	1
Refrigerant quantity [2]	kg	2,8	2,8	2,8
Inlet/Outlet connections	DN	40	40	40
Sound pressure level in 10m [3]	dB	46	46	47
Fan				
Type		EC		
Number of fans	n	3	3	3
Air flow	m³/h	17949	17949	17949
Plate heat exchanger				
Number of plate heat exchangers	n	1	1	1
Flow rate cooling [1]	m³/h	5,3	6,3	7,3
Pressure drop cooling	kPa	17,6	22,4	27,2
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	27,0	29,1	33,0
Dimensions and weight				
Length	mm	2652	2652	2652
Width	mm	1000	1000	1000
Height	mm	1690	1690	1690
Operating weight	kg	690	720	730

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Chillers
Galaxy Solo

* The photos in this brochure are for illustrative purposes only. The appearance of the final product may vary depending on your selections, additional options and other order details.

NATURAL REFRIGERATION SOLUTIONS

Natural refrigerants available! #R290

Choose propane or propylene and contribute to the environment!

Description

Galaxy Solo air-cooled chiller has the cooling capacity of 45 kW to 120 kW and is designed for industrial or commercial buildings with smaller power demand. Such systems are widely used in various factories, supermarkets and office buildings. Galaxy Solo chiller is made with one circuit to service the end user.

Special modular assembly system provides the ability to integrate Galaxy Solo with useful additional options, such as a built-in hydraulic module or heat recovery system. With extensive power selection options and many possible extra features, Galaxy chillers stand out as one of the most versatile products that Refra can offer.

Refra manufactures modern devices using plug-and-play ideology, making the installation and use of the devices as easy as possible. In this case, the customer can start using the device quickly and easily after installment.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, microchannel heat exchangers, reciprocating compressors. The galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included:

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Air cooled microchannel condenser;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters — Galaxy Solo

Calculations are made for basic units without additional options

Model		GAL106	GAL108	GAL109
Standard version				
Refrigeration capacity [1]	kW	48,40	63,40	72,30
Power consumption	kW	14,40	18,40	20,80
EER		3,4	3,4	3,5
SEPR		7,04	7,02	6,90
SEER		5,69	5,48	5,38
System data				
Refrigerant	Type	R290		
Number of compressors	n	1	1	1
Refrigerant quantity [2]	kg	4,4	4,4	4,4
Inlet/Outlet connections	DN	50	50	50
Sound pressure level in 10m [3]	dB	51	51	53
Fan				
Type		EC		
Number of fans	n	2	2	2
Air flow	m³/h	41598	41598	41598
Plate heat exchanger				
Number of plate heat exchangers	n	1	1	1
Flow rate cooling [1]	m³/h	9,3	12,1	13,8
Pressure drop cooling	kPa	9,6	15,1	18,8
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	36,5	47,9	55,2
Dimensions and weight				
Length	mm	2607	2607	2607
Width	mm	1275	1275	1275
Height	mm	2355	2355	2355
Operating weight	kg	980	1030	1030
Dimensions and weight with additional buffer tank				
Length	mm	2877	2877	2877
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Net weight	kg	+430 kg (500 L) or +570 kg (800 L)		

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Technical Parameters — Galaxy Solo

Calculations are made for basic units without additional options

Model		GAL110	GAL112	GAL113	GAL114
Standard version					
Refrigeration capacity [1]	kW	85,40	94,40	108,80	124,50
Power consumption	kW	25,10	29,20	33,20	38,90
EER		3,4	3,2	3,3	3,2
SEPR		6,50	7,00	6,93	6,86
SEER		5,38	5,68	5,55	5,56
System data					
Refrigerant	Type	R290			
Number of compressors	n	1	1	1	1
Refrigerant quantity [2]	kg	5,1	5,8	6,9	6,9
Inlet/Outlet connections	DN	65	65	65	80
Sound pressure level in 10m [3]	dB	53	54	56	56
Fan					
Type		EC			
Number of fans	n	2	4	4	4
Air flow	m³/h	41598	83196	83196	83196
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate cooling [1]	m³/h	16,3	18,1	20,9	23,8
Pressure drop cooling	kPa	14,1	16,8	15,1	19,0
Power supply					
Voltage		400V 3Ph/N/PE			
Max. power consumption	A	65,2	75,7	87,4	107,7
Dimensions and weight					
Length	mm	2607	2877	2877	2877
Width	mm	1275	2321	2321	2321
Height	mm	2355	2355	2355	2355
Operating weight	kg	1050	1260	1260	1290
Dimensions and weight with additional buffer tank					
Length	mm	2877	4082	4082	4082
Width	mm	2321	2321	2321	2321
Height	mm	2355	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)			

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Chillers
Galaxy Twin

* The photos in this brochure are for illustrative purposes only. The appearance of the final product may vary depending on your selections, additional options and other order details.

NATURAL REFRIGERATION SOLUTIONS

Natural refrigerants available! #R290

Choose propane or propylene and contribute to the environment!

Description

Galaxy Twin air-cooled chiller has the cooling capacity of 77 kW to 232 kW and is designed for industrial or commercial buildings with small to medium power demand. Such systems are widely used in various factories, supermarkets and warehouses. Galaxy Twin chiller is made with two circuits to ensure continuous system operation in case of emergency – if one circuit is damaged, the other can still use the remaining unit capacity to service the end user.

