

Plant Solutions

ECO₂ Range

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The ECO₂ Range:

- Refrigerant: CO₂
- Types of system: Booster (medium temperature and low temperature)
- Pack arrangement: Internal, Housed or Packaged
- Frame dimensions: From 4 up to 10 compressors

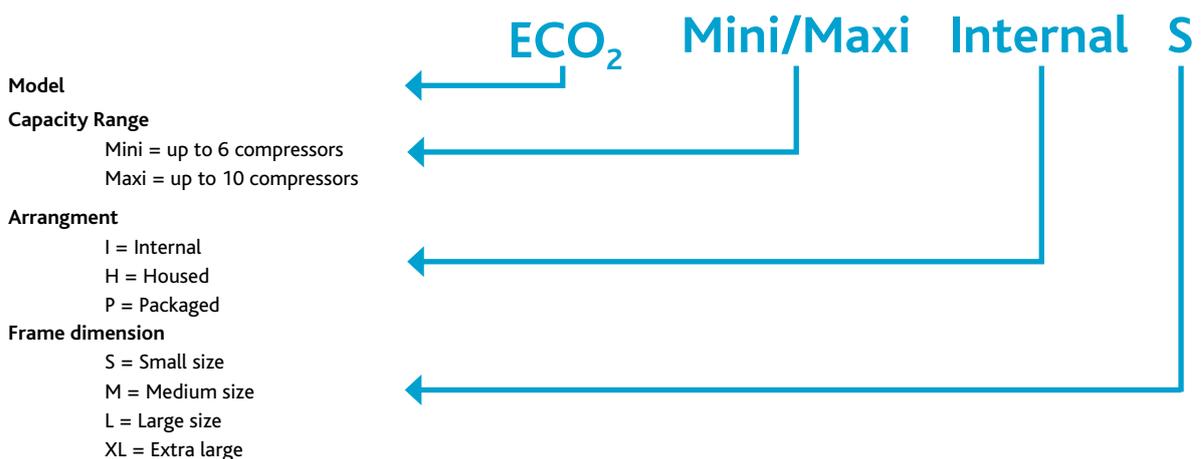
ECO₂ Mini and ECO₂ Maxi Internal

At Space Engineering Services, we have been building natural refrigeration solutions since 2007 and we now have a comprehensive range of greener plant solutions to suit customers with wide ranging cooling requirements. We understand the importance of delivering environmentally friendly products to the market, and we have developed the ECO₂ Range to offer plant solutions for all retail formats.

The ECO₂ Range of plant solutions has a low global warming potential (GWP), without compromising on noise, footprint size or serviceability. We have and continue to dedicate significant resources into honing our expertise in the field of greener refrigeration technology, and we are proud to be able to offer customers innovative and competitively priced natural refrigeration plant solutions.

The ECO₂ Internal range includes the ECO₂ Mini, the smallest of our CO₂ plant solutions and a cost effective refrigeration unit for convenience store users with smaller refrigeration requirements. Operating on a single CO₂ refrigerant, this low GWP booster system with its dual temperature configuration is an environmentally friendly derivative of our tried and tested Classic Mini/Maxi Internal system. These ECO₂ single or dual temperature internal frames can be configured with 2 to 8 compressors depending on cooling requirements. The plant is designed for easy installation in a plant room or where space dictates a back of house area, and is fitted with anti-vibration mounts as standard.

As with all of our plant solutions, the ECO₂ Internal plant solutions are pre-commissioned, strength tested and CE marked, and has been assembled with minimal brazed connections reducing leak potential and manufacturing time.

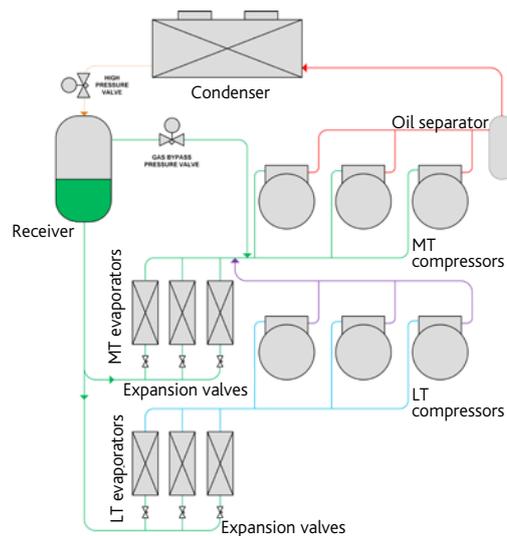


ECO₂ Mini and ECO₂ Maxi Internal

System Features

- Low GWP of 1
- Compact, transcritical design
- Designed for easy installation in plant or stock room
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Modular compressor configuration means a wide application range
- Available with scrolling or reciprocating compressor technology
- Pre-formed copper piping with minimal joints to reduce leak potential
- Single or dual temperature configuration
- Integral HP receiver in 75, 110 & 220ltr volume options
- Supplied with anti-vibration mounts as standard
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- Can be fitted with any manufacturer or type of primary control or compressor

