



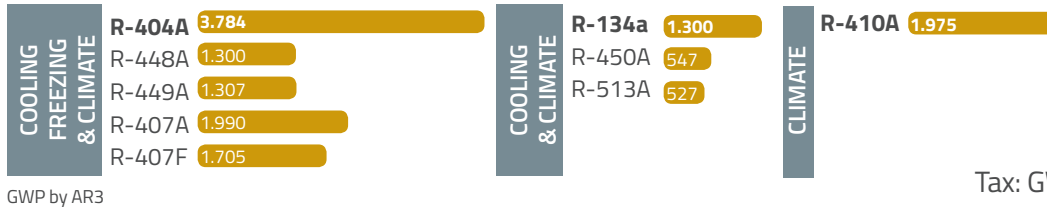
Tewis

GLOBAL **Market** SOLUTIONS
GLOBAL **Market** SOLUTIONS

Integrated refrigeration and climate control
systems for food distribution facilities

KEYS FOR THE DESIGN OF A REFRIGERATION SYSTEM

FLUORINATED GAS TAX 16/2013



F-GAS REGULATION UE 517/2004



Compliance with F-GAS standards installing refrigeration units below 40 kW.

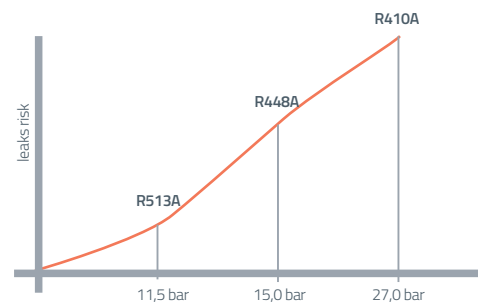
ENVIRONMENTAL CO₂ CONTROL OF PPM



CO₂ concentration control inside air conditioned rooms decreases the amount of necessary air changes and its associated costs.

WORKING WITH GASES

The working vapor pressure of a refrigerant is directly proportional to the number of problems in a refrigeration system, specially when it comes to leaks.



PLUG & PLAY EASY INSTALLATION



This kind of design reduces problems, the setting up time and secondary costs associated to a refrigeration system installation.

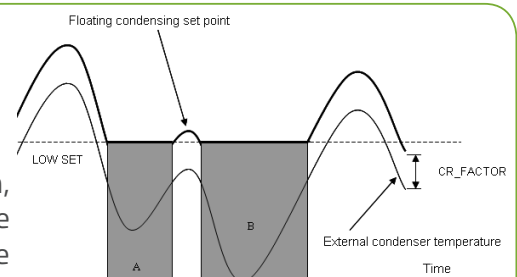
LOW ENVIRONMENTAL IMPACT



TEWI index measures the environmental impact of a refrigeration system including refrigerant leakage per year. Installing a leak detection system it can be reduced up to 85% and the energy savings can increase up to 15%

FLOATING CONDENSATION

Adjusts the condenser parameters (number of fans in operation, rotation speed, etc.) in function of the external temperature constantly, achieving optimal liquid subcooling and improving the refrigeration system performance.



ESSENTIALS OF A GLOBAL MARKET SYSTEM

SUBCOOLED LIQUID ECONOMIZER

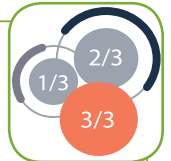


Subcooling liquid in a refrigeration installation increases its COP up to 12%.

The coefficient of performance (COP) of a compressor is much better when it works at climate control regime than at refrigeration regime.

So, using the climate control system for liquid subcooling in the refrigeration system, the refrigeration compressors work fewer hours and its efficiency increases.

SYSTEM THERMAL BALANCE



For example, the consumption of 1kW of energy can generate 2kW of cooling and 3kW of heating which can be used in winter.

HEATING CONSUMPTION



Only 5-10% of the installation's energy consumption is used for heating.

DIRECT SYSTEM



A direct system avoids the use of secondary liquid in the installation, saving 20% in energy consumption.

PROPORTIONAL MODULATION



We use modulating compressors and fans with adaptive speed control systems that automatically adjust the operation point to the system needs.

OPTIMIZED REFRIGERANT



The selection of the best refrigerant for a specific application is imperative to achieve the highest performance of the refrigeration system.

EASY AFTER MARKET



We use standard components that are easy to acquire and replace. Simplifying the maintenance of the machine.

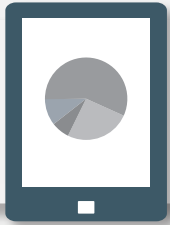
INTEGRATED CONTROL



Remote and local monitoring and control device.

It allows the user visualize the operation parameters and alarms and generate energy audit graphs.

Also, it can manage the refrigeration and climate control parameters for heat recovery, liquid subcooling and number of air changes.