Special modular assembly system provides the ability to integrate Galaxy Twin with useful additional options, such as a built-in hydraulic module and heat recovery system. With extensive power selection options and many possible extra features, Galaxy chillers stand out as one of the most versatile products that Refra can offer.

Refra manufactures modern devices using plug-and-play ideology, making the installation and use of the devices as easy as possible. In this case, the customer can start using the device quickly and easily after installment.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, microchannel heat exchangers, reciprocating compressors. The galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included:

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Air cooled microchannel condenser;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters — Galaxy Twin

Calculations are made for basic units without additional options

Model		GAL210	GAL212	GAL215	GAL217
Standard version					
Refrigeration capacity [1]	kW	81,20	94,80	123,20	144,20
Power consumption	kW	25,80	28,80	36,60	41,70
EER		3,1	3,3	3,4	3,5
SEPR		7,16	7,22	6,85	6,80
SEER		5,47	5,27	5,20	5,18
System data					
Refrigerant	Type	R290			
Number of compressors	n	2	2	2	2
Refrigerant quantity [2]	kg	3,5	3,7	3,7	4,6
Inlet/Outlet connections	DN	65	65	80	80
Sound pressure level in 10m [3]	dB	53	54	54	56
Fan					
Type		EC			
Number of fans	n	4	4	4	4
Air flow	m³/h	83196	83196	83196	83196
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate cooling [1]	m³/h	15,6	18,2	23,6	27,6
Pressure drop cooling	kPa	18,5	16,9	26,5	22,3
Power supply					
Voltage		400V 3Ph/N/PE			
Max. power consumption	A	66,0	73,0	95,8	110,4
Dimensions and weight					
Length	mm	2877	2877	2877	2877
Width	mm	2321	2321	2321	2321
Height	mm	2355	2355	2355	2355
Operating weight	kg	1860	1860	1860	1930
Dimensions and weight with additional buffer tank					
Length	mm	4082	4082	4082	4082
Width	mm	2321	2321	2321	2321
Height	mm	2355	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)			

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Technical Parameters — Galaxy Twin

Calculations are made for basic units without additional options

Model		GAL219	GAL222	GAL224	GAL227
Standard version					
Refrigeration capacity [1]	kW	165,80	182,60	206,60	241,60
Power consumption	kW	49,70	54,90	63,10	75,30
EER		3,3	3,3	3,3	3,2
SEPR		6,42	6,83	6,51	6,36
SEER		4,81	5,25	5,02	4,80
System data					
Refrigerant	Type	R290			
Number of compressors	n	2	2	2	2
Refrigerant quantity [2]	kg	4,6	7,4	7,4	8,4
Inlet/Outlet connections	DN	80	100	100	100
Sound pressure level in 10m [3]	dB	56	57	58	58
Fan					
Type		EC			
Number of fans	n	4	6	6	6
Air flow	m³/h	83196	124794	124794	124794
Plate heat exchanger					
Number of plate heat exchangers	n	1	1	1	1
Flow rate cooling [1]	m³/h	31,7	35,0	39,5	46,1
Pressure drop cooling	kPa	28,5	21,6	27,0	23,0
Power supply					
Voltage		400V 3Ph/N/PE			
Max. power consumption	A	130,4	144,6	168,0	208,6
Dimensions and weight					
Length	mm	2877	4082	4082	4082
Width	mm	2321	2321	2321	2321
Height	mm	2355	2355	2355	2355
Operating weight	kg	1930	2420	2420	2490
Dimensions and weight with additional buffer tank					
Length	mm	4082	5286	5286	5286
Width	mm	2321	2321	2321	2321
Height	mm	2355	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)			

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Chillers
Galaxy Tribus

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NATURAL REFRIGERATION SOLUTIONS

Natural refrigerants available! #R290

Choose propane or propylene and contribute to the environment!

Description

Galaxy Tribus air-cooled chiller has the cooling capacity of 176 kW to 360 kW and is designed for industrial or commercial buildings with medium to large power demand. Such systems are widely used in various factories, supermarkets, warehouses and office buildings. **Galaxy Tribus chiller is made with three circuits to ensure continuous system operation in case of emergency – if one circuit is damaged, the others can still use the remaining unit capacity to service the end user.**

Special modular assembly system provides the ability to integrate Galaxy Tribus with useful additional options, such as a built-in hydraulic module and heat recovery system. With extensive power selection options and many possible extra features, Galaxy chillers stand out as one of the most versatile products that Refra can offer.