Booster System



System Details

Internal	Refrigerant	R744	R744	R744
	Model	Mini	Mini	Maxi
	System	Booster	Booster	Booster
	Max n.° of compressors	4	6	8
	Typical configuration MT/LT	2x2	4x2	5x3
	MT capacity [kW] ^(a)	10-40	40-160	160-220
	LT capacity [kW] ^(b)	5-10	10-40	40-55
	Gas cooler arrangement	Remote	Remote	Remote
	Compressor frame dimensions	Small	Medium	Large
	Length [mm]	1455	2301	4330
	Width [mm]	805	1800	780
Height [mm]	1940	2205	1965	
Weight [kg] ^(c)	850	1850	2800	

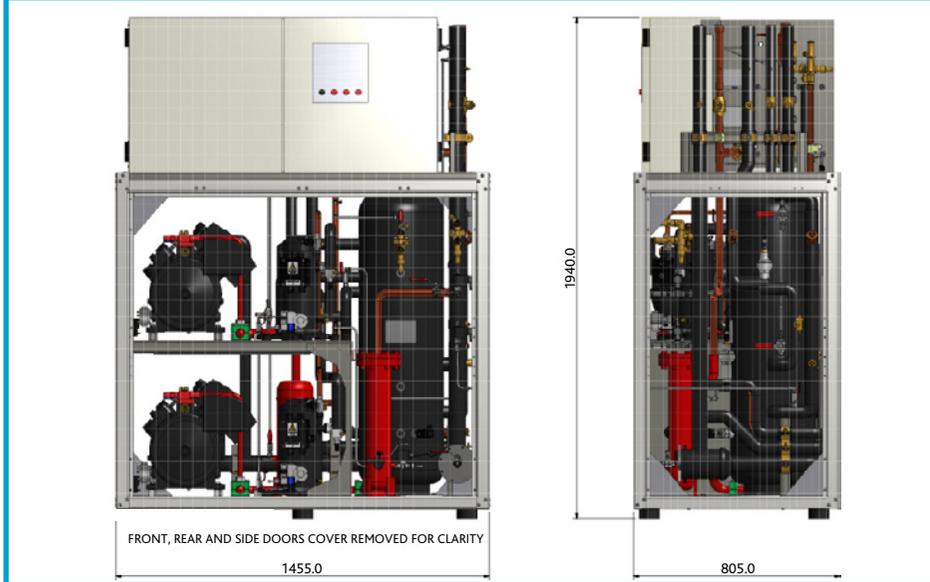
(a) Performance assuming R744 at -10°C condensing temperature and 32°C ambient temperature

(b) Performance assuming R744 at -35°C condensing temperature and -10°C ambient temperature

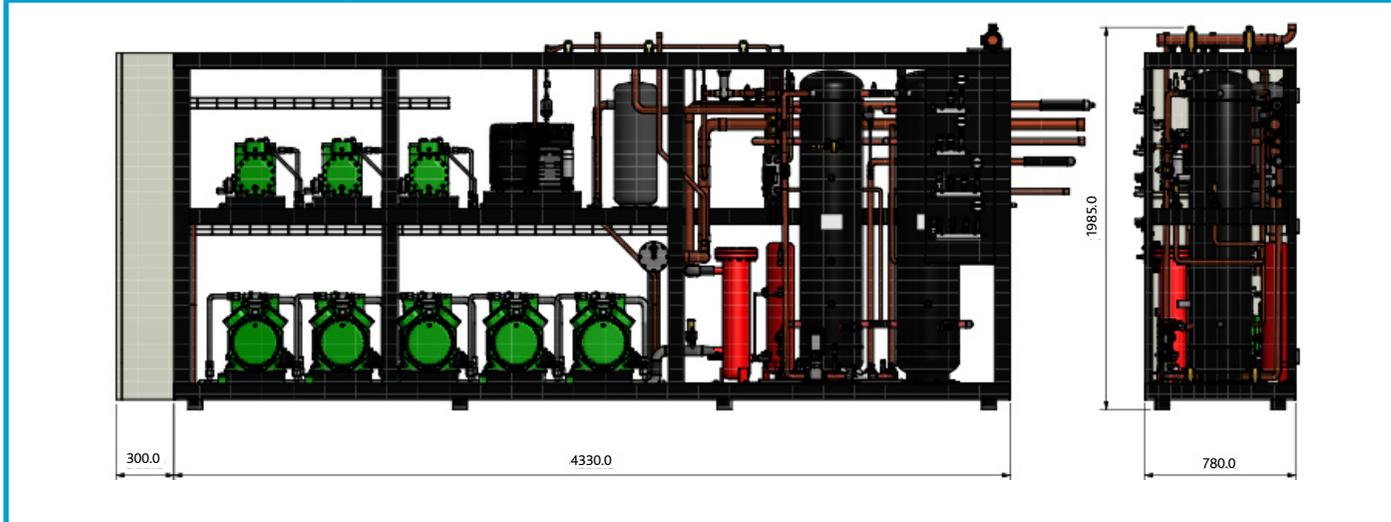
(c) For maximum number of compressors

ECO₂ Mini and ECO₂ Maxi Internal

A – ECO₂ Mini Internal (small)



B – ECO₂ Maxi Internal (large)



ECO₂ Mini Internal

Remaining at the forefront of greener refrigeration technology, we have launched our latest CO₂ plant solution for the European market.

The ECO₂ Mini Internal system which has been designed, manufactured and tested in the UK, is the ideal dual temperature CO₂ system for refrigeration users and convenience stores with limited space.