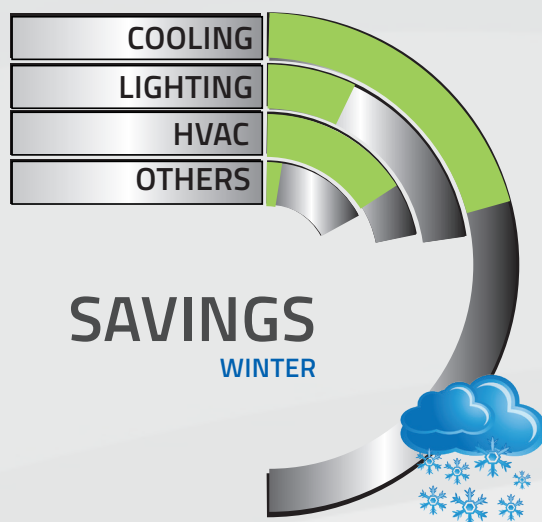
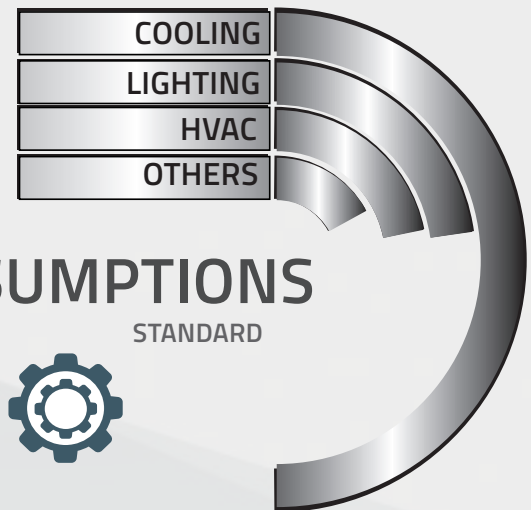
FIGURES CONSUMPTION AND SAVING IN A COMMERCIAL FACILITY

WE KNOW HOW TO SAVE ENERGY

Tewis has a wide experience in the refrigeration industry. Thanks to our broad knowledge of refrigeration systems development and experience in project executions we can make deep analysis of new and existing installations offering the best solutions and adapting each installation to the last industry advantages.

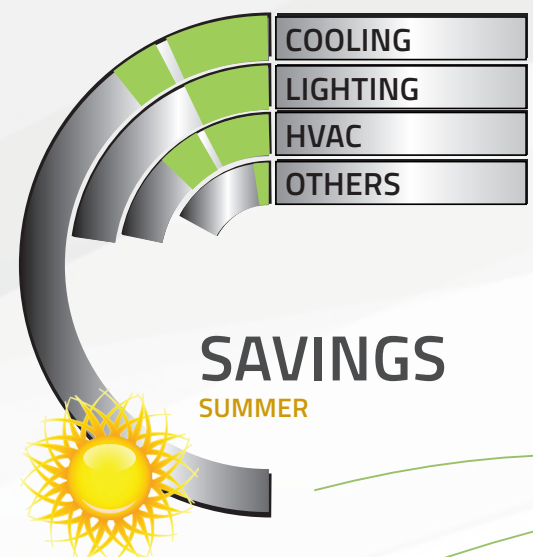
The integration of various systems makes possible to achieve great results and improve energy consumption in an installation.

The following graphs show the results for an area of 1500m².



- 40% HEATING RECOVERY
- 15% DOMOTIC CONTROL
- 75% HEATING RECOVERY
- 2% OTHERS

- 15% FLOATING CONDENSATION
- 5% ECONOMIZER
- 15% DOMOTIC CONTROL
- 15% FLOATING CONDENSATION
- 8% FREE COOLING + CO₂ CONTROL
- 2% OTHERS



GLOBAL **Market** SOLUTIONS

The F-Gas regulation and recent advances in the study of **refrigeration and climate** control systems, along with the research and the selection of refrigerants, have encouraged a continuous search for new and even more efficient solutions which have a lower environmental impact.

Our **Global Market** integrated systems respond to the cooling demand in the plant, obtaining great results in energy efficiency and lowering the energy of climate control and heating systems. This is because the integration of solutions **allows the recovery of the heat generated in the refrigeration system**.

These solutions, developed by Tewis and aimed at **local shops, the retail sector and supermarkets**, use the latest management, control and innovation technology to optimise each establishment.

HIGHLY EFFICIENT REFRIGERATION

GM-PACK COMPACT SOLUTION

Multi-functional, high efficiency equipment units of **less than 40kW** which can be combined.

Their **small size and modular chassis** facilitate their adaptation to projects with very different requirements.



GM-SPLIT MODULAR SOLUTION

Imagine the installation as a **single system** composed by some complementary units that work in an efficient and coordinated way, thanks to its control technology.



GM CUSTOM TAILORED

These solutions allow you to assign various power settings with a single unit and, therefore, **satisfy the requirements of the installation**.

There are a large number of **compatible peripheral** devices for optimising these units. A noteworthy one is the bi-state option, with Tewis know-how, which considerably reduces the condensation air flow and the size of the air outlet on the facade, thus complying with noise/flow relationship legislation. If you want more information about the GM CUSTOM, contact us.



COMPACT SOLUTION

GM-PACK CW-BACK

A multi-function, high efficiency device designed for serving retail establishments and small businesses. It has various functions or modes for cooling, climate control, heating and heat recovery.

It complies with the F-GAS regulation and is easily adaptable to each installation thanks to its modular nature and its construction design (axial, radial, reduced height) that allows to merge several units in function of the climate / cooling / heating needs and the physical space available to put the units.

The interconnection of systems allows centralized regulation and monitoring either each unit individually or the whole machine.



TECHNICAL CHARACTERISTICS

ADAPTIVE The unit automatically adjusts and distributes the generated and/or recovered energy depending on the system needs.

COOLING-CLIMATE-FREEZING The Top model is designed to simultaneously meet the needs for climate control and/or refrigeration, whilst the Freeze model meets those of climate control and freezing.

MULTI-ZONE The Top model provides different climate control areas with independent temperatures and includes 2 pipes which supply cold and heat simultaneously-sequentially.

HEAT PUMP Cycle inversion for heat generation.