Refra manufactures modern devices using plug-and-play ideology, making the installation and use of the devices as easy as possible. In this case, the customer can start using the device quickly and easily after installment.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, microchannel heat exchangers, reciprocating compressors. The galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included:

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Air cooled microchannel condenser;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters — Galaxy Tribus

Calculations are made for basic units without additional options

Model		GAL323	GAL326	GAL331
Standard version				
Refrigeration capacity [1]	kW	190,20	216,90	256,20
Power consumption	kW	55,10	62,50	75,30
EER		3,5	3,5	3,4
SEPR		7,02	6,90	6,50
SEER		5,48	5,38	5,38
System data				
Refrigerant	Type	R290		
Number of compressors	n	3	3	3
Refrigerant quantity [2]	kg	4,4	4,4	5,1
Inlet/Outlet connections	DN	100	100	100
Sound pressure level in 10m [3]	dB	56	58	58
Fan				
Type		EC		
Number of fans	n	6	6	6
Air flow	m³/h	124794	124794	124794
Plate heat exchanger				
Number of plate heat exchangers	n	3	3	3
Flow rate cooling [1]	m³/h	36,4	41,5	48,9
Pressure drop cooling	kPa	15,1	18,8	14,0
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	143,7	165,6	195,6
Dimensions and weight				
Length	mm	4082	4082	4082
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Operating weight	kg	2890	2890	2890
Dimensions and weight with additional buffer tank				
Length	mm	5286	5286	5286
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)		

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Technical Parameters — Galaxy Tribus

Calculations are made for basic units without additional options

Model		GAL335	GAL339	GAL343
Standard version				
Refrigeration capacity [1]	kW	283,20	326,40	373,50
Power consumption	kW	87,60	99,60	116,60
EER		3,2	3,3	3,2
SEPR		7,00	6,93	8,68
SEER		5,68	5,55	5,56
System data				
Refrigerant	Type	R290		
Number of compressors	n	3	3	3
Refrigerant quantity [2]	kg	5,8	6,9	6,9
Inlet/Outlet connections	DN	125	125	125
Sound pressure level in 10m [3]	dB	59	60	60
Fan				
Type		EC		
Number of fans	n	12	12	12
Air flow	m³/h	249588	249588	249588
Plate heat exchanger				
Number of plate heat exchangers	n	3	3	3
Flow rate cooling [1]	m³/h	54,3	62,6	71,5
Pressure drop cooling	kPa	16,8	15,1	19,0
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	227,1	262,2	323,1
Dimensions and weight				
Length	mm	7695	7695	7695
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Operating weight	kg	4900	4900	4900
Dimensions and weight with additional buffer tank				
Length	mm	8900	8900	8900
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)		

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

R290 Chillers
Quad

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NATURAL REFRIGERATION SOLUTIONS

Natural refrigerants available! #R290

Choose propane or propylene and contribute to the environment!

Description

Galaxy Quad air-cooled chiller has the cooling capacity of 229 kW to 465 kW and is designed for industrial or commercial buildings with high power demand. Such systems are widely used in various factories, supermarkets, warehouses and office buildings. **Galaxy Quad chiller is made with four circuits to ensure continuous system operation in case of emergency – if one circuit is damaged, the others can still use the remaining unit capacity to service the end user.**

Special modular assembly system provides the ability to integrate Galaxy Quad with useful additional options, such as a built-in hydraulic module and heat recovery system. With extensive power selection options and many possible extra features, Galaxy chillers stand out as one of the most versatile products that Refra can offer.

Refra manufactures modern devices using plug-and-play ideology, making the installation and use of the devices as easy as possible. In this case, the customer can start using the device quickly and easily after installment.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, microchannel heat exchangers, reciprocating compressors. The galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

Parts Included:

- Bitzer reciprocating compressors (Ex II-3G) with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Air cooled microchannel condenser;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters — Galaxy Quad

Calculations are made for basic units without additional options

Model		GAL430	GAL434	GAL439
Standard version				
Refrigeration capacity [1]	kW	246,40	288,40	331,60
Power consumption	kW	73,30	83,30	99,50
EER		3,4	3,5	3,3
SEPR		6,85	6,80	6,42
SEER		5,20	5,18	4,81
System data				
Refrigerant	Type	R290		
Number of compressors	n	4	4	4
Refrigerant quantity [2]	kg	3,7	4,6	4,6
Inlet/Outlet connections	DN	100	125	125
Sound pressure level in 10m [3]	dB	57	59	59
Fan				
Type		EC		
Number of fans	n	8	8	8
Air flow	m³/h	166392	166392	166392
Plate heat exchanger				
Number of plate heat exchangers	n	2	2	2
Flow rate cooling [1]	m³/h	47,2	55,1	63,3
Pressure drop cooling	kPa	26,5	22,3	28,5
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	191,6	220,8	260,8
Dimensions and weight				
Length	mm	5286	5286	5286
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Operating weight	kg	3920	3920	3920
Dimensions and weight with additional buffer tank				
Length	mm	6490	6490	6490
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)		

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Technical Parameters — Galaxy Quad

Calculations are made for basic units without additional options

Model		GAL444	GAL448	GAL454
Standard version				
Refrigeration capacity [1]	kW	365,20	413,20	483,20
Power consumption	kW	109,90	126,20	150,50
EER		3,3	3,3	3,2
SEPR		6,83	6,51	6,36
SEER		5,25	5,02	4,80
System data				
Refrigerant	Type	R290		
Number of compressors	n	4	4	4
Refrigerant quantity [2]	kg	7,4	7,4	8,4
Inlet/Outlet connections	DN	125	125	125
Sound pressure level in 10m [3]	dB	60	61	61
Fan				
Type		EC		
Number of fans	n	12	12	12
Air flow	m³/h	249588	249588	249588
Plate heat exchanger				
Number of plate heat exchangers	n	2	2	2
Flow rate cooling [1]	m³/h	69,9	79,0	92,3
Pressure drop cooling	kPa	21,6	27,0	23,0
Power supply				
Voltage		400V 3Ph/N/PE		
Max. power consumption	A	289,2	336,0	417,2
Dimensions and weight				
Length	mm	7695	7695	7695
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Operating weight	kg	5110	5110	5110
Dimensions and weight with additional buffer tank				
Length	mm	8900	8900	8900
Width	mm	2321	2321	2321
Height	mm	2355	2355	2355
Net weight	kg	+290 kg (500 L) or +430 kg (800 L)		