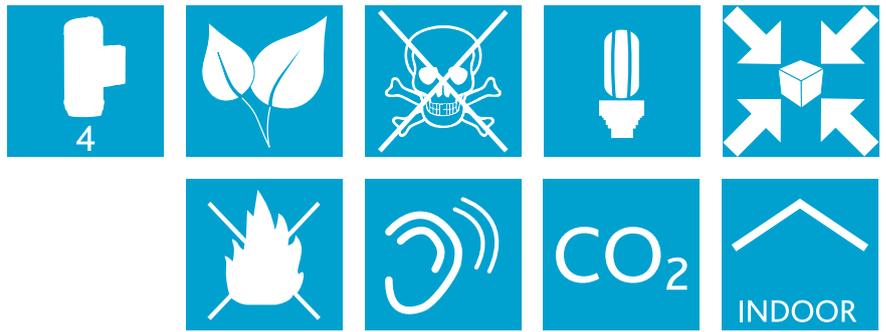
Modelled on our smallest footprint HFC equivalent, this dual temperature plant with its exceedingly compact design is now the smallest system in the CO₂ range, and is ideally suited to a back of house or stock room installation.

The ECO₂ Mini Internal combines the low and high temperature cooling requirements of convenience stores into a single, packaged plant solution. As with all of our CO₂ plant it has a low global warming potential, whilst the application of variable speed drive and digital controls on the compressors provide significant energy saving benefits.

The compressors, vessels and pipework are fully concealed in a sound attenuated enclosure to minimise noise disruption, especially important in the retail environment. The Emerson Core-Sense technology used on the HT compressors provides full compressor diagnostics, and a CO₂ leak detection alarm offers added security.

The ECO₂ Mini Internal is designed for easy installation, and has excellent heat recovery potential when combined with Space Engineering's heat reclaim technology, designed for space and water heating.





Key Features

- Low GWP
- Compact transcritical design
- Designed for easy installation in plant or stock room
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Modular compressor configuration means a wide application range
- Pre-fabricated copper pipework for durability & cost effective manufacturing
- Single or dual temperature configuration
- Supplied with anti-vibration mounts as standard
- Fully enclosed compressors, vessels and pipework
- Sound attenuated enclosure to minimise noise disruption
- CO₂ leak detection alarm
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- VSD & digital controls on compressors providing energy saving benefits
- Excellent heat reclaim potential for heating air & water

ECO₂ Maxi Internal

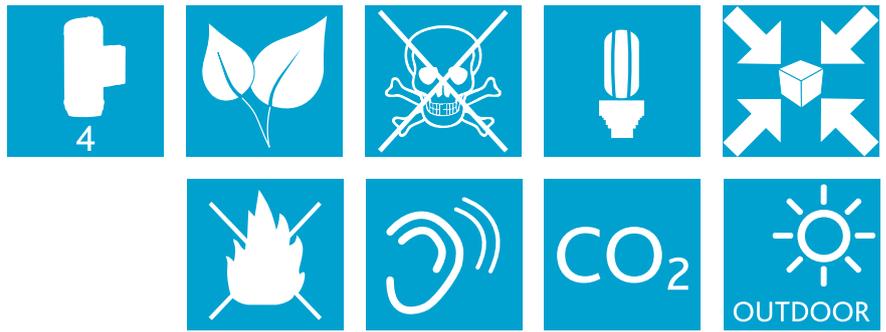
Developed with the European market in mind, the ECO₂ Maxi Internal system which has been designed, manufactured and tested in the UK, is the ideal temperature CO₂ system for refrigeration users with large store cooling requirements. This dual temperature plant with its compact design is ideally suited to a back of house or stock room installation.

The ECO₂ Maxi Internal combines the low and high temperature cooling requirements of large format stores into a single, packaged plant solution. As with all our CO₂ plant, it has a low global warming potential, whilst the application of variable speed drive and digital controls on the compressors provide significant energy saving benefits.

The compressors, vessels and pipework configuration have been designed to maximise the ease of servicing. The Emerson Core-Sense technology used on the HT compressors provides full compressor diagnostics, and a CO₂ leak detection alarm offers added security.

The ECO₂ Maxi Internal is designed for easy installation, and has excellent heat recovery potential when combined with our heat reclaim technology, designed for space and water heating.





Key Features

- Low GWP
- Compact, transcritical design
- Designed for easy installation in plant or stock room
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Modular compressor configuration means a wide application range
- Pre-formed copper piping with minimal joints to reduce leak potential
- Single or dual temperature configuration
- Integral HP receiver in 75, 110 and 220ltr volume options
- Supplied with anti-vibration mounts as standard
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- VSD and digital controls on compressors providing energy saving benefits
- Can be fitted with any manufacturer or type of primary control or compressor