ADVANCED ELECTRONICS High efficiency in motic control with interconnected units and remote monitoring. All the alarms can be sent to a call center.

ADJUSTABLE The compressors automatically regulate their refrigeration capacity in function of the cooling / heating demand at each moment. 3 scroll compressors.

BALANCEABLE The refrigeration and climate control capacities can be balanced in the Top model. This leads to a more accurate load diversity factor that guarantees the meet of the system cooling / climate demand continuously.

CHASSIS, AIR OUTLETS AND ASSEMBLY

Axial-Radial // Vertical-Horizontal // Compact-Split in order to adapt to any installation needs. Chassis for indoors or outdoors installing. Interchangeable covers for horizontal or vertical air outlets.

SUCTION FILTERS included in climate control and refrigeration systems. Accessible and exchangeable core liquid filter.

EFFICIENCY SETTINGS Programmed for optimal energy use; night setting, floating evaporation and condensation, eco parameters, etc.

EMERGENCY SETTINGS In case of electronic failure, it is possible to manually activate a minimum refrigeration service. In the GMP Top model, if one of the compressors breaks down, its operation is automatically assumed by another compressor.

STACKABLE UNITS for better space utilisation and adaptation to each establishment. Maximum 2 units.

EC VENTILATORS with high energy efficiency and electronic modulation as defined by regulations.

COMPLETE ELECTRIC SWITCHBOARD with suitable protection devices in accordance with European legislation.

V-MOUNT BATTERIES 5MM double v-mount batteries, one of which is reversible. 5mm, high productivity and low volume refrigerant pipe.

ECOLOGICAL AND EFFICIENT REFRIGERANT with low GWP, R-448A or an equivalent.

SOUND PRESSURE A silent solution even in residential areas.

* Based on a spherical area and a distance of 10m of open space.



GM-PACK CW-BACK

GM-PACK R-448A	MT COOL POWER -10°C	LT COOL POWER -30°C	CLIME AT +5°C	RECOVERED HEAT MAX. ⁽³⁾	GENERATED HEAT
GMP Top cool-clime	27/39,5 kW ⁽¹⁾	-	22,5/39,5 kW ⁽²⁾	42 kW	18 kW
GMP Freeze freeze-clime	-	8 kW	31,5 kW	13 kW	18 kW

Ask about optional kit for power increasing. (1) Three compressors working for cooling function.

(2) Two compressors working for climatization function (3) On ending units: maximum power to be installed for heating. Minimum power cooling + heating: 5 kW.

BALANCE (Top)	1	2	3	4	5	6
Cool -10°C	39,5 kW	27,0 kW	22,0 kW	16,0 kW	12,5 kW	0,0 kW
Clime +5°C	0,0 kW	12,5 kW	17,5 kW	23,5 kW	27,0 kW	39,5 kW

Virtual table for balance function selection.

OPTIONS & BODYWORKS



Split



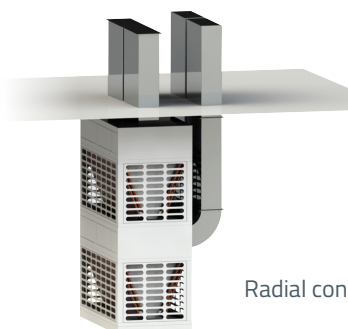
Radial



Axial



Stackable



Radial condensation
stackable



Compact reduced
height (1.220mm)

CLIMATIZATION UNITS

CASSETTES



R-448A MOD.	CLIME P. AT +5°C	HEAT P. +50°C	Ø LIQ.	Ø GAS
EV19ZCE-50E	5,5 kW	5,2 kW	3/8"	5/8"
EV19ZCE-80E	8,2 kW	7,7 kW	3/8"	5/8"
EV19ZCE-120E	13,1 kW	12,3 kW	1/2"	7/8"

Recommended diameters

DUCT

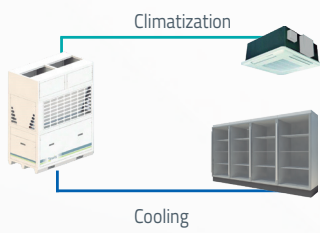


R-448A MOD.	CLIME P. AT +5°C	HEAT P. +50°C	Ø LIQ.	Ø GAS
GMA-12-01	19,1 kW	18,5 kW	7/8"	1 1/8"
GMA-14-01	25,1 kW	23,1 kW	7/8"	1 3/8"
GMA-22-01	35,2 kW	37,2 kW	1 1/8"	1 5/8"
GMA-24-01	54,3 kW	50,6 kW	1 1/8"	1 5/8"