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.
[2] Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.
[3] Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Additional Options

Buffer tank

Description

Refra Galaxy Chillers can be integrated with an additional buffer tank to enhance system performance. **Additional Refra buffer tank is installed within the same frame as the chiller, creating a single, unified machine for easier installation and operation.**

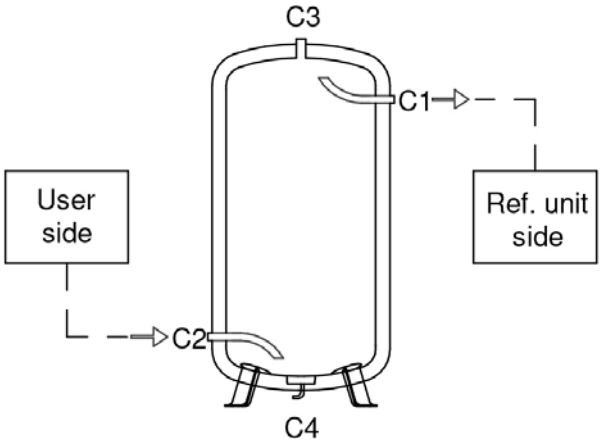
Refra offers buffer tanks with glycol, which provide enhanced freeze protection and greater temperature stability. Glycol buffer tanks ensure reliable system operation in cold environments by preventing freezing and downtime. With an operating pressure of 6 to 10 bar, these buffer tanks increase the liquid capacity within the system and ensure stable operation.

Designed to optimize refrigeration systems, these additional buffer tanks are available in 500 or 800 liter capacities to help maintain a constant cooling cycle, thus stabilizing chiller performance and preventing fluctuations in water temperature. Made from a durable S235JR carbon steel and externally insulated with ArmaFlex insulation, the tank provides superior thermal protection and efficiency, contributing to a consistent and reliable refrigeration cycle.

The additional buffer tank is housed in a closed-type protective frame, integrating seamlessly with the chiller to create a unified system in a single machine. **Note that when selecting an integrated buffer tank, additional rock wool insulation for ultra-quiet operation (30 mm) cannot be applied.**

Main Characteristics

- Sizes available for 500 liters or 800 liters
- Housed in a Half Box or a Full Box
- Designed for glycol
  Made from S235JR carbon steel
- 32 mm of ArmaFlex insulation



Additional Options

Half Box | 500 L

The Half Box is a closed-type protective frame, designed to house a 500-liter buffer tank, integrating seamlessly with the chiller to create a unified system. The additional frame is constructed from galvanized steel, powder-coated for durability, and features standard insulation that ensures effective protection and noise reduction.

Dimensions:
Length: 1205mm
Height: 1070mm
Width: 2203mm

When selecting a buffer tank as an additional feature, each chiller is fitted with an extra frame box. Note that this added length extends the overall size of the unit, which should be carefully considered during installation, especially in spaces where length is a key factor. **For more specific sizing details, please refer to the Technical Parameters of the selected chiller model.**

Full Box | 800 L

The Full Box is a closed-type protective frame designed to house an 800-liter buffer tank, integrating seamlessly with the chiller to create a unified system. The additional frame is constructed from galvanized steel, powder-coated for durability, and features standard insulation that ensures effective protection and noise reduction.

Dimensions:
Length: 1205mm
Height: 2355mm
Width: 2203mm

When selecting a buffer tank as an additional feature, each chiller is fitted with an extra frame box. Note that this added length extends the overall size of the unit, which should be carefully considered during installation, especially in spaces where length is a key factor. **For more specific sizing details, please refer to the Technical Parameters of the selected chiller model.**

Additional Options

Pump on/off 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. “On/Off” function is used in applications where the pump only needs to operate when there is a demand for fluid flow.

Pump on/off 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. “On/Off” function is used in applications where the pump only needs to operate when there is a demand for fluid flow.

Pump inverter 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.

Pump inverter 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.

Twin Pump on/off 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances. One pump serves as the base-load pump, while the second pump can serve as a reserve in the event of a fault.

Twin Pump inverter 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances, ensures reliable operation in case of an emergency and precise control over the fluid flow rate.

Additional Options

Flow switch

Detects the flow of liquid medium in HVAC systems. Used as a safety device to ensure there is an adequate flow of the fluid, and to trigger an alarm or shut down the system in case of low flow.

Flow meter

Utilises ultrasonic transit-time technology to provide accurate and repeatable water-flow measurement and insures the correct measured flow. Monitors the performance and efficiency of the system, ensures the adequate flow of fluid.

Check valve

Allows fluid to flow in one direction only, and prevents backflow in the opposite direction. Recommended for systems with more than one heat pump, to prevent backflow and ensure proper fluid flow.