ECO₂ Mini and ECO₂ Maxi Housed

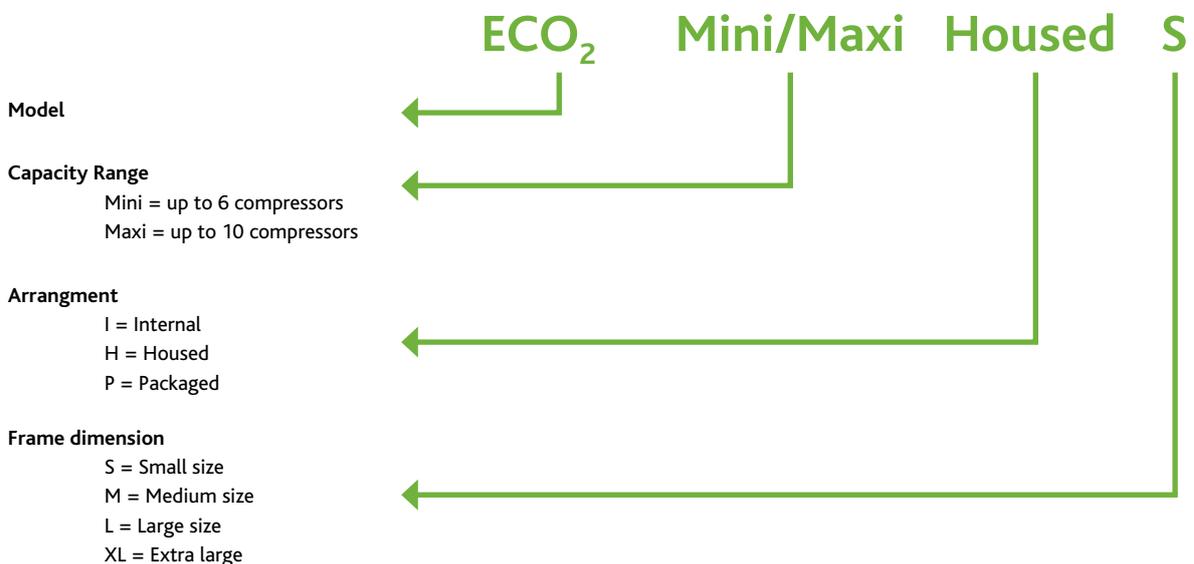
The ECO₂ Housed range is designed for easy installation in external locations where space is restricted. Operating on a single CO₂ refrigerant, this low GWP booster system with its dual temperature configuration is a cost effective and environmentally friendly derivative of our tried and tested Classic Internal Housed system.

The ECO₂ Mini and ECO₂ Maxi Housed plant solution uses a CE marked system, designed specifically for external application and is commissioned and tested to reduce on-site installation time and cost.

Available in a single or dual temperature configuration, ECO₂ Housed units can be configured with between 2 and 8 compressors depending on cooling requirements. The plant is designed for easy installation in a plant room or where space dictates a back of house area, and is fitted with anti-vibration mounts as standard.

As with all of our plant solutions, the ECO₂ Housed is pre-commissioned, strength tested and is CE marked, and has been assembled with minimal brazed connections reducing leak potential and manufacturing time.

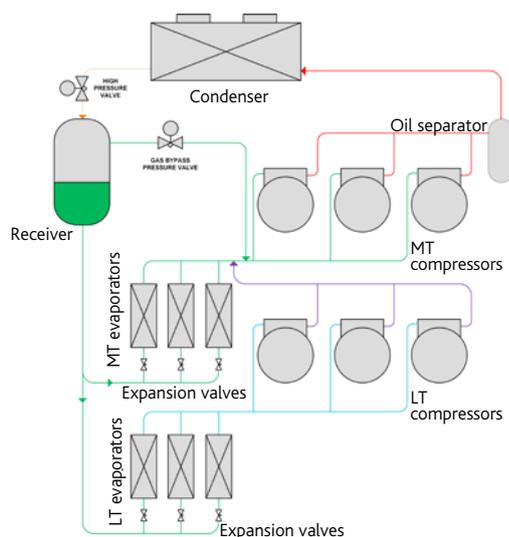
Our ECO₂ Housed plant further benefit from a coalescing oil separator which is 98.5% efficient, and oil regulators. The oil separator works by reclaiming oil from the compressors and feeding it back into the oil regulators, helping to reduce inefficiencies in the cabinets and associated service costs. The plant's electronic oil regulators stop the compressors from running if the oil levels run low, preventing expensive compressor failures.



System Features

- Low GWP
- Compact transcritical design
- Designed for easy internal or external installation
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Pre-formed copper piping with minimal joints to reduce leak potential
- Single or dual temperature configuration
- Integral HP receiver in 75, 110 & 220ltr volume options
- Supplied with anti-vibration mounts as standard
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- Can be fitted with any manufacturer or type of primary control or compressor
- Double skinned therefore strong and durable
- Robust construction with high quality powder coated finish

Booster System



System Details

Housed	Refrigerant	R744	R744	R744	R744
	Model	Mini	Mini	Maxi	Maxi
	System	Booster	Booster	Booster	Booster
	Max n.° of compressors	4	6	8	2x(8)
	Typical configuration MT/LT	2x2	4x2	5x3	2x(5x3)
	MT capacity [kW] ^(a)	10-40	40-160	160-220	2x(160-220)
	LT capacity [kW] ^(b)	5-10	10-40	40-55	2x(40-55)
	Gas cooler arrangement	Remote	Remote	Remote	Remote
	Compressor frame dimensions	Small	Medium	Large	Large-Dual
	Length [mm]	1800	2301	1755	2900
Width [mm] ^(c)	1000+805	1800 + 805	5990	5990	
Height [mm]	2320	2205	2430	2430	
Weight [kg] ^(d)	1650	3250	5350	9200	

