



Product guide

2024






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FAST

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*The reliable partner
for the future*

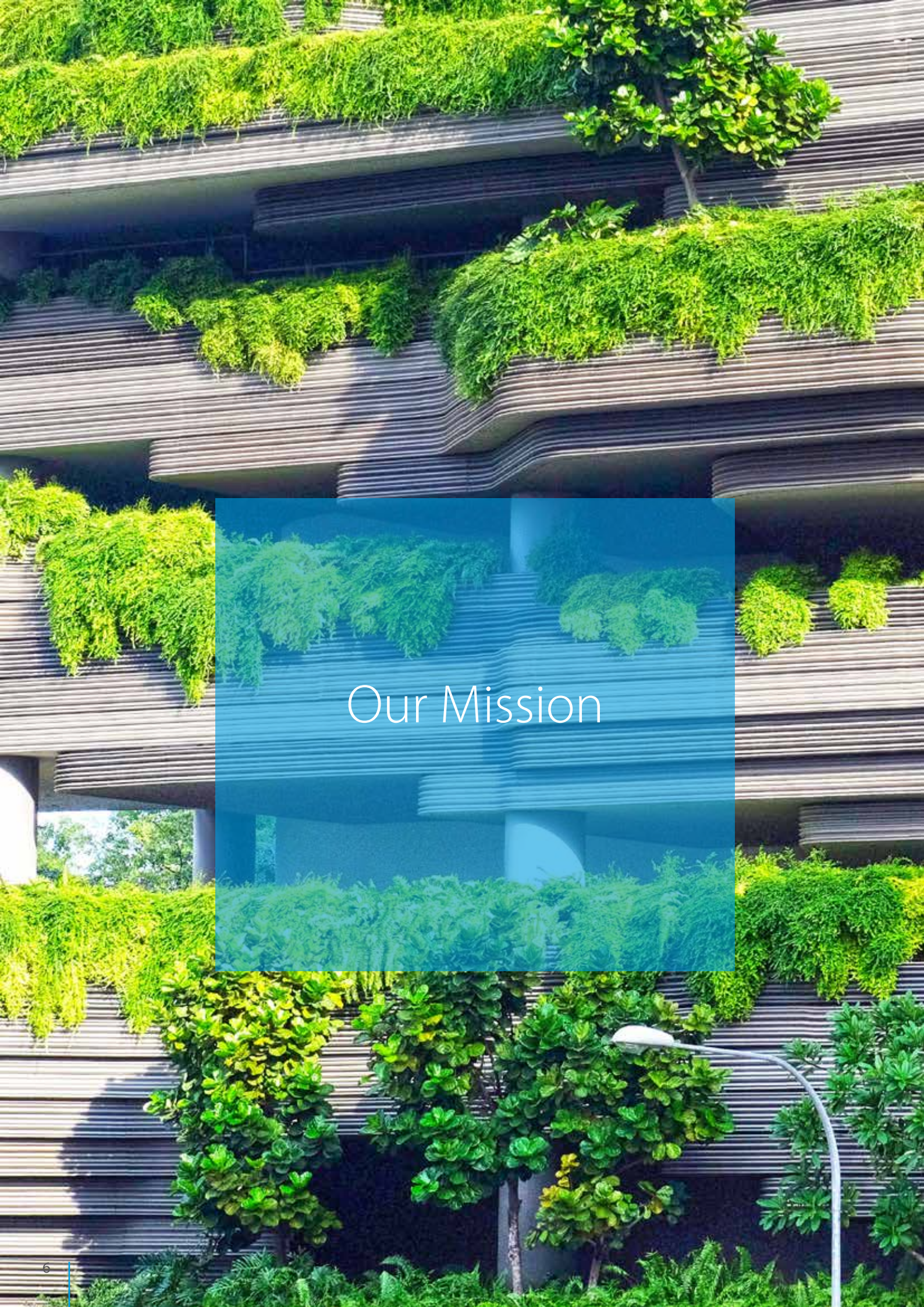
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Fast was founded in 1990 as a precise entrepreneurial choice of the Giordano Riello International Group, driven by the need to have an autonomous company that positioned itself at the highest levels in the specific sector of air treatment machine production. Led by Mrs. Raffaella Riello, President, and her husband Dr. Paolo Gasparini, Vice-President and CEO, Fast quickly made its mark on the market with a series of innovative and high-tech machines. The Montagnana (PD) facilities cover an area of 18,000 m², of which 1600 m² are reserved for offices and services.

The sophisticated production equipment, continuously updated for the technical development of products, allows the construction of all the most significant parts that make up the "air treatment units" within the structure. The establishment of the brand, the success of the products, and market demands led Fast to expand its catalog in the air conditioning sector, where it is present with a complete range, ranging from air treatment units to roof tops, from thermoventilators to heat recovery units.

Fast is a young company with goals of continuous growth in Italy and abroad. It maximizes the wealth of experiences, knowledge, market sensitivity, and customer attention, which is a fundamental characteristic of the Giordano Riello Group, a pioneer in the Italian air conditioning sector. The connection with the group provides Fast with the opportunity for significant synergies and a wealth of technical, production, and marketing experiences. Machines and their components are tested in adequately equipped laboratories to provide customers with the utmost confidence in the efficiency of the purchased product. Certifications such as Eurovent, Vision 2000, and ISO 14001 are a secure guarantee of the highest attention to quality in every business function. Special care is also given to personnel training for every phase of the production process, aimed at achieving the highest specialization.



Our Mission

Our Mission

Pride and Professionalism

At **Fast** we are proud of our company and our products.

Our work is characterised by efficiency, transparency and honesty. These factors, combined with our experience, enable us to work confidently and cooperatively within the market.

Winning team

Knowledge and information sharing is our key success factor to work as a winning team.

Ecological company

We pay special attention to the environment (ISO 14001).