Desuperheater

Utilizes the high-temperature energy of the superheated refrigerant gas to heat water. By using the waste heat generated during the cooling process, desuperheater can improve the overall energy efficiency of the system.

Thick insulation frame

Additional 30 mm rock wool material for a super silent unit operation with double insulation reduces the sound level and strengthens the frame construction. **Not possible with additional buffer tank.**

Antivibration mounts

Reduces and isolates the transmission of vibrations from the unit by using a rubber element with a metal casing.

Additional Options

Coil guard

Shields coils from physical damage, environmental debris and dust buildup, preserving heat exchange efficiency and extending equipment lifespan. Woven aluminum mesh and grid frame provide robust protection, reduce maintenance efforts and minimize the risk of system malfunctions.

Aqua Aero

Helps to lower energy consumption by reducing airside fouling in cooling coils, thus improving the overall energy efficiency of the system. The hydrophobic coating acts as a barrier which prevents corrosive agents from infiltrating the underlying metal surface.

Siemens cloud + modem GSM

This kit provides remote access to the unit controller. The cloud provides all relevant equipment data and allows to evaluate and control it efficiently using leading IoT analytics tools.

Smart Grid (SG) Ready

Allows the controller to communicate with smart grid infrastructure, responding to signals from the grid to optimize energy usage. It supports demand response, energy management, and grid stabilization by enabling real-time monitoring, automated load adjustments, and integration with energy systems.

Keypad

Offers data point access and system configuration for Climatix controllers, featuring 240x128 dpi resolution display and 6 easy-to-use keys. Equipped with Alarm, Info, and Cancel functions, it supports multiple languages and local HMI settings.

Touch screen

High-resolution, 7-inch touch display offers an intuitive operator interface, quick connection to controllers via Ethernet or RS485/422. It minimizes engineering, lifecycle costs and commissioning, ensuring local control in production, process, and building automation.

Additional Options

Electric energy meter

Monitors and records active, reactive, and apparent energy consumption, displaying the data with real-time visualization. Integrates seamlessly with power monitoring systems via Modbus and calculates average consumption over time.

Thermal energy meter

Measures heat energy in heating and cooling systems by combining an electric energy meter and an ultrasonic flow meter. Utilizes transit-time technology for accurate, repeatable water flow measurement, ensuring precise energy monitoring, optimal system performance, and efficiency.

Trace heating

Maintains or raises the temperature of pipes and vessels through specially engineered cables to protect it from freezing at sub-zero temperatures. **Not possible with additional buffer tank.**

Low-Noise Fan

Utilizes biomimetic fine air dividing technology to significantly reduce acoustic levels by up to 4 dB, ensuring quieter operation. **Delivers reliable, high-performance cooling with reduced environmental impact without compromising the technical performance of the unit.**

Vacon inverter

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.

Varipack

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.

NATURAL
REFRIGERATION
SOLUTIONS

Refra®

Air Heat Exchangers

Refra's heat exchanger production line is equipped with modern automated machinery and operated by skilled professionals, ensuring a high-quality production process with minimal deviations from the designed result. At the customer's request, Refra can design and manufacture custom finned tube heat exchangers for a variety of applications, providing tailored solutions for nearly any type of heat exchanger.

Air Heat Exchangers
Gas Coolers

Description

Gas coolers are heat rejection heat exchangers in vapour compression refrigeration systems that use carbon dioxide (CO2) as refrigerant. Such products are often chosen for cooling high pressure gases and are perfect for CO2 systems. Refra gascooler series are designed on the same frame as condensers, but with 7,94 x 0,54 mm tubes suited for high pressures in CO2 transcritical systems – up to 120 bar. Our gas coolers come with EC fans and aluminum or copper fins. Each unit is pressure tested and shipped filled with nitrogen.

GF

Large capacity range gas cooler series, created for large transcritical CO2 systems with high pressure. Double heat exchanger and double fan row provide large heat capacity within limited placement area, making it perfect for saving space while still maintaining high power. This product is perfect for green and climate-friendly solutions and suitable for commercial or industrial buildings with high power demand. Available heat capacity ranges over 1 MW upon nominal conditions (when Tin is 115°C, Tout is 33°C and Tamb is 35°C and pressure is 91,7 bar).

W shaped large construction, assembled with inner 7,94 x 0,54 mm grooved copper tubes, aluminum or copper fins and EC fan motor technology. The clever frame design also allows for the installation of additional equipment under the gas cooler.

GV

Wide capacity range gas cooler series, created for small or large transcritical CO2 systems with high pressure. This product is perfect for green and climate-friendly solutions and is suitable for commercial or industrial buildings with medium power demand. Available heat capacity is up to 1 MW upon nominal conditions (when Tin is 115°C, Tout is 33°C and Tamb is 35°C and pressure is 91,7 bar).

V shaped construction, assembled with inner 7,94 x 0,54 mm grooved copper tubes, aluminum or copper fins and EC fan motor technology. The galvanized steel and powder coated frame can be designed in various sizes.

GM

Wide capacity range gas cooler series, created for small and medium transcritical CO2 systems with high pressure. Due to its lightweight construction and practical weight distribution this product can be installed even on medium-strength rooftops. This product is perfect for green and climate-friendly solutions and suitable for commercial or industrial buildings. Available heat capacity is up to 500 kW upon nominal conditions (when Tin is 115°C, Tout is 33°C and Tamb is 35°C and pressure is 91,7 bar).