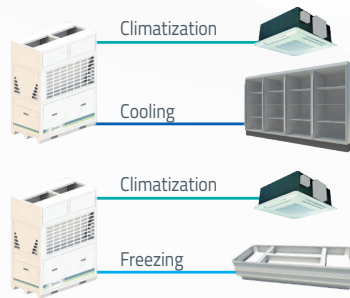
CONFIGURATIONS

GM-PACK
CW-back

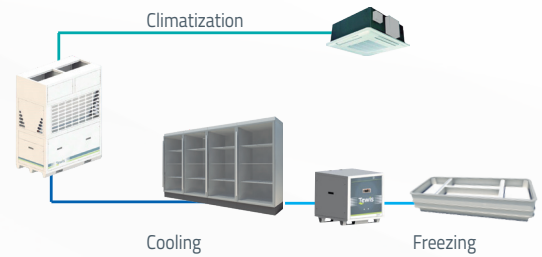
GMP Top



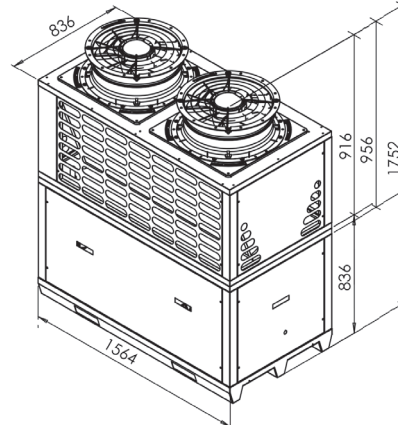
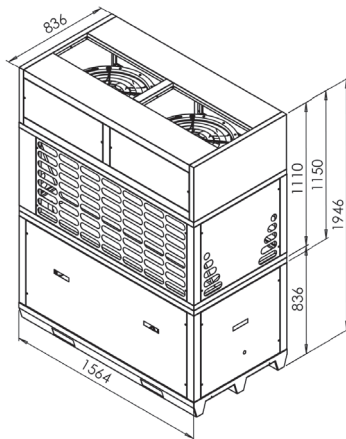
GMP Top + Freeze



GMP Top + GMS Ice



DIMENSIONS

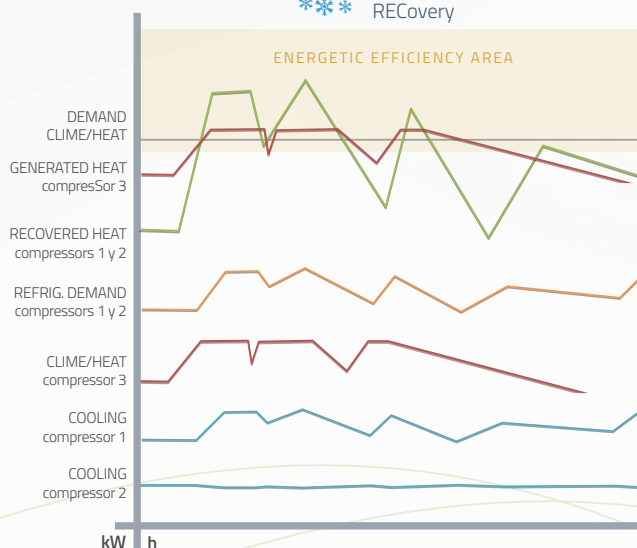


ENERGY BEHAVIOUR FOR SPECIFIC DEMANDS GMP Top

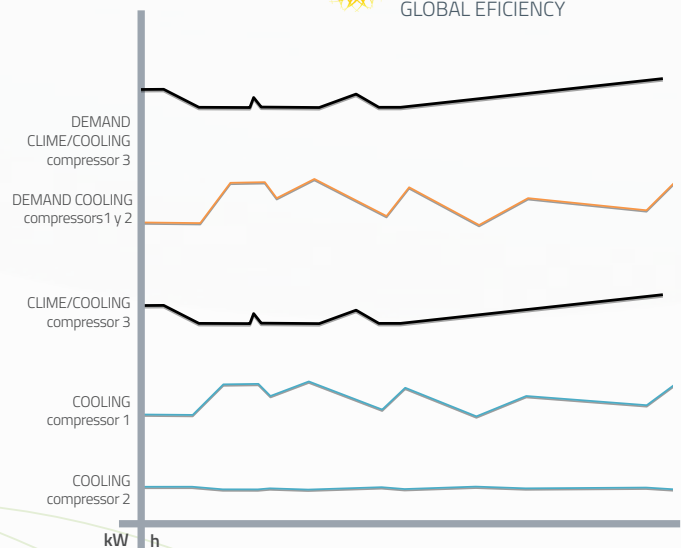


WINTER FUNCTION
REcovery

ENERGETIC EFFICIENCY AREA



SUMMER FUNCTION
GLOBAL EFFICIENCY



CONTROL & SWITCHBOARD

The equipment includes the **Free Evolution** programmable controller from Eliwell, with the latest analogue, digital and communication technology.

The software manages all the **regulation, control, safety and energy efficiency functions**.

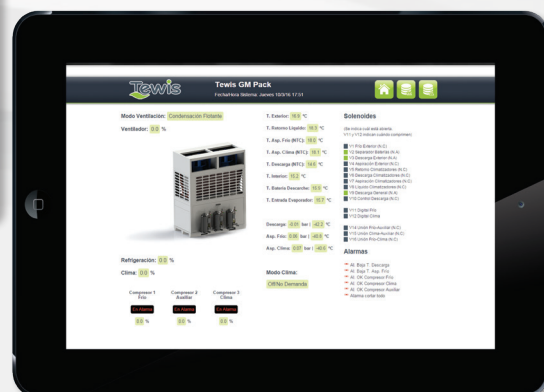
It includes an application for monitoring and control from a remote or a local location via internet that allows the user visualize the operation parameters, alarms, real time parameters, electric consumptions and generate energy audit graphs. View a demo at: www.tewis.com/gmpack

The **integrated electrical switchboard** includes the thermal, magnetic and differential protection devices needed to comply with European regulations. It has a hinged opening, an external general cut-off switch, phase relays to protect the scroll compressor from rotating in the wrong direction and energy counter.

The standard unit is designed for climate control of one zone. For additional zones a thermostat for each zone must be purchased. Up to 4 zones can be controlled.