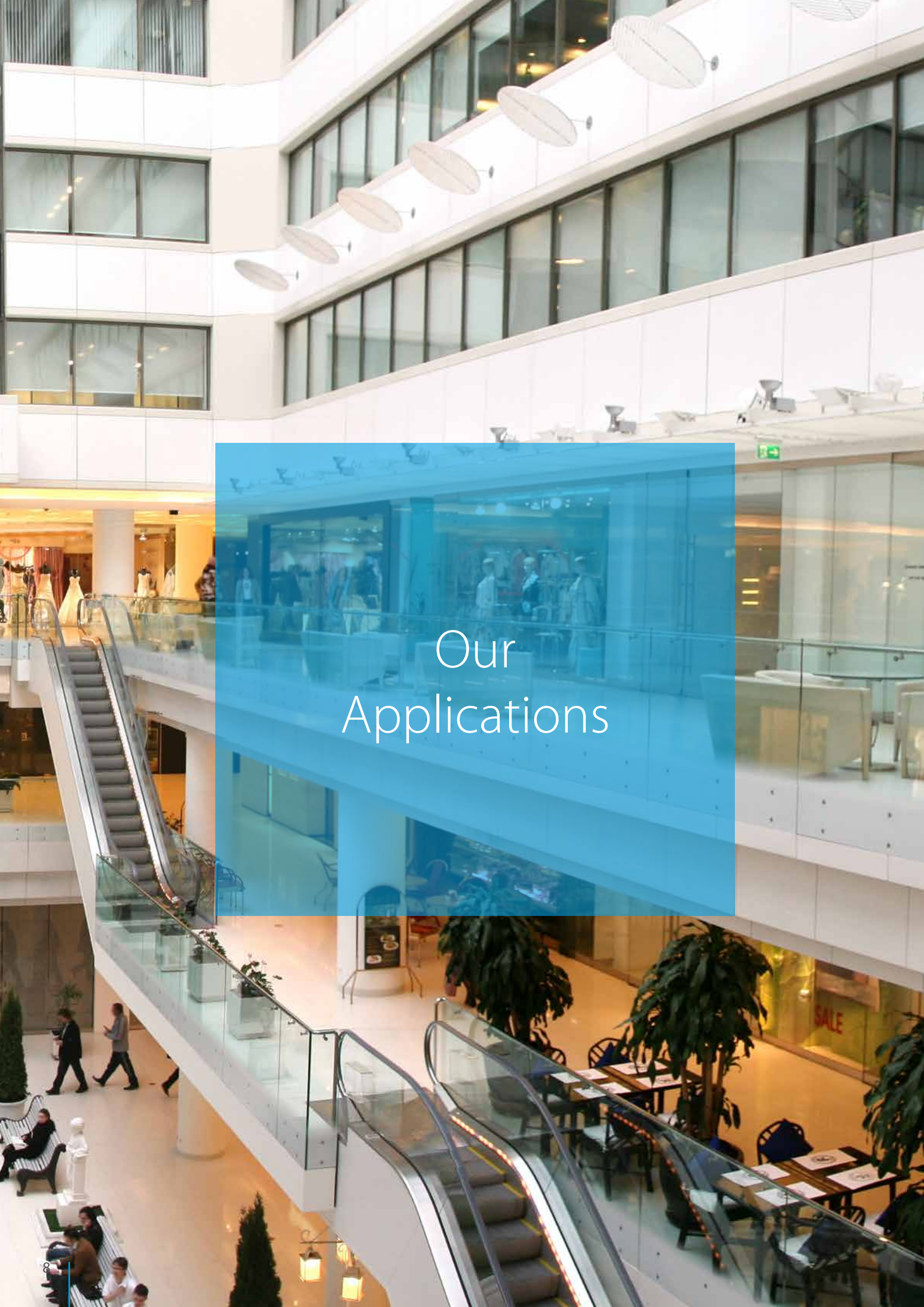
Fast is a flexible and experienced company

in the production of high quality air conditioning units.

Fast is acknowledged as a company that works with its customers by understanding their needs and finding creative solutions, thus offering higher added value products than its competitors.

The aim of Fast is to give punctual and precise solutions to customers' requirements.

We develop a specific computer software for customised selection of the units, which is also used by the sales department and by all involved in the design of air conditioning installations. We supply the necessary tools for the technical and service functions of all customers choosing Fast products.



Our
Applications

Applications

The experience accumulated over the past 30 years of activity, coupled with our ability to be dynamic and flexible, ensures that our customers recognize us in the market as a solid, reliable company capable of providing customized solutions tailored to their specific needs.

Thanks to our internal structure and collaboration with other companies within the Giordano Riello International Group, we can address any comfort-related requirements as well as specialized areas such as healthcare, food, and industrial sectors.

We have always been attentive to the needs of our customers, transforming their requests into turnkey solutions through comprehensive services including research, design, industrialization, installation, and maintenance.



Industrial



Service Sector



Health Care



Food / Beverage



Winemaking



Chemical



Museums



Wellness / SPA



Education



Fair



Government



Sport / Leisure



Hotels



Agriculture



Commercial

Our Certifications

Certification

Here are some of the numerous certifications our products hold:

Quality - UNI EN ISO 9001

Fast has held UNI EN ISO 9001 company certification since 1997. This international standard lays out the fundamental requirements for demonstrating a company's ability to regularly provide products based on its customers' requests or complying with the relative legally binding requisites; enhancing customer satisfaction by means of continuous improvement.

Environment - EN ISO 14001

In 2004, **Fast** was the first company in the air handling sector to receive UNI EN ISO 14001 certification. This international standard specifies the requisites for companies wanting to draw up an innovative industrial policy aimed at reducing the effect of their work on the environment.

Fast confirmed its sensitivity to problems linked with environmental protection and conservation by developing a programme for monitoring and improving its work processes and products, aiming to limit environmental impact.

Safety - UNI ISO 45001:2018

Fast is certified according to UNI ISO 45001:2018, the international standard for Occupational Health and Safety (OSH) management system certification. The safety and protection of people is a fundamental value that each and every one of us puts into practice in all our day-to-day activities.

VDI 6022 - Hygiene certification

Fast air handling units can be supplied with VDI 6022 certified execution. Certification according to the German standard VDI 6022 verifies that the sizing, materials used, installed components, design choices, and, more broadly, the entire production process are such as to facilitate the cleaning of the units, reduce microbial proliferation inside them, and ensure good resistance to detergents and disinfectants used during maintenance operations.

DIN 1946 - Hygiene certification

Certification according to the German DIN 1946 standard represents, compared to units in VDI 6022 version, a further evolution that **Fast** has chosen to make available for its range of air handling units. Specifically designed for hospital or pharmaceutical applications, units in accordance with DIN 1946 specifications emphasize requirements related to material quality and maintenance spaces. The distinctive features of units in DIN 1946 version contribute to enhancing the hygienic conditions of the systems, with clear benefits for the occupants of the serviced areas.

NOISE - Sound-proofing power of the panels

In collaboration with the Department of Technical Physics of the University of Padua, measurements were taken in the laboratory on various types of panelling (50 mm thick) that make up the shell of the air handling units.

EUROVENT - Performance certification

Fast takes part in the Eurovent programme relating to air handling units (AHU). The products concerned appear on the eurovent-certification.com or certiflash.com website. **FAST S.p.A.** participates in the product certification programmes of Eurovent – a European organisation with 15 national member associations bringing together the manufacturers of ventilation, air conditioning and refrigeration equipment from eleven countries. The voluntary certification programmes established and managed by Eurovent provide for a comparison between the technical characteristics declared by the manufacturer in the documentation and in the selection software and the results of the test conducted on real products.