(a) Performance assuming R744 at -10°C condensing temperature and 32°C ambient temperature

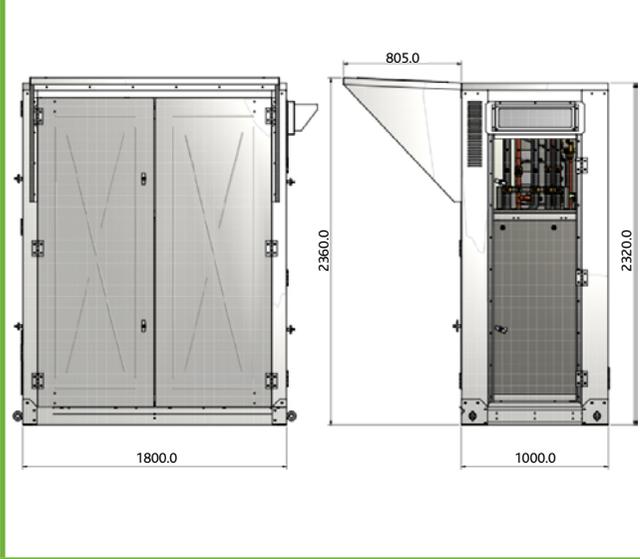
(b) Performance assuming R744 at -35°C condensing temperature and -10°C ambient temperature

(c) Weather shield optional. Dimension of 805 mm

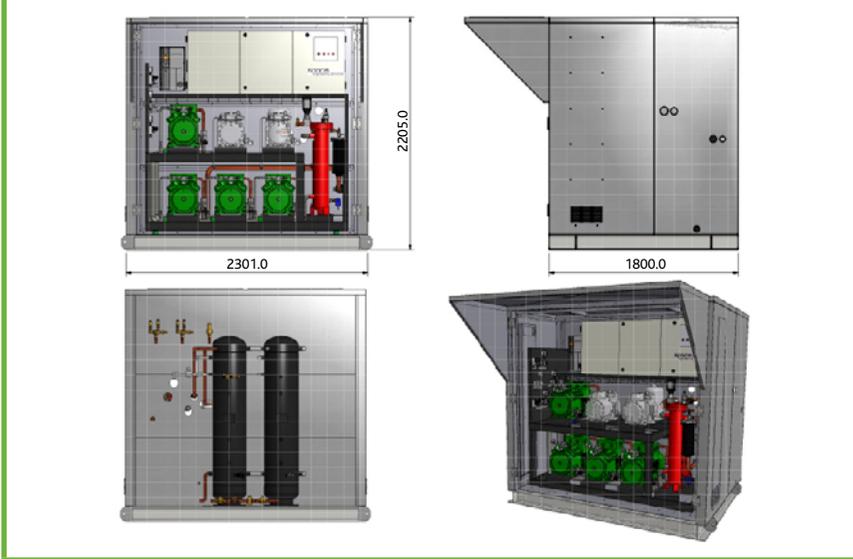
(d) For maximum number of compressors

ECO₂ Mini and ECO₂ Maxi Housed

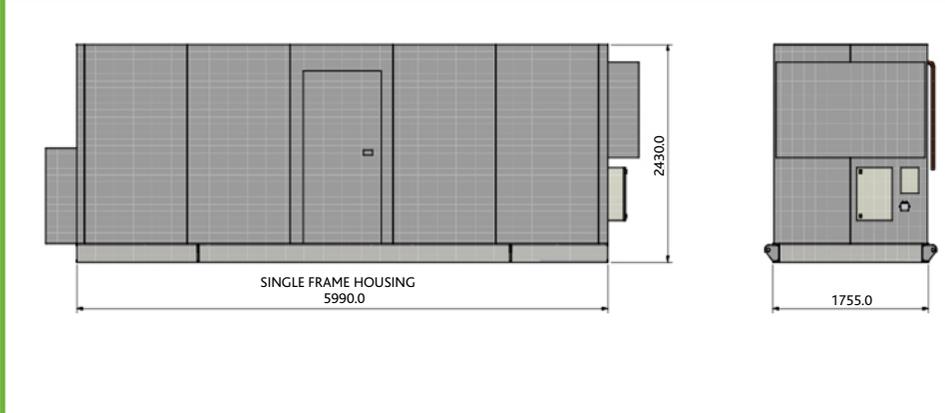
A – ECO₂ Mini Housed (small)



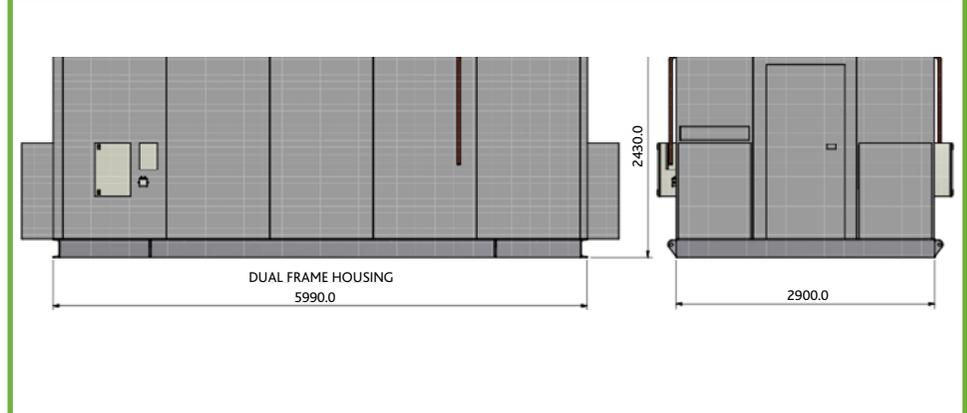
B – ECO₂ Maxi Housed (medium)