Demo control system

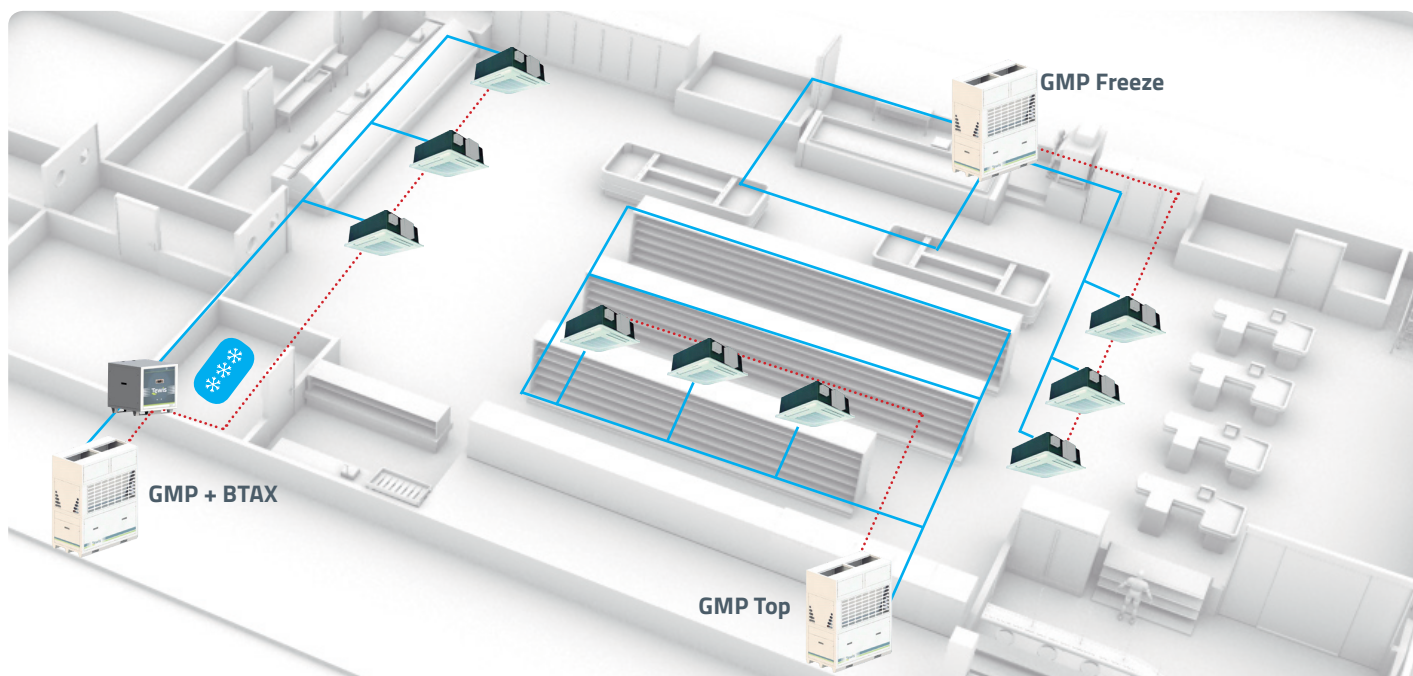


Free Evolution



Multi-zone thermostat

SUPERMARKET APPLICATION (EXAMPLE)



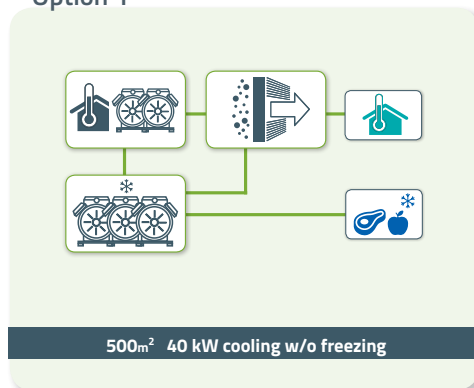
MODULAR SOLUTION GM-SPLIT

The GM-SPLIT assumes the refrigeration system as a single unit composed by some **complementary units that work in an efficient and coordinated way**, thanks to the synergy between those units and the control management device.

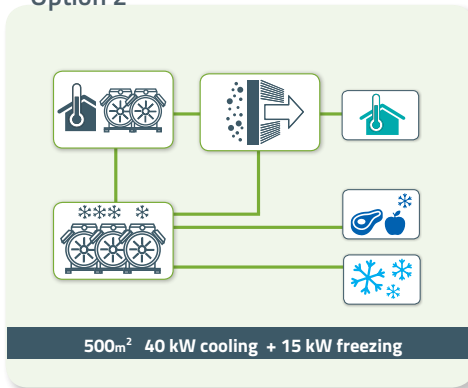
The merge of **climate control, refrigeration and freezing** generates a lot of cooling power that can supply any demand of the installation. The GMS products can be adapted to the user needs.