Our Team
at your Service

Our Industrial Culture

Fast is a company with a 30-year history and a commitment to ongoing growth. It maximizes the wealth of experiences, knowledge, market awareness, and customer-centric focus, which are fundamental characteristics of the Giordano Riello International Group, a pioneer in the Italian air conditioning sector.

Every day, we work to ensure that our brand becomes synonymous with reliability and professionalism both in Italy and abroad.

The aim of **Fast** is to give punctual and precise solutions to customers' requirements. We develop a specific computer software for customised selection of the units, which is also used by the sales department and by all involved in the design of air conditioning installations. We supply the necessary tools for the technical and service functions of all customers choosing **Fast** products.



Pre-sale support

Consultancy

Fast, aware of the particular nature and the critical aspects of the HVAC&R sector, works alongside its professionals and offers all the skills and experience it has built up during its 30-plus years of activity.

The support provided by **Fast** involves all the main phases where our products are the leading players in the world of air conditioning systems:

Product training

Consultancy and training about the regulatory aspects of the product
Analysis of the requirements of the specific application that the product will be inserted in (with dedicated meetings at the customer's premises too).

Study and identification of the characteristics of the product best suited to the system (new or undergoing renovation or energy requalification)

Support in the selection of the products via the dedicated selection software

Development of any special technical solutions to meet specific plant requirements, such as those needed to ensure adequate sound attenuation in cinemas and theaters or to satisfy the needs of applications that impose compliance with very stringent hygiene constraints, such as in the pharmaceutical, hospital, and food sectors.

Organisation of guided technical visits to our company

Site inspections to assess installation conditions and guide the configuration of equipment to specific circumstances.

Preparation of the necessary documentation to ensure compliance with current regulations and facilitate the installation and use of our products.

Organisation of supervised performance tests (witness tests) at the cutting-edge laboratories of the Group that **Fast** is part of. These tests allow the customer to verify (prior to installation) that all requisites are fully respected, avoiding any risk of setbacks in the field later on.



Selection
software

Customized solutions

Selection Software

Fast's innovative HVAC&R selection software packages make selection and configurations quicker and easier. On the basis of the air conditioning system begin designed or set up, these software packages allow the most suitable features to be viewed, chosen and configured in a quick, user-friendly manner.

The software users can take advantage of an internal selection support service provided by dedicated technicians who can help resolve any problems. Training courses are also organised, to explain the potential of the software and the continuous updates made to it.

FastNET 2.0 (Aircalc)

The "FastNET 2.0" configuration software is dedicated to the air handling units. It's a powerful sizing tool that's a real design aid for the professionals in this sector. Thanks to an intuitive interface and a step-by-step approach to the selection of the components, after making the required selection the user will have a performance data sheet, a description of the specifications, the psychrometric charts, a detailed dimensional drawing and a preliminary cost estimate. The software is distributed in stand-alone form, but it can be regularly updated via the web.

With the latest software evolution, the professional can complete the configuration of the air handling unit with regulation and control elements; in this way, the unit becomes a "plug & play" solution.



Nationwide
support

Support

Fast is aware that the support for its products can't stop at the time of the sale. The immediate identification of any problems– thanks to technical expertise– and quick interventions mean the customer is supported throughout the lifecycle of the products, which are becoming more and more technologically complex.

All this is made possible by a nationwide assistance organisation (Technical Support Centres coordinated by dedicated HQ personnel), regularly updated by the company by means of specific courses.

The aftersale service can:

- Provide qualified technical assistance for the products;
- Organise and implement the start-up of the units installed, making sure they're operating properly;
- Guarantee the availability of spare parts for the product components;
- Carry out on-site inspections to verify the installation conditions beforehand;
- Arrange visits and scheduled maintenance tasks on the basis of the customer's needs;
- Provide assistance and information about the remaining warranty time and any possible extensions;
- Provide technical documentation for products installed some time ago.



Training

Training

For over 30 years, **Fast** has been constantly committed to promoting the air treatment culture supporting the professionals in this sector with specific training programmes.

Fast is convinced that the only way of facing the latest challenges defined by recent legislation and standards, aimed at reducing the energy impact of systems in buildings, is with a profound knowledge of the products and the plant engineering skills of the professionals out in the field.

Investment in training is constant via:

- **Courses held in the company** by experienced teachers, both in dedicated physical classrooms and virtual ones (online), providing an attendance certificate and the course documentation. During these courses, guided tours of the production plant are organised so that those taking part can see for themselves the reality of what's explained in the classroom;
- **Technical seminars arranged around the country** in collaboration with the Association of Engineers, with the possibility to take advantage of Professional Training Credits Get in touch with us for more information about the upcoming courses and technical seminars.

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Air flow rate from 1.000 to 100.000 m³/h



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Air flow rate from 1.000 to 100.000 m³/h



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Air treatment

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Dehumidification and treatment of swimming pools
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FM

Air handling applications

The air handling units of the FM series are the blend of experience, research and testing in the specific aeraulic machines sector. The FM series adapts to all the specific needs of the system, both with regard to operation and overall sizes allowing different air treatment requirements to be met even in specific fields such as hospitals, the food industry, the pharmaceutical industry and microelectronics.

The FM series is made in full compliance with the provisions of the EN 1886 norm as far as mechanical resistance, air leakage, heat performance and soundproofing is concerned.

The precise frame-panels coupling makes it possible to achieve air leakage values within the values on best class of the UNI EN 1886 standard.





Characteristics

1 - STRUTTURA

Bearing frame made of newgeometry rounded aluminium profiles with corners made of reinforced nylon. The casing is made of 50 mm thick sandwich panels fixed to the frame with exclusive locking profile and complete absence of screws. The precise frame-panels coupling permits uniform pressure over the casing providing excellent air tightness (class B – EN 1886).