C – ECO₂ Maxi Housed (large) - Single housing



C – ECO₂ Maxi Housed (large) - Dual housing



ECO₂ Mini Housed

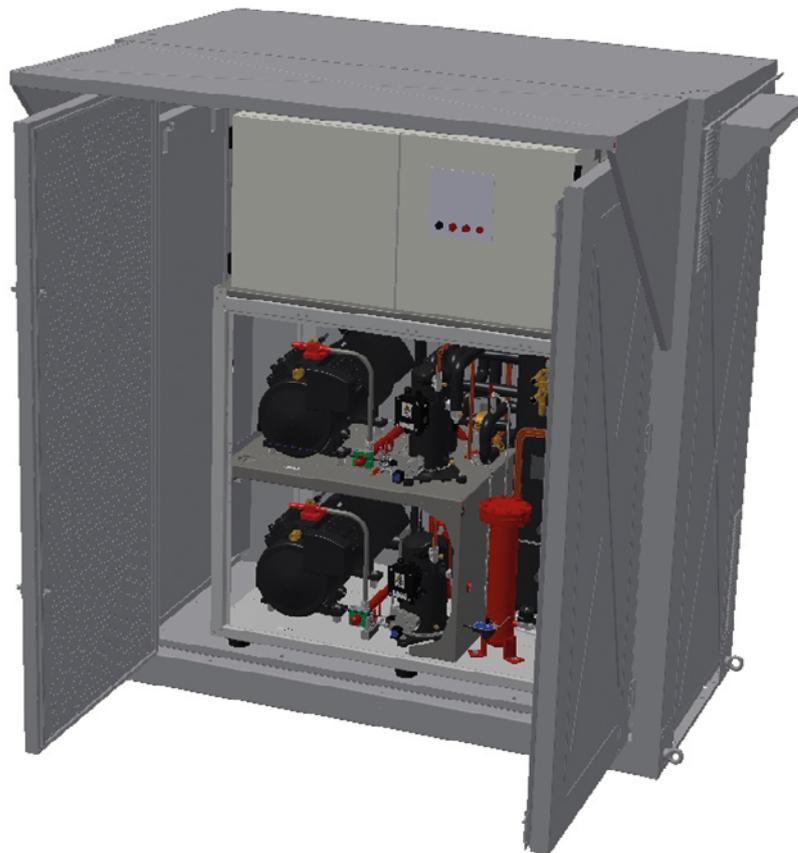
The ECO₂ Mini Housed system, which has been designed, manufactured and tested in the UK, is the ideal dual temperature CO₂ system for refrigeration users and convenience stores with limited space.

Modelled on our smallest footprint HFC equivalent, this dual temperature plant with its exceedingly compact design is now the smallest system in the CO₂ range, and supplied inside a weather proof low noise enclosure, it is ideal for external locations.

The ECO₂ Mini Housed combines the low and high temperature cooling requirements of convenience stores into a single packaged plant solution. As with all of our CO₂ plant it has a low global warming potential, whilst the application of variable speed drive and digital controls on the compressors provide significant energy saving benefits.

The low noise, sound attenuated enclosure minimises noise disruption, especially important in the retail environment. The Emerson Core-Sense technology used on the HT compressors provides full compressor diagnostics, and a CO₂ leak detection alarm offers added security.

The ECO₂ Mini Housed is designed for easy installation, and has excellent heat recovery potential when combined with our heat reclaim technology, designed for space and water heating.



ECO₂ Mini Housed (cont.)



Key Features

- Low GWP
- Compact transcritical design
- Designed for easy installation externally
- Helps to free up valuable space in store
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Pre-formed copper piping with minimal joints to reduce leak potential
- Single or dual temperature configuration
- Integral HP receiver in 75ltr volume
- Full clad weather proof assembly with intake and extract ventilation
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- VSD and digital controls on compressors providing energy saving benefits
- Can be fitted with any manufacturer or type of primary control or compressor

ECO₂ Mini and ECO₂ Maxi Packaged

The ECO₂ Mini and ECO₂ Maxi Packaged plant solutions have been designed specifically for internal applications and are pre-piped, pre-commissioned and in manufacture tested to reduce on-site installation time and cost.