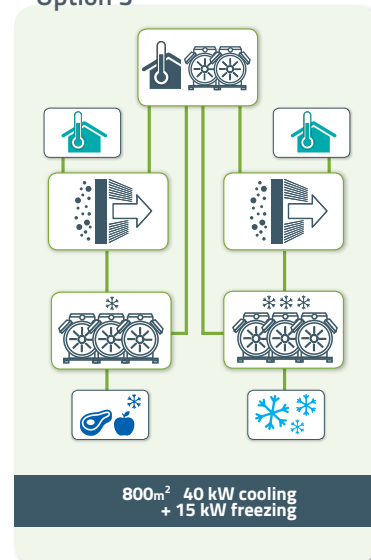
Option 1



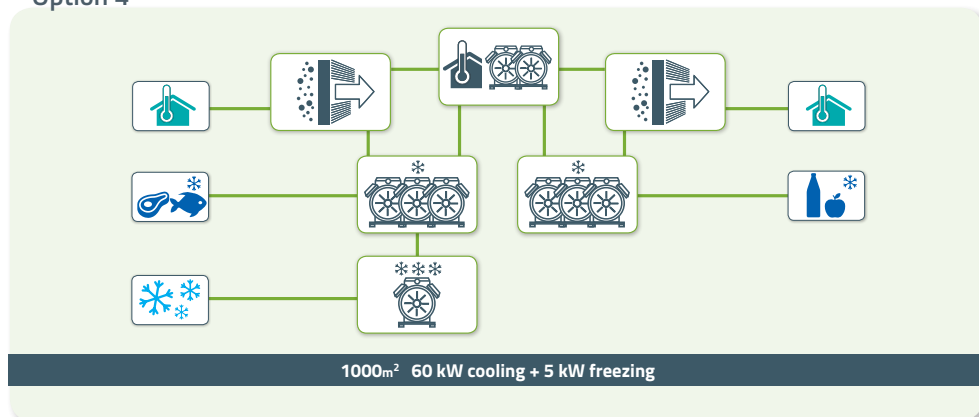
Option 2



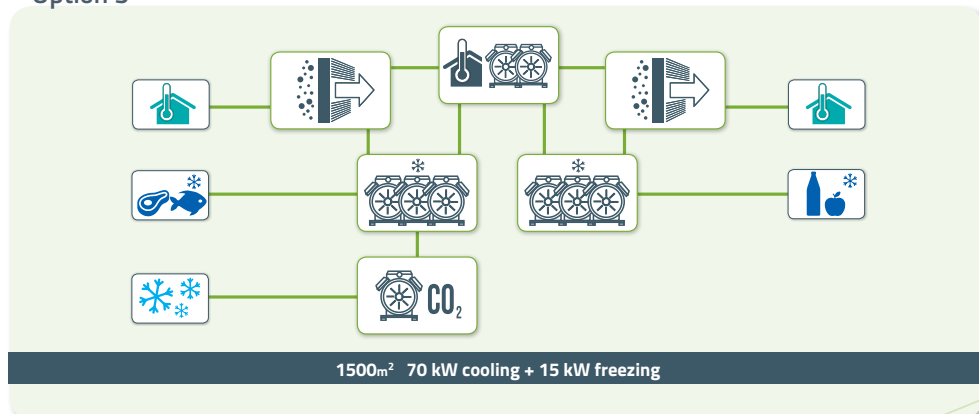
Option 3



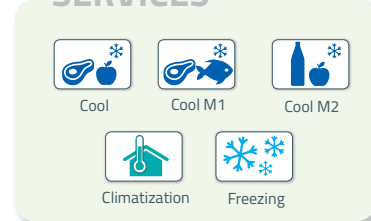
Option 4



Option 5



SERVICES



PLUG & PLAY

All units are connected to each other using the GM Split's own electronic control and making the set function as a single system.

GMS Comfort

R-134a **condensing unit** with cycle inversion and with a backup function so in case of breakdown of a unit, another one will replace it. Furthermore, it feeds the subcooler of the GMS Cool equipment, providing it with extra cooling power.

It can provide cooling power in climate control and heating power when the recovery heat rate is below the current demand.

Semi-hermetic compressors. Available as Axial-Radial // Compact-Split.

HT R-134a	COOLING POWER +5/+45 °C
GMSQ-206B-001AT	27,68 kW
GMSQ-306B-001AT	41,52 kW
GMSQ-406B-001AT	55,36 kW
GMSQ-215B-001AT	58,60 kW
GMSQ-315B-001AT	87,90 kW
GMSQ-415B-001AT	117,20 kW



GMS Cool

Cooling rack prepared to supply refrigerant to the refrigeration and/or freezing units.

With an optional subcooler, fed by the GMS Comfort unit.

It manages the heat recovery using a set of valves that send the heat flow to the AHU and use it for climate control. Thus, an extra heat power is generated with no extra cost.






Semi-hermetic compressors. Available as Axial-Radial // Compact-Split.

MT R-134a	COOLING POW. -10/+45 °C
GMSC-206B-001TN	14,74 kW
GMSC-306B-001TN	22,11 kW
GMSC-406B-001TN	29,48 kW
GMSC-215B-001TN	29,68 kW
GMSC-315B-001TN	44,52 kW
GMSC-415B-001TN	59,36 kW

MIXED R-448A	COOLING POW. -10/+45 °C	COOLING POW. -30/+45 °C
GMSC-206B/106B-001MX	22,70 kW	3,88 kW
GMSC-206B/206B-001MX	22,70 kW	7,76 kW
GMSC-215B/206B-001MX	46,40 kW	7,76 kW
GMSC-215B/115B-001MX	46,40 kW	7,28 kW
GMSC-215B/215B-001MX	46,40 kW	14,56 kW
GMSC-315B/215B-001MX	69,60 kW	14,56 kW

LT R-448A	COOLING POW. -30/+45 °C
GMSC-206B-001BT	7,76 kW
GMSC-306B-001BT	11,64 kW
GMSC-406B-001BT	15,52 kW
GMSC-215B-001BT	14,56 kW
GMSC-315B-001BT	21,84 kW
GMSC-415B-001BT	29,12 kW