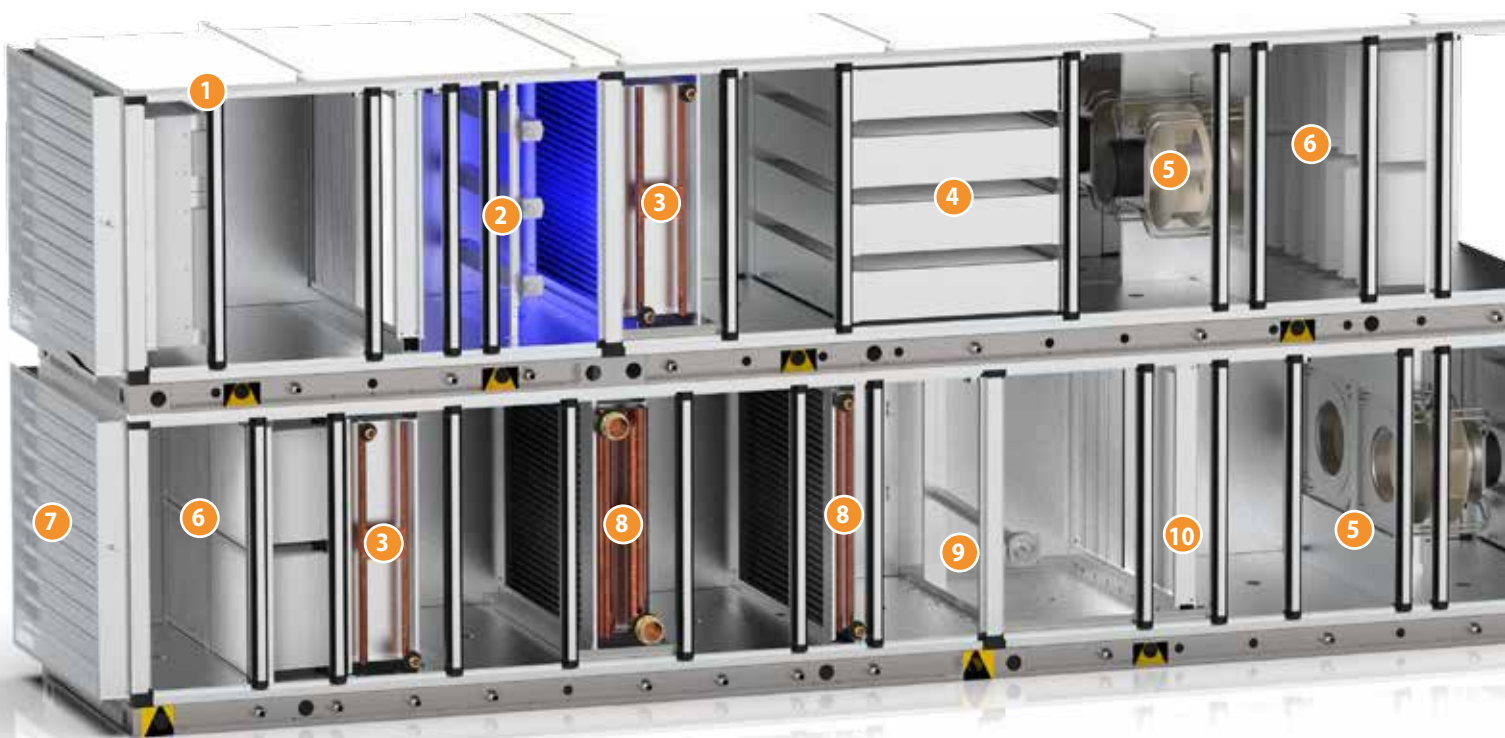
Internal surfaces are perfectly smooth to prevent dirt from accumulating. The thermal and acoustic insulation of the panels can be achieved with:

- *expanded polyurethane* with density 45 kg/m³
- *mineral wool* with density 40 kg/m³
- *mineral wool* with density 100 kg/m³

Aluminium profiles are available in the following versions:

- aluminium with natural finish
- anodized aluminium
- aluminium with natural finish and thermal break
- anodized aluminium with thermal break

The thermal break profile is performed by making a discontinuity in the aluminium profile and placing a layer of extruded polyamide with low thermal conductivity.



2- GERMICIDAL UV-C DEVICES

They are generally used in sequence with very high efficiency filtering systems, to keep under control the bacterial flora and the germs which mainly form in the coils and in the condensate drain pans.

3 - HEAT RECOVERY SYSTEMS

Static cross-flow; static with by-pass damper; static cross-flow with recirculation damper (group 3 dampers with recuperator); heat pipes; rotary; run-around coils.

4 - SOUND ATTENUATORS

Horizontal or vertical configuration.

5 - FANS

Forward bladed fans or reverse (backward) bladed fans, EC motors.

6 - FILTERS

Rigid bag or soft bag filters, roller, absolute, active carbon absorption or electrostatic, with removable cell prefilters.

7 - DAMPERS

Partial or total section.

8 - HEAT EXCHANGERS

Water coils, steam coils , direct expansion coils or electric coils.

9 - HUMIDIFICATION

Adiabatic humidification; isothermal humidification.

10 - DROPLET SEPARATORS

Stainless steel, aluminum alloy or polypropylene.ww



Strength point

IONIZER MODULES

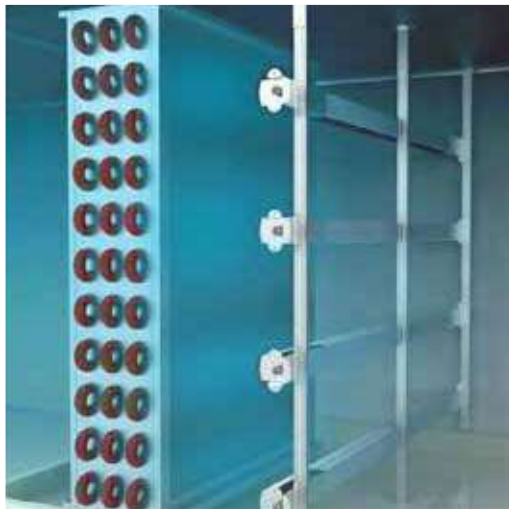
The installation of ionizer modules allows the unit to be sanitized over time thanks to the action of the oxidizing ions generated by photocatalytic oxidation, capable of destroying polluting agents such as bacteria, viruses, molds, allergens and smells.

HUMIDIFICATION SYSTEMS

Humidification systems chosen on the basis of special usage for which they are designed in compliance with the fluid available.

The available systems are the following:

- **adiabatic humidification** honeycomb type, PVC type, with or without recirculation pump, high pressure, compressed air, ultrasonic type and air washer.
- **isothermal humidification** (steam distribution, with immersed electrodes, electrical resistances, with gas generator)



HEAT RECOVERY SYSTEMS

Various types of heat recovery systems make it possible to comply with energy saving regulations currently in force.

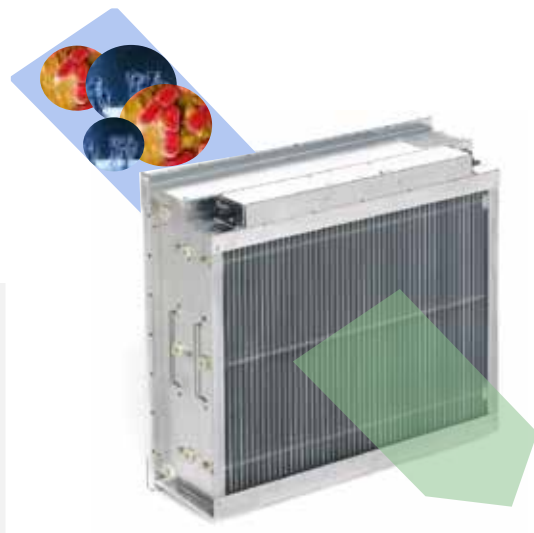
The available heat recovery systems include:

- **cross-flow plate exchangers**
- **counter-flow plate exchangers:** efficiency greater than 90% can be obtained
- **wheel exchangers:** they facilitate the exchange of heat and humidity
- **run-around coils:** positioned on the expulsion and fresh air flows
- **heat pipe:** it is used the phase change of the refrigerant fluid inside the pipes.