Flat shaped simple construction, assembled with inner 7,94 x 0,54 mm copper tubes, aluminum or copper fins and EC fan motor technology. The galvanized steel and powder coated frame can be designed in flat or vertical way.

Air Heat Exchangers
Dry Coolers

Description

A dry cooler is a cooling device that uses air to achieve process temperature regulation. Dry coolers can be programmed to operate year-round, even in environments with low temperatures. These systems are often seen in data processing centers or other commercial and institutional buildings, where excess heat needs to be removed. The benefits of choosing dry coolers include easy installation and low operating costs.

DM

Wide capacity range dry cooler series, which can be used in waterloop systems or as a free-cooling option in chillers. This small to medium capacity product is perfect for small and medium commercial buildings and various supermarkets. Available heat capacity is up to 350 kW under nominal conditions (when ETG is 35%, Tin is 45°C, Tout is 40°C and Tamb is 35°C).

Flat shaped simple construction is assembled with smooth copper tubes, aluminum or copper fins and EC/AC fan motor technology. The galvanized steel and powder coated frame can be designed in horizontal or vertical position.

DV

Wide capacity range dry cooler series, created for small to large refrigeration systems with high power demand. Complete with a double heat exchanger and single/double fan row, this product is a super effective solution, which can provide large heat capacity while being installed in limited space area. For these reasons it is a popular choice for medium to large size commercial and industrial buildings. Available heat capacity is up to 550 kW under nominal conditions (when ETG is 35%, Tin is 45°C, Tout is 40°C and Tamb is 35°C). Capacities up to 1.2 mW can be achieved by ordering a modular DV type with more heat exchangers that are tilted to the side and reduced in length.

V shape construction, assembled with smooth copper tubes, aluminum or copper fins and EC/AC fan motor technology. The galvanized steel and powder coated frame can be made in various sizes.

DF

High capacity range dry cooler series, perfect for large industrial refrigeration systems. 4 heat exchangers and double fan row can provide especially large heat capacity within limited placement area, making it the unit with the highest power supply per square meter. Available heat capacity ranges over 1 MW under nominal conditions (when ETG is 35%, Tin is 45°C, Tout is 40°C and Tamb is 35°C).

W shaped large construction, assembled with smooth copper tubes, aluminum or copper fins and AC/EC fan motor technology. The clever frame design also allows for the installation of additional equipment under the dry cooler.

Air Heat Exchangers
Evaporators

Description

Refra heat exchanger production line is completed with modern automatic machinery and qualified personnel, allowing us to achieve high quality production process with minimum deviations from designed result. At the customer's request, Refra can design and manufacture finned tube heat exchangers for various application so almost any type of heat exchanger is possible with individual design. We use only certified high quality tubes and aluminum or copper sheets for coil production to achieve maximum reliability. All heat exchangers are tested with high pressure and fit PED (Pressure Equipment Directive) – No. 23/1997/EC.

Evaporator coil (DX)

Refra heat exchangers for evaporators are made of aluminum or copper fins and convert the system's refrigerant liquid to gas. Usually they are used to cool and sometimes dehumidify air. Refra evaporator coils are made using inner grooved or smooth copper tubes, which range from 7 mm to 12,7 mm in diameter. The operating tube pressure reaches 80 or even 120 bar, making evaporator coils perfectly suitable for CO2 systems.

The frame can be made using aluminum, galvanized or stainless steel and can be coated with a special Aqua-Aero anti corrosion protection. Heat exchangers can be manufactured up to 50 kW capacity for both low and medium temperatures.

Liquid coil

customer needs. Super flexible options allow Refra engineers to select the optimal circuit arrangement for required capacities, providing the best possible unit performance. The coils can be designed using various diameter smooth copper tubes which extends the power selection options. Assembled with aluminum or copper fins and aluminum, galvanized or stainless steel frame with Aqua-Aero anti corrosion protection. Coils are suited for small to high capacity commercial or industrial refrigeration systems.

Gas cooler coil

Refra heat exchangers for gas coolers are made of special K65 copper tubes for high pressures which go up to 120 bar. Such coils are perfect for CO2 systems as they are capable of maintaining the pressure these systems need. Standard units are designed using corrugated fin shape and can be made with aluminum, galvanized or stainless steel frame with Aqua-Aero anti corrosion protection. These products are usually selected and manufactured exclusively according to the customer's wishes.

Condenser coil

Refra heat exchangers for condensers are made of copper tubes and convert the system's refrigerant gas to liquid form. Usually they are used for refrigeration equipment as a remote condenser or as a part of a condensing unit. Refra condenser coils are made using inner grooved or smooth copper tubes, which range from 5 mm to 12,7 mm in diameter. The frame can be made using aluminum, galvanized or stainless steel and can be coated with a special Aqua-Aero anti corrosion protection. Heat exchangers can be manufactured from low to high capacities to fully meet customer needs.

NATURAL
REFRIGERATION
SOLUTIONS

Refra®

Water Systems

Refra offers specialized water systems, designed to complement our refrigeration equipment or operate independently as standalone refrigeration units. These systems can be supplied individually or integrated with our refrigeration solutions, ensuring optimal performance and adaptability.