HIGHLIGHTED FUNCTIONS

	 Summer function	 Medium-warm	 Medium-cool	 Winter function	 Backup
GMS Cool	Cooling and/or freezing				
GMS Comfort	Clime + subcooling increasing the cooling power	Off	Off	Clime generating heat	Refrigeration mode Clime manual/sequential
GMS Air	AHU	Free Cooling	Heat recovering	Heat recovery and dissipation	AHU + Free Cooling + Heat recovery
GMS Ice	Increase the freezing possibilities				
GM Smart	Control and optimization of CO ₂ renovations	Control	Control and optimization of CO ₂ renovations	Control and optimization of CO ₂ renovations	Control and optimization of CO ₂ renovations

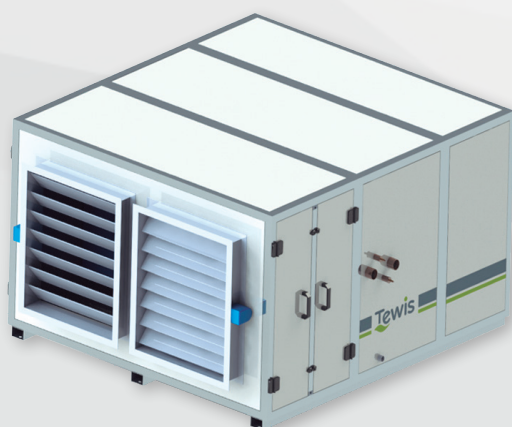
GMS Air

This is the **Air Handling Unit (AHU)** for GMS systems.

It includes a heat recovery battery that uses the GMS Cool condensing heat for climate control requirements and a climate control battery that can work in reverse cycle, so it can be used for heating or cooling with the GMS Comfort model.

Includes free-cooling gates to take advantage of the external conditions, thus the comfort level inside the climate controlled room is improved and the efficiency is increased.

In order to achieve an optimal air quality in the climate controlled room, this model includes G4 Pre-filters and F7 washable air filters. It also includes a radial fan designed with enough available pressure for climate control ducts.



HT R-134a	FLOW	AVAILABLE PRESURE	CLIME P. +5°C	HEAT P. +40°C
GMS-Air 06-01	4000 m³/h	100 Pa	22 kW	14,6 kW
GMS-Air 12-01	9.000 m³/h	100 Pa	46 kW	30,4 kW
GMS-Air 20-01	13.000 m³/h	200 Pa	76 kW	51,2 kW
GMS-Air 30-01	18.000 m³/h	200 Pa	114 kW	60,6 kW

GMS Ice

Global Market Systems can increase its functionality with auxiliar freeze units as BTAX, BTAXmini (as a temporary resource) and CO₂ condensing units (high energy efficiency) to fulfill the cooling demand of freezing units. Both solutions condense in cascade with medium temperature units.

BTAX

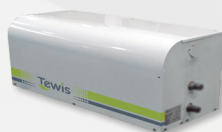
Evaporation -30°C
Condensation +8°C
Modulable power (10%-100%)



R-448A	COOLING POWER	CONDENSATION POWER
BTAX105AEF-1	5,45 kW	6,95 kW
BTAX106AEF-1	6,48 kW	8,19 kW
BTAX108BEF-1	8,74 kW	11,15 kW

BTAX mini

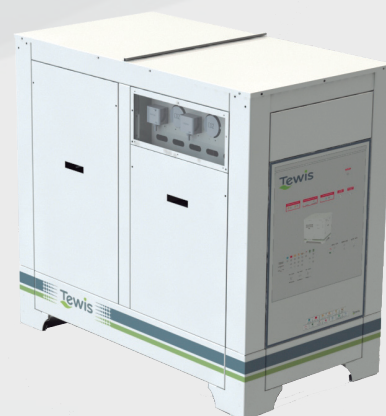
Evaporation -30°C
Condensation +20°C



R-448A	COOLING POWER	CONDENSATION POWER
BTAXMN101AQF-1	0,85 kW	2,19 kW
BTAXMN101BQF-1	0,96 kW	2,62 kW
BTAXMN101CQF-1	1,52 kW	3,81 kW

CO₂ UNIT

Evaporation -35°C
Condensation -5°C



CO ₂	COOLING POWER	CONDENSATION POWER
CO2MSL-001	2,58 kW	3,29 kW
CO2KSL-001	4,32 kW	5,49 kW
CO2JSL-001	5,68 kW	7,19 kW
CO2HSL-001	7,22 kW	9,12 kW
CO2GSL-001	8,61 kW	10,85 kW
CO2FSL-001	11,09 kW	13,94 kW

ELECTRONIC AND CONTROL SYSTEM

GM-SMART
GM-SMART

Integral monitoring software, compatible with all Global Market systems, allowing access to and management of all the installed units.

It communicates with each unit via Ethernet protocol, so the data transmission is in real time. This data is saved by a document manager that is accessible from the web.

There are **two levels of access**: 'maintenance' and 'user' and they display information based on the indicated needs for analysis or maintenance.

The interface, with its predefined icons, **ease of use and responsive programming**, allows effective control without the restrictions of location or time, thus boosting the whole plant energy efficiency.



THE ENTIRE SUPERMARKET MANAGED FROM A PERSONAL PANEL

Centralised multi-installation management.

Energy analysis and management.