FILTRATION

All the types of filtration systems usually used in air handling units are available, thereby ensuring compliance with the room airquality related to the regulations currently in force. Thanks to the innovative electrostatic filters, particles of very small diameter can be retained without losing the filtering capacity over time.

Compared to traditional filtration systems, the electrostatic filters are able to break down, with efficiency up to 99%, microorganisms such as bacteria, germs, molds and yeasts.



Strength point

Integrated and configurable control system



Thanks to thirty years of experience and highly specialized technicians, **Fast** is able to offer air handling units equipped with a regulation system, a power electrical panel, and elements in the field that are completely wired and tested in the factory. The unit thus becomes a “plug and play” solution that requires nothing more than connection to the electrical power (in addition to the aeraulic connection to the duct system and hydraulic connection for the heat exchange).

KEY BENEFITS

Compared to on-site integration of controls, units with an integrated control system in the factory allow for::

- significant savings on installation times
- optimization of construction site procurement phases
- guaranteed costs from the outset
- a single point of contact for air handling units
- support for commissioning
- support for maintenance
- support for spare parts
- safety certification for all applicable European Directives

Fast, through its network of service centers distributed throughout the national territory and with the help of specialized in-house technicians, is able to provide a comprehensive support service for on-site assistance, whether it pertains to commissioning or general assistance services.



FM

Applications for the service sector

Recent research shows that people nowadays spend almost 90% of their time in closed spaces. In this situation, the HVAC&R system must be able to guarantee comfort, energy efficiency and the health of the occupants. Comfort, in other words maintaining the right internal hygrothermometric conditions for human occupancy, for a long time was the only parameter for assessing the suitability of a system. Over the years, thanks also to the evolution in regulations, energy efficiency has taken on a significant role in guaranteeing the sustainability of the building-system as a whole. The future challenge for tertiary systems will instead focus on the issue of people's health: guaranteeing air with a high degree of purity (free from dust, substances, microorganisms) and therefore high standards of IAQ (Indoor Air Quality) of the environments.

The "service sector" application covers a multitude of situations such as hotels, offices, shops, banks, restaurants and cafés, shopping centres and multi-purpose structures. The mechanical systems – and therefore the air conditioning units – have to adapt to the specific needs.

For industry operators, having a wide range of solutions becomes crucial. With over 30 years of experience, **Fast** is the partner for every need, capable of providing everything from air handling units to rooftop units, from heat recovery systems to ducted units.



FM

Air treatment

Air flow rate from 1.000 to 100.000 mc/h

Product characteristics

The FM units are designed for civil, commercial and hotel contexts, with 109 sizes to cover applications in every room, whatever its dimensions. The load-bearing structure uses aluminium alloy profiles, also available in an anodised version and with a thermal break to improve performance in terms of both corrosion resistance and thermal insulation

The panelling has a twin sheet metal wall available in various materials from galvanised to AISI 316 stainless steel, but also aluminium or galvanised with anti-bacterial treatment.



Insulation can be made of polyurethane or mineral wool. The ground-breaking gaskets guarantee reduced leakage, in accordance with EN 1886. The screw-free method for fixing the panels to the load-bearing structure means the panels themselves are not altered in any way and the pressure is evenly distributed across their entire edge, even when they need to be removed for extraordinary maintenance and subsequently reassembled.





FM

Applications for the hospital sector

Air handling units for the hospital sector must adhere to stringent hygiene and cleanliness requirements to minimize the risks of internal development of biological and chemical contaminants. The solution developed by **Fast** includes, in addition to the geometric and construction features dictated by recent regulatory documents.

Fast's proposed solution is developed in collaboration with the customer to meet various system solutions and required air conditioning conditions.





FM - Hygienic

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

FM Hygienic units are designed for applications where special materials are required because the units are subjected to sanification procedures using potentially aggressive disinfectants on their surfaces and internal components. The possible options are noble materials like stainless steel, or special painting on fans and/or other components such as the heat exchanger coils. These units can also be fitted with special filters to minimise the microbial level in the delivery air.

109 sizes available.

Load-bearing structure and modular construction that guarantee component standardisation and optimum flexibility of use. Sandwich panelling, 50 mm thick.



FM - VDI 6022

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

The FM VDI 6022 units have been certified as meeting the strict requisites of the German standard VDI 6022 (Hygiene requisites for ventilation and air conditioning units), recognised at international level.

Units complying with the technical guidelines of this standard must respect specific sizing criteria and be made using approved materials and components. The construction choices and, more generally, the whole production process are such as to facilitate their cleaning, reduce internal microbial proliferation and ensure good resistance to the detergents and disinfectants used during maintenance work.

The main characteristics of this certified range are, for instance: access sections allowing all the components, panels and draining tanks to be easily inspected and cleaned, to ensure the quick drainage of water even during the sanitisation phases. The certification process was carried out by Eurocertifications Srl, Italian partner of TÜV Hessen in Germany.

109 sizes available.

Load-bearing structure and modular construction that guarantee component standardisation and optimum flexibility of use. Sandwich panelling, 50 mm thick.



FM - Surgery

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

The units of the FM Surgery line meet the needs of hospital applications, especially operating theatres where the single product has to combine various aspects that together make these units the ideal solution.

These units are compact, to allow installation in small areas like the service room of the operating theatre. At the same time, they fully meet all the hygiene criteria with regards materials and components, and fulfil the inspection requisites to enable the regular maintenance and sanitisation of all the surfaces that come into contact with the air. Thanks to their regulation system, the necessary overpressure conditions can be maintained in the operating theatre to avoid pathogenic micro-organisms from entering via the adjacent rooms.

109 sizes available.

Load-bearing structure and modular construction that guarantee component standardisation and optimum flexibility of use. Sandwich panelling, 50 mm thick.



FM - Pharma

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

The units of the FM Pharma range are designed to ensure that all the surfaces in contact with the air are kept hygienic and sanitised, so they require materials able to resist the potentially aggressive detergents used during routine maintenance work that also involves the regular disinfection of the inside of the machine. The pharmaceutical industry calls for the highest standards of materials and components, and there are often sections with UVC lamps for the treatment of cooling coil surfaces or other components where condensate may form and create a risk of a biofilm of mould, yeast or other pathogenic micro-organisms that could contaminate the packaging lines.