Water Systems
Ice Banks

Description

Ice banks are highly effective in various air conditioning and refrigeration applications by addressing the common need for consistent cooling during peak demand periods. They work by storing thermal energy in the form of ice, which is later used for cooling purposes. Such ice cold storage is widely used for process cooling in industries like food and beverage manufacturing or preservation. Ice storage tanks are popular in commercial cooling as they reduce energy consumption during peak hours. Refra ice banks can be integrated into ice storage chiller system in a flooded setup with Refra chillers or in a direct expansion ice storage cooling system with condensing units or compressor racks. This flexibility ensures a configuration that best meets the specific cooling demands of the customer.

Ice banks with glycol coil

Refra manufactures liquid ice banks, designed for acumulation of capacity. Such units can be compatible with other refrigeration systems, if the hygienic standards of all units are ensured. The glycol used in the system is usually cooled by a separate chiller.

Made with multiple stainless steel thermal coil batteries, built into a large water reservoir, these units work on the principle of ice formation. The glycol mixture circulating in the coil batteries forces the formation of ice on the pipes, thus cooling the water inside the tank. This technology is capable of cooling particularly large amounts of water with relatively little energy consumption.

Ice banks with DX coil

The direct expansion system is popular due to easier installation and reduced system costs. Direct expansion ice banks are usually used for refrigeration of dairy products in medium or large farms, milk collection points, beer or milk factories. Refra manufactures ice banks based on this refrigeration model.

Made with multiple stainless steel coil batteries, built into a large water reservoir, these systems work on the principle of ice formation. The refrigerant circulating in the coil batteries forces the formation of ice on the pipes, thus cooling the water inside the tank. This technology is capable of cooling particularly large amounts of water with relatively little energy consumption.

Installation, Service and Maintenance

Hussmann Full Turnkey HVAC&R Service Solutions

Envision Tomorrow: Paving the Path to Decarbonisation

Partner with Hussmann for cutting-edge **natural refrigeration solutions**, tailored to meet the unique need of your business. Together we'll power your store with fully integrated sustainable systems.

Hussmann can be your **green transition enabler** to help you

- Reduce carbon emissions
- Achieve your sustainability commitments
- Future proof your store


Design,
Project Management,
Commissioning
Reactive
& Schedule
Proactive &
Preventative
Maintenance
Service
Installation
Services
TCO2
HVAC
Plant
Self Contained
Case
Remote
Equipment
HUSSMANN
COLD CHAIN
SOLUTIONS
Speciality
Energy
Projects
Optimisation
Monitoring
& Reporting
Digital IoT
OneConnect
CaseConnect Sensors, Measure
& Validation, Data & Analysis
Solutions

Install and Commissioning

Hussmann is a leading provider of refrigeration systems and services for food retailers globally. With a commitment to innovation and customer satisfaction, Hussmann offers a range of integrated solutions designed to support efficient operations, including installation, service, and maintenance, all enhanced by CaseConnect IoT systems.

Hussmann has long been a leader in the refrigeration industry, recognised for its ability to deliver cutting-edge technologies that meet the diverse needs of retailers. With a strong focus on performance, Hussmann has developed comprehensive solutions that include Installation, Service, and Maintenance—each designed to streamline operations and optimise the performance of refrigeration systems. The integration of CaseConnect IoT systems further bolsters these functions, providing retailers with advanced data insights and management capabilities.

Installation

Hussmann's installation function plays a crucial role in the successful deployment of refrigeration systems within retail environments. Hussmann ensures a coordinated installation process that minimises disruption and maximises efficiency. The CaseConnect IoT system enhances this function by providing real-time data and connectivity, allowing for better planning and execution during installations. Through CaseConnect, technicians can monitor system performance from the outset, ensuring that installations meet operational standards and aligning with the retailer's overall energy management strategy.

Aftermarket Service & Maintenance

Service

Hussmann's service function is designed to support retailers throughout the lifecycle of their refrigeration systems. With a nationwide network of skilled technicians and project managers, Hussmann ensures that retailers receive top-tier service tailored to their specific needs. The implementation of CaseConnect IoT systems significantly enhances service capabilities by enabling real-time monitoring and analytics. This means that service teams can diagnose potential issues proactively, often before they manifest as significant problems. The data collected through CaseConnect allows for informed decision-making, ensuring that systems are optimally configured and that retailers enjoy minimal downtime.

Maintenance

The maintenance function at Hussmann focuses on proactive strategies aimed at maximising the operational efficiency of refrigeration equipment. By utilising the predictive capabilities of CaseConnect IoT systems, Hussmann helps retailers move towards a proactive maintenance model, where alerts and insights enable timely interventions based on actual performance data. This approach not only reduces maintenance costs but also enhances energy efficiency by optimising system performance. By regularly analysing data from CaseConnect, Hussmann can work with retailers to develop tailored maintenance plans that align with their operational goals and drive sustainability efforts within their stores.

CASECONNECT®
BETTER DATA = SMARTER SOLUTIONS

IoT Sensors

CaseConnect® integrates physical IoT sensors into refrigerated cases and leverages advanced SaaS cloud technology to enable monitoring, early detection of issues and enable proactive maintenance.