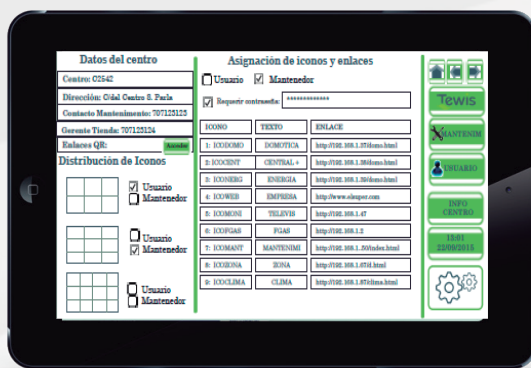
Control of ATUs for a comfortable temperature in the shop.

Alarms management.

CO₂ control for the activation of the extraction mode and more efficient air changes.

Domotic control:

- Cooling
- Freezing
- Climatization
- Indoor and outdoor lighting.



GLOBAL CONTROL PANNEL

GM-SMART
GM-SMART

CONFIGURABLE BASED ON THE SYSTEMS
USED IN THE INSTALLATIONS

APPS



Positive
cooling rack



Negative
cooling rack



Compact kit



Domotics



Climatization



ATUs



Monitorization



Web access



Maintenance



F-GAS



Energy



Area control
(thermostat)



Area control
(clime)



Cool-Clime

Using this control system, the available applications are accessed directly, depending on the configuration applied in the installation of the refrigeration, climate control and control services.



ATUs



Climatización



Acceso web

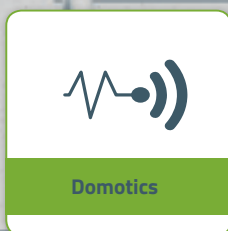


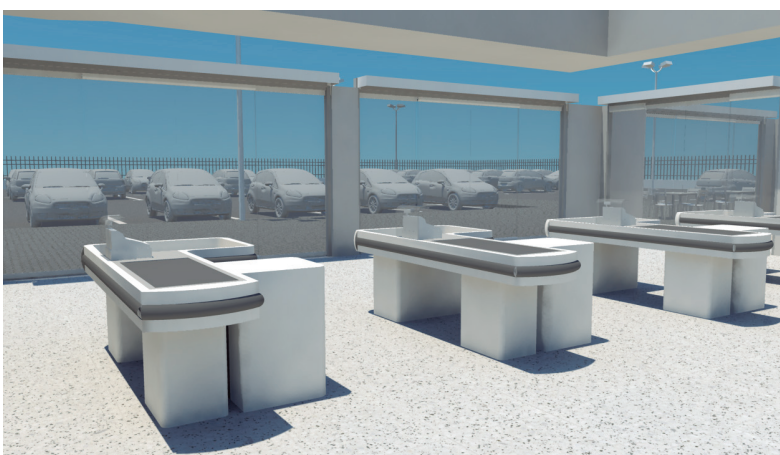
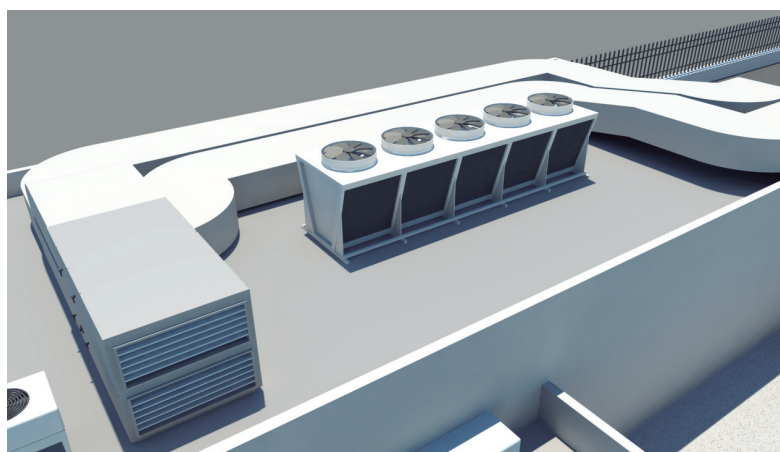
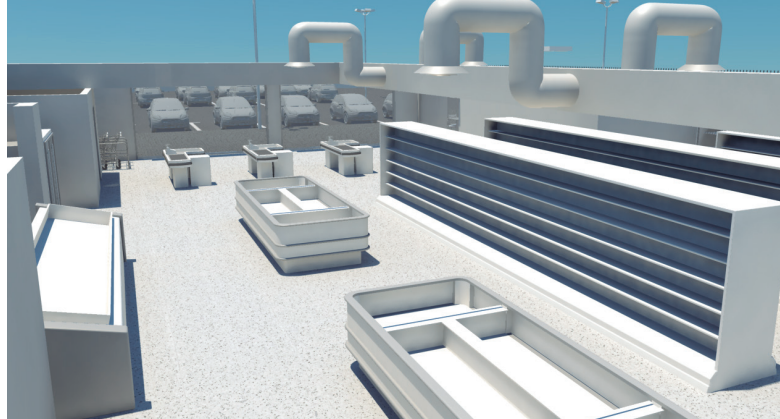
Positive
cooling rack



Negative
cooling rack

THE WHOLE SUPERMARKET ON ONE MENU





Certificaciones

2006/42 CE
2004/108 CE-93/68 CEE
2006/95 CEE-93/68 CEE
97/23 CEE

Fabricación según normativa 97/23/CE



Tewis

a member of **DAIKIN** group

Parque Tecnológico
Auguste y Louis Lumière, 26
46980 Paterna (Valencia) ES
Tel.: (+34) 96 313 42 02
Fax: (+34) 96 350 07 87

www.tewis.com
info@tewis.com