109 sizes available.

Load-bearing structure and modular construction that guarantee component standardisation and optimum flexibility of use. Sandwich panelling, 50 mm thick.





FM

Applications for the theatre sector

The mechanical systems designed for entertainment structures (cinemas, theatres, concert halls and other similar places) have certain specific requirements that call for dedicated air conditioning units.

The main aspects of this type of application include:

- **acoustic:** the reduction of the sound emission values of the machinery, combined with a careful design of the air distribution system, is of fundamental importance to ensure the performance of the shows without compromising listening.
- **thermohygrometric well-being and air quality:** the structures for the shows are designed to accommodate many people (high density of occupancy, high crowding) and therefore it is necessary to provide high air exchange
- **air purification:** to contain energy waste related to air exchange and to limit the spread of viruses and pathogens in general, it is of fundamental importance to provide sanitation systems that allow a greater quantity of recirculation air to be used safely.
- **partialization of the systems:** according to occupancy: often the structures are multifunctional (need to partialize the air treatment according to the occupied areas) or the same area may have discontinuity of occupation (need for spare parts according to the actual crowding).



FM - Theatre

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

FM Theatre units use the knowledge gained from the development of the FM Low Noise range, combined with that acquired on systems designed for use in areas with a high degree of crowding. In those situations, it's vital to respect the hygrothermometric parameters in order to maintain environmental comfort and at the same time ensure that people's health is safeguarded thanks to good air renewal to keep levels of CO₂, VOC and contaminants in general within the limits. These units are designed for any type of context, such as theatres and cinemas, where it's necessary to find the right balance between quiet operation and the right air flow.



FM - Low Noise

Air treatment

Air flow rate from 1.000 to 100.000 m³/h

Product characteristics

The units of the FM Low Noise range are designed for special applications where the limitation of sound emissions is vital. For this type of machine, must necessarily be installed low-noise fans as the fans are the main source of sound emissions in the units.

Another special construction feature that helps make these machines quieter is the noise damper purposely developed to minimise the sound pressure level downstream of the equipment. Last, but certainly not least, special panelling whose thickness and material create a shell that prevents widespread sound pollution.





FM

Applications for the swimming pool sector

The particular characteristics of the environments such as swimming pools, wellness centers and fitness centers require plant solutions and specific air treatment systems in such a way as to obtain maximum energy savings with the needs of environmental comfort.

The systems, generally of the all-air type, are in fact characterized by being highly “energy-intensive” or have a very high energy requirement : estimates indicate that the cost of the energy necessary for the operation of the pool can also reach 35% of the total management costs.

Environmental comfort and the well-being of the people must be ensured by adequate dehumidification of the rooms, normally obtained by expelling the internal air and replacing it with fresh air.

It is also important to take care of the air distribution system minimizing the speed of the air at the level of the tank (maximum 0.1 m / s) in order not to have excessive evaporation.

It is also essential very accurate climate control : even small deviations can lead to a significant increase in energy consumption.



Alfamini

Dehumidification and treatment of swimming pools

Air flow rate from 4.000 to 13.000 m³/h

Product characteristics

The AlfaMini units represent the ideal solution to grant comfort conditions in small-medium wellness areas, spa, fitness centres, small swimming pools, sports centres, etc.

The unit combines a cooling circuit and a heat recovery system for the sensible and latent heat, specifically optimised to minimize the energy consumptions. The main function of the unit, which is supplied as a “plug & play” machine, is to dehumidify and at the same time to grant the wellness conditions of the served ambience. The units equipped with an efficient heat exchange system on the water side, which is necessary to partially heat the swimming pool water without additional costs. The frame and all internal components are designed to guarantee the maximum resistance to corrosion.



TECHNICAL DATA

AlfaMini		025	040	060	100	130
Nominal air flow (supply/extract)	m ³ /h	2.500	4.000	6.300	10.000	13.000
Available pressure (supply/extract)	Pa	400	400	400	400	400
Heat recovery capacity recovered (1)	kW	7,9	12,6	20,4	32	41,5
Max heat recovery efficiency (1)	%	80,8	79,3	80,1	79,5	79,4
Refrigerant circuit recovered capacity (1)	kW	7,5	10,5	21,3	31,7	45,7
Total recovered capacity (1)	kW	15,4	23,1	41,6	63,7	87,3
Compressor absorbed power (1)	kW	1,3	1,6	3,7	6	8,4
COP (1)	-	11,8	14,4	11,2	10,6	10,4
COP (2)	-	3,9	4	4,1	4	4,1
Total dehumidification capacity (1)	kg/h	15,5	25,2	40,1	63,7	82,7
Supply fan power input	kW	1,6	2,6	3,7	5,9	7,6
Extract fan power input	kW	1,2	1,9	2,7	4,5	5,7
Type / number of compressors	n°			Scroll / 1		
Hot water heating coil (standard)						
Capacity (without recovery active) (1)	kW	26,1	35,4	61,6	95,3	124,5
Water flow rate (3)	l/h	2.250	3.050	5.300	8.200	10.700
Water pressure drop (3)	kPa	23,5	43,7	33,1	48,8	46,3
Plate heat exchanger R410A/non aggressive water (standard)						
Nominal water flow rate (4)	l/h	950	1.120	2.500	3.600	5.400
Water pressure drop (4)	kPa	19	19	31	32	33
Plate heat exchanger accessible non aggressive water/pool water (standard)						
Water flow rate nominal pool (5)	l/h	1.200	1.400	3.100	4.500	6.800
Pressure drop pool side (5)	kPa	32,4	34	31,4	33	34,5
Pressure drop intermediate circuit side (5)	kPa	21,2	22,3	20,6	21,6	22,5
Electrical data						
Power supply				400 V - 3 ph - 50 Hz		
Maximum total current input supply fan	A	3,5	6,2	11	14,6	15
Maximum total current input extract fan	A	2,6	4,9	6,4	11,3	11,3
Unit maximum current input	A	11,6	17,1	32,4	49,3	61,3
Unit starting current	A	32,1	46,1	91,4	181,9	184,3

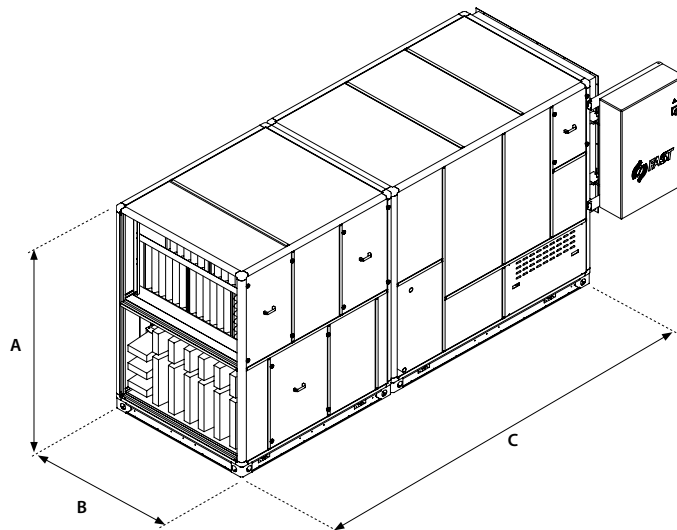
(1) External air 0°C, 80% RH; internal air 29°C, 60% RH.