The key focus of CaseConnect® is to:

- Reduce energy consumption, operational and maintenance costs
- Provide customer engagement
- It compliments case controller data

CaseConnect
IoT Sensors
Save more, Waste less, Sell more

Hussmann CaseConnect® is an advanced solution leveraging IoT (Internet of Things) and SaaS cloud technology to provide real-time monitoring and control of your refrigeration equipment.

It's capabilities empower retailers to prevent costly breakdowns, enhance operational efficiency, reduce energy costs, and ensure food safety compliance providing a seamless and reliable refrigeration management solution.

01

Defrost on Demand

- Adaptable to high humidity
- Automatic Ice Detection

02

Fan

- Maximise equipment uptime
- Avoid unsafe product temperatures and wastage

03

Product Temperature

- Monitor Case Temp in Real Time
- Prevent Product Wastage

04

Drain

- Automatic Drain Blockage Detection
- Avoids poor Hygiene & Customer Impact

05

Door

- Door Open Alarm
- Planogram Success Measure

06

People Counter

- Insights of High Flow Areas
- Planogram Success Measure

07

Air Return Blockage

- Return Air Block Alarm
- Optimize Performance

08

Night Blind

- NB Open Alarm
- Fan Motor Energy Reductions

Proactive Maintenance

Low Operating Costs

Marketing Insights

How it works

Hardware & IoT

CaseConnect®'s Hardware IoT includes Control Box and 8 IoT sensors.

- Retailers can choose from 8x IoTs
- Control Box provides real-time data
- Pre-fitted or Retrofit options
- Independent of Case Controller

Defrost On Demand IoT

Fan IoT

Product Temperature IoT

Drain IoT

Door IoT

People Counter IoT

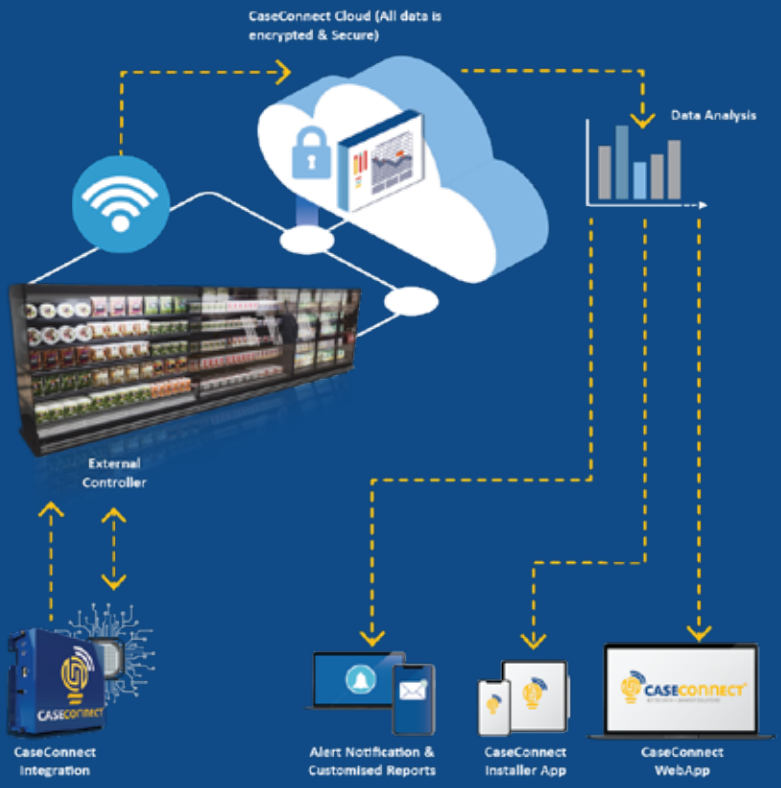
Air Return Blockage IoT

Night Blind IoT

Cloud Software

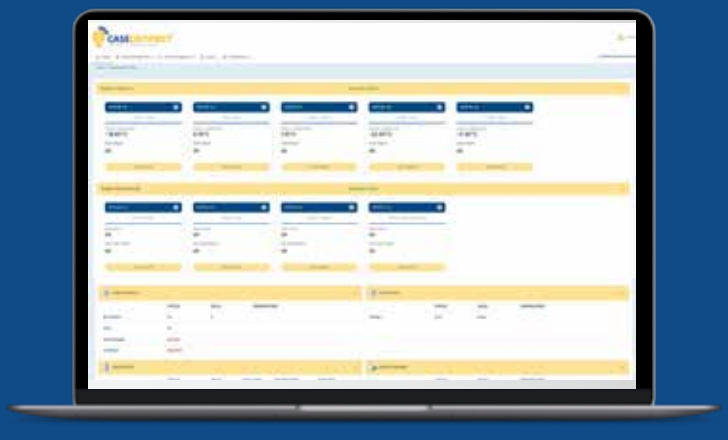
CaseConnect®'s Cloud receives, processes and stores data from the IoT sensors.

- Advanced analytics in the cloud
- Monitoring and alerts to third party
- Open, send data to own cloud
- Alerts/WO for Service Teams



Data Analysis

CaseConnect®'s Web Application offers data analytics, actionable insights into refrigeration performance, energy consumption, and maintenance needs, empowering retailers to make data-driven decisions.




Refrigeration systems
focused on a future
of natural solutions.
NATURAL
REFRIGERATION
SOLUTIONS

AUSTRALIA

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