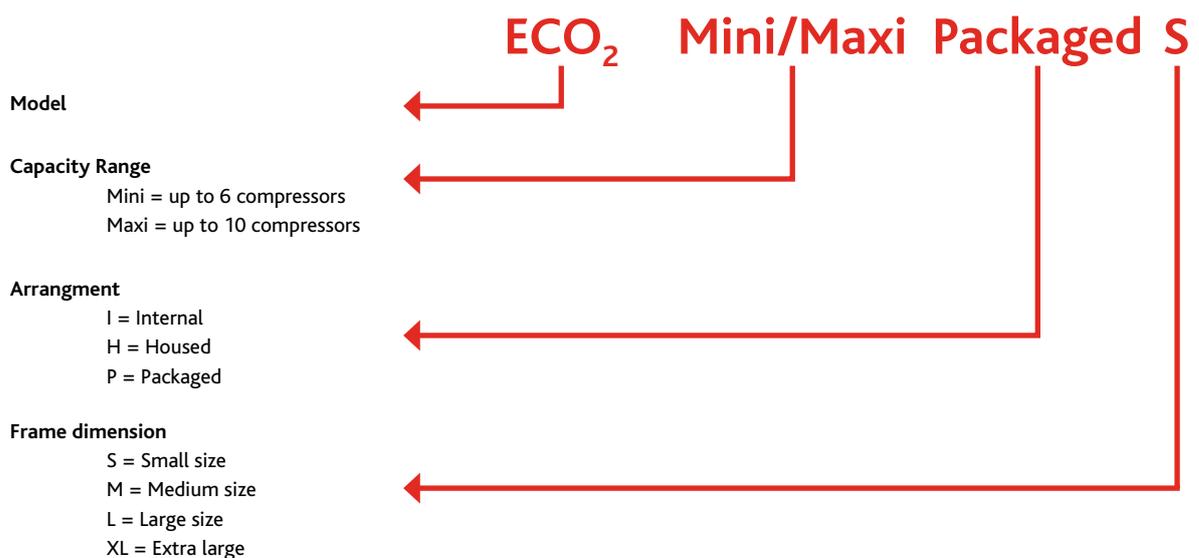
The external application of the plant helps increase trading or stock room space, making it ideal for sites without a specific plant room. The double-skinned enclosure helps reduce noise levels, and makes the plant both strong and durable.

The ECO₂ Packaged system is a solution utilising natural refrigerant. Operating on a single CO₂ refrigerant, this low GWP booster system, with its dual temperature configuration, is a cost effective and environmentally friendly derivative of our tried and tested Classic Packaged system.

The ECO₂ Mini and ECO₂ Maxi Packaged solutions are a CE marked system, designed specifically for internal application and are commissioned and tested to reduce on-site installation time and cost.

Available in a single or dual configuration, the ECO₂ Mini and ECO₂ Maxi Packaged can be configured with 2 to 4 compressors depending on cooling requirements. The plant is designed for easy installation in a plant room or where space dictates a back of house area, and is fitted with anti-vibration mounts as standard.

Our ECO₂ Packaged plant further benefits from a coalescing oil separator which is 98.5% efficient, and oil regulators. The oil separator works by reclaiming oil from the compressors and feeding it back into the oil regulators, helping to reduce inefficiencies in the cabinets and associated service costs. The plant's electronic oil regulators stop the compressors from running if the oil levels run low, preventing expensive compressor failures.

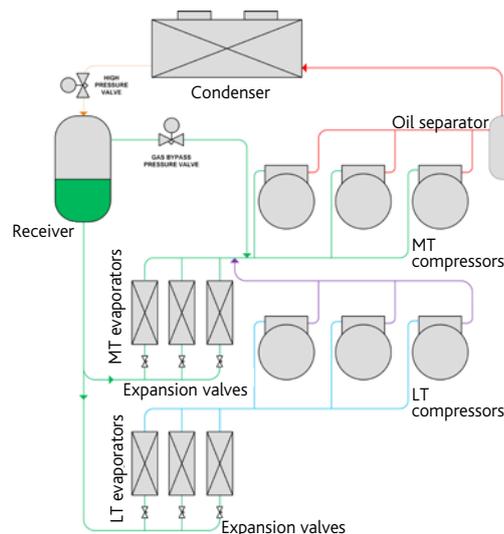


ECO₂ Mini and ECO₂ Maxi Packaged

System Features

- Low GWP
- Designed for easy installation in external locations
- Suitable for all format supermarket retail applications
- Easy access for service and maintenance
- Modular compressor configuration means a wide application range
- Pre-formed copper piping with minimal joints to reduce leak potential
- Single or dual temperature configuration
- Integral HP receiver in 75, 110 & 220ltr volume options
- Supplied with anti-vibration mounts as standard
- High pressure coalescing oil separator
- High pressure electronic oil level regulator for each compressor
- Integral control panel
- Can be fitted with any manufacturer or type of primary control or compressor
- Double skinned therefore strong and durable
- Robust construction with high quality powder coated finish