(2) Values as per conditions of D.M. 7 april 2008 for heating only operation.

(3) Water temperature inlet/outlet 70/60°C; water pressure drop including 3 way valve.

(4) Water temperature inlet/outlet non aggressive 27/37°C.

(5) Water temperature inlet/outlet intermediate circuit 37/27°C; water temperature inlet/outlet pool 25/35°C.



DIMENSIONS

AlfaMini		25	40	60	100	130
A	mm	1.765	1.765	2.245	2.405	2.405
B	mm	895	895	1.055	1.375	1.695
C	mm	3.230	3.390	4.190	4.190	4.670
Weight	kg	900	1.000	1.350	2.060	2.600

The dimensions and weights are subject to changes.

Alfamax

Dehumidification and treatment of swimming pools

Air flow rate from 16.000 to 25.000 m³/h

Product characteristics

The AlfaMax units represent the ideal solution to grant comfort conditions in medium-large wellness areas, spa, fitness centres, swimming pools, sports centres, etc. The unit combines a heat pump and an heat recovery system composed by a double plate and cross flow exchanger, specifically optimized to minimize the energy consumptions. The main function of the unit, which is supplied as a “plug & play” machine, is to dehumidify the served ambience and at the same time to grant the temperature conditions. The unit can be equipped with an efficient heat exchange system on the water side, which is necessary to partially heat the swimming pool water without additional costs. The frame and all internal components are designed to guarantee the maximum resistance to corrosion.



TECHNICAL DATA

Afamax		160	200	250
Nominal air flow (supply/extract)	m ³ /h	16.000	20.000	25.000
Available pressure (supply/extract)	Pa	400	400	400
Heat recovery capacity recovered (1)	kW	59,6	68,6	89,2
Max heat recovery efficiency (1)	%	93	86	89,2
Refrigerant circuit recovered capacity (1)	kW	46,3	53,6	69,4
Total recovered capacity (1)	kW	105,9	122,2	158,6
Compressor absorbed power (1)	kW	8,5	9,2	12,8
COP (1)	-	12,5	13,3	12,4
COP (2)	-	4,0	3,9	3,9
Total dehumidification capacity (1)	kg/h	102,2	127,6	159,5
Supply fan power input	kW	10,9	13,7	17,7
Extract fan power input	kW	8,3	9,8	12,4
Type / number of compressors	n°		Scroll / 1	
Hot water heating coil (standard)				
Capacity (without recovery active) (1)	kW	131,9	182,7	205,9
Water flow rate (3)	l/h	11.300	15.700	17.700
Water pressure drop (3)	kPa	43,7	37,9	42,2
Plate heat exchanger R410A/non aggressive water (standard)				
Water flow rate nominal (4)	l/h	5.760	6.450	8.260
Water pressure drop (4)	kPa	33	33	33
Plate heat exchanger accessible non aggressive water/pool water (standard)				
Water flow rate nominal pool (5)	l/h	7.200	8.100	10.400
Pressure drop pool side (5)	kPa	34,2	34,7	34,2
Pressure drop intermediate circuit side (5)	kPa	22,3	22,7	22,2
Electrical data				
Power supply		400 V - 3 ph - 50 Hz		
Maximum total current input supply fan	A	29,2	41,0	42,0
Maximum total current input extract fan	A	22,0	22,6	30,0
Unit maximum current input	A	86,2	99,6	123,0
Unit starting current	A	209,0	223,0	287,0

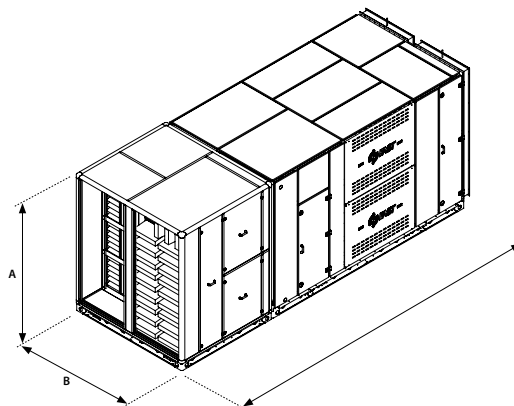
(1) External air 0°C,80% RH; internal air 29°C,60% RH.

(2) Values as per conditions of D.M. 7 april 2008 for heating only operation.

(3) Water temperature inlet/outlet 70/60°C; water pressure drop including 3 way valve.

(4) Water temperature inlet/outlet non aggressive 27/37°C.

(5) Water temperature inlet/outlet intermediate circuit 37/27°C; water temperature inlet/outlet pool 25/35°C.



DIMENSIONS

Afamax		160	200	250
A	mm	2.085	2.405	2.405
B	mm	2.015	2.175	2.335
C	mm	5.790	5.790	6.430
Weight	kg	2.780	3.250	3.580

The dimensions and weights are subject to changes.



Heat recovery unit

Applications for the service sector

Recent research shows that people nowadays spend almost 90% of their time in closed spaces. In this situation, the HVAC&R system must be able to guarantee comfort, energy efficiency and the health of the occupants. Comfort, in other words maintaining the right internal hygrothermometric conditions for human occupancy, for a long time was the only parameter for assessing the suitability of a system. Over the years, thanks also to the evolution in regulations, energy efficiency has taken on a significant role in guaranteeing the sustainability of the building-system as a whole. The future challenge for tertiary systems will instead focus on the issue of people's health: guaranteeing air with a high degree of purity (free from dust, substances, microorganisms) and therefore high standards of IAQ (Indoor Air Quality) of the environments.

The "service sector" application covers a multitude of situations such as hotels, offices, shops, banks, restaurants and cafés, shopping centres and multi-purpose structures. The mechanical systems – and therefore the air conditioning units – have to adapt to the specific needs.

For industry operators, having a wide range of solutions becomes crucial. With over 30 years of experience, **Fast** is the partner for every need, capable of providing everything from air handling units to rooftop units, from heat recovery systems to ducted units.



HRR

High efficiency heat recovery unit with rotating recovery unit.