Booster System



System Details

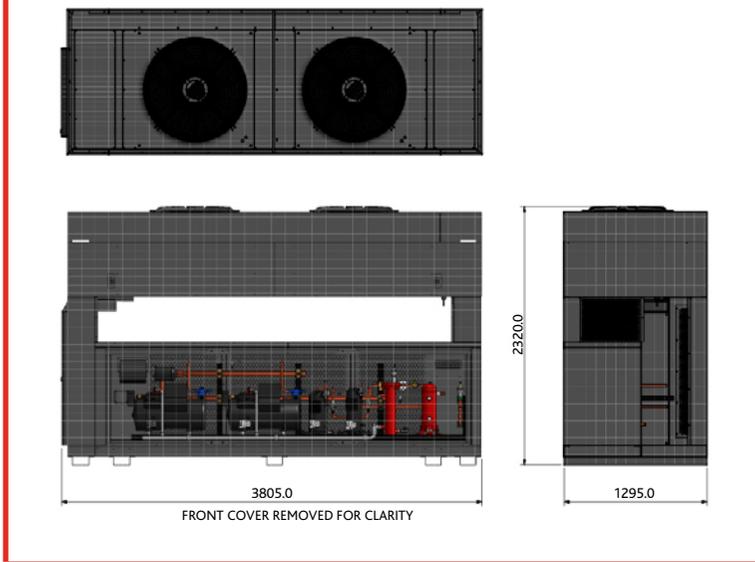
PACKAGED	Refrigerant	R744
	Model	Mini
	System	Booster
	Max n.º of compressors	4
	Typical configuration MT/LT	2x2
	MT capacity [kW] ^(a)	10-40
	LT capacity [kW] ^(b)	5
	Gas cooler arrangement	Coupled
	Compressor frame dimensions	Small
	Length [mm]	3805
	Width [mm]	1925
Height [mm]	2320	
Weight [kg] ^(c)	2400	

(a) Performance assuming R744 at -10°C condensing temperature and 32°C ambient temperature

(b) Performance assuming R744 at -35°C condensing temperature and -10°C ambient temperature

(c) For maximum number of compressors

A – ECO₂ Mini Packaged (small)



ECO₂ Mini Packaged

To meet increasing demand for refrigeration plant utilising natural refrigerants, we have developed our latest CO₂ system to complement our broad range of packaged plant solutions.

This environmentally friendly plant is designed specifically for refrigeration users with limited plant room space; ECO₂ Mini Packaged is our first compact design CO₂ plant for convenience and small user application.

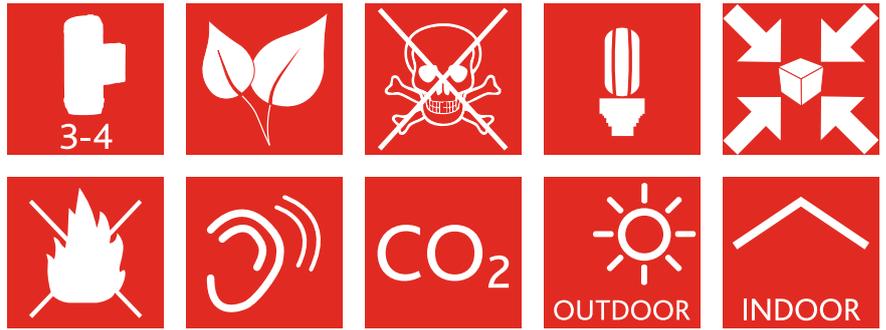
The EC fans have a capped speed for normal operation and a full PLC backup for overcapacity in high ambient conditions; making them an energy efficient alternative.

Copper pipework is utilised for suction and oil lines to reduce leak potential and manufacturing timescales. For added safety the plant has a high pressure receiver with 60 bar delivery pressure making the plant more resilient and an integral gas detection system with an audible alarm.

The plant benefits from a coalescing high pressure oil separator which is 98.5% efficient and electronic oil regulators. The oil separator works by reclaiming oil from the compressors and feeding it back into the oil regulators, helping to reduce inefficiencies in the cabinets and associated service costs. The plant's electronic oil regulators stop the compressors from running if the oil levels run low, preventing expensive compressor failures.



ECO₂ Mini Packaged (cont.)



Key Features

- Low GWP of 1
- Compact, transcritical design
- Suitable for convenience and small supermarket retail applications
- Easy access for service and maintenance
- Pre-formed copper piping with minimal brazed joints to reduce leak potential
- Single CO₂ refrigerant
- Integral 75ltr intermediate receiver
- Low installation and maintenance costs
- Low noise
- EC fan motors
- Can be fitted with any manufacturer or type of primary control or compressor
- Double skinned, making it both strong and durable
- Robust construction with high quality powder coated finish

ECO₂ Maxi Packaged

The ECO₂ Maxi Packaged is a packaged plant solution utilising natural refrigerant for large refrigeration users.

Operating on a single CO₂ refrigerant, this low GWP booster system with its dual temperature configuration is a cost effective and environmentally friendly derivative of our tried and tested Classic Maxi Packaged system.

Like its parent design this CE marked system is designed specifically for external application and is pre-piped, commissioned and tested to reduce on-site installation time and cost. The double skinned enclosure helps reduce noise levels and make the plant both strong and durable. The plant further benefits from a coalescing oil separator and electronic oil regulators.



ECO₂ Maxi Packaged



Key Features

- Completely packaged plant; pre-piped, commissioned and tested
- Available as close coupled packaged unit or pack enclosure and remote gas cooler
- Steel discharge header with all other copper pipework pre-fabricated
- Single or dual temperature configuration
- EC Fan motors
- 80ltr receiver with drier/bypass
- Capped fan speed for normal operation with overcapacity in high ambient
- Coalescing high pressure oil separator
- Electronic high pressure oil level regulator for each compressor
- Can be fitted with any manufacturer or type of primary control or compressor
- Double skinned therefore strong and durable
- Robust construction with high quality powder coated finish