Air flow rate from 1.000 to 30.000 m³/h

Product characteristics

- High-efficiency rotary heat recovery unit with low pressure drops (also with the option of hygroscopic surface treatment). The heat recovered from the exchanger minimizes the contribution of the air conditioning system.
- Plug fan ventilators with electronically controlled motors (up to size 17) or with high-efficiency motors controlled by inverters.

HRR units are designed to meet the hygrothermometric well-being needs and air renewal and quality requirements typical of civil contexts.

These are "Plug & Play" units, as they are directly fitted with electronic adjustment and an electrical power panel. The special control software can maximise the use of the unit in energetically favourable conditions.



TECHNICAL DATA

HRR		07	09	12	15	17	21	24
HEAT RECOVERY UNIT								
Power supply		400V 3N ~ 50Hz						
Unit type		UVNR (Unit ventilation not residential)						
Heat capacity recovered (EN308) (1)	kW	5,8	10,3	19,4	31,4	41,3	64,3	85,0
Dry heating efficiency (2)	%	79,0	78,9	78,3	78,8	78,9	78,5	78,7
Information In Compliance With Annex V Of Regulation Eu No. 1253/2014								
Nominal air flow rate supply / recovery	m ³ /s	0,31	0,54	1,03	1,65	2,17	3,39	4,47
Nominal air flow rate supply / recovery	m ³ /h	1100	1950	3700	5950	7800	12200	16100
Fans (3)								
Commissioning	type	Analog signal of EC fan						
Type	type	Plug-fan						
Number	n°	1	1	1	1	1	1	1
Supplied electrical power consumption	kW	0,27	0,48	0,85	1,31	1,90	2,20	2,80
Recovered electrical power consumption	kW	0,27	0,48	0,86	1,30	1,90	2,20	2,80
Total input electric power	kW	0,84	2,04	6,10	8,78	10,20	22,37	30,37
SFP int.	W/(m ³ /s)	1061,00	994,00	927,00	733,00	669,00	778,00	759,00
SFP int. lim. 2018	W/(m ³ /s)	1141	1106	1033	942	887	886	887
Filters face velocity	m/s	1,8	1,9	1,8	1,8	1,8	1,6	1,7
Nominal external pressure Δp (3)	Pa	100	100	100	100	100	100	100
Useful static supply pressure	Pa	360	520	1000	1100	900	1440	1500
Useful static recovery pressure	Pa	360	520	1000	1100	900	1440	1500
Supplied internal pressure drop Δp_s int.	Pa	269	262	276	222	216	240	241
Recovered internal pressure drop Δp_s int.	Pa	272	265	280	225	219	243	244
Fans static efficiency (4)	%	64,5	65,5	62,8	64,1	67,2	64,7	65,8
Internal leakage (5)	%	< 3	< 3	< 3	< 3	< 3	< 3	< 3
External leakage	%	0,2	0,2	0,1	0,1	0,1	0,1	0,1
Air filter								
Delivery filter energy classification		D						
Recovery filter energy classification		D						

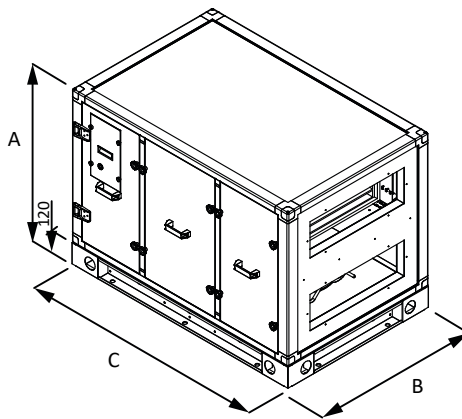
(1) Expelled air: Tdb=25°C; Twb<14°C. Fresh air: Tdb=5°C.

(2) Relation between the inlet air heating gain and the expulsion air heating loss, both relating to the outside temperature, measured in dry reference conditions, with balanced mass flow and an internal/external air heating difference of 20K, excluding the heating gain generated by the fan motors and the internal leakage.

(3) Performances referring to clean filters

(4) According to regulation EU 327/2011

(5) External leakage test performed at +400 Pa and -400 Pa; internal leakage test performed at 250 Pa



DIMENSIONS

HRR		07	09	12	15	17	21	24
A	mm	965	1285	1445	1765	2085	2405	2725
B	mm	895	1005	1375	1695	1855	2335	2665
C	mm	1375	1535	2045	2365	2365	3005	3005
Empty weight	kg	240	340	570	820	1010	1610	1980

The dimensions and weights are subject to changes.

HRF

Heat recovery unit with yield above 90%.

Air flow rate from 790 to 4.250 m³/h

Product characteristics

- heat recovery from the exhaust air using a high-efficiency aluminium plate heat recovery unit with counter-current exchange. The heat recovery unit has a yield of over 90%, EUROVENT CERTIFIED;
- filtration of the air flows (high-efficiency for the fresh air flow);
- plug fan ventilation with EC electronic control motor with low power consumption;
- design aimed at reducing the overall value of the Specific Fan Power;
- free cooling/heating to make full use of the favourable conditions of the outside air;
- antifreeze function in the winter season;
- complete control of the ventilation, thermoregulation with advanced energy saving functions;
- integration of the necessary power using a wide range of accessories;
- Plug & Play installation logic (internal or external installation) with capacity to interface with BMS systems



TECHNICAL DATA

HRF		008	010	013	020	031	042
Heat recovery unit							
Power supply		230V~50Hz				400V 3~50Hz	
Unit type		UVNR (non-residential ventilation unit)					
Heat recovery system type	Type/n°	Static at counter-current flow / 1					
Heat capacity recovered (EN308) (1)	kW	4,2	5,4	7,0	10,7	16,6	22,8
Dry heating efficiency (2)	%	80,0	79,9	80,0	79,9	79,9	83,8
Information in compliance with Annex V of regulation EU no. 1253/2014							
Nominal air flow rate supply / recovery	m³/s	0,22	0,28	0,36	0,56	0,86	1,18
Nominal air flow rate supply / recovery	m³/h	790	1000	1300	2000	3100	4250
Minimum air flow rate	m³/h	200	200	400	1000	1000	1300
Maximum air flow rate	m³/h	980	1260	1530	2350	3700	4600
Fans (3)							
Commissioning	type	Analogue signal of EC fan (0-10Vdc)					
Type	type	EC					
Number	no.	2	2	2	2	2	2
Supplied electrical power consumption	kW	0,16	0,24	0,33	0,60	0,79	1,30
Recovered electrical power consumption	kW	0,15	0,23	0,33	0,56	0,76	1,20
Total input electric power	kW	0,31	0,47	0,66	1,16	1,55	2,50
Maximum input power	kW	0,60	1,24	1,26	1,66	5,26	5,26
Maximum input power	A	4,6	7,5	7,5	9,3	11,1	11,1
SFP int.	W/(m³/s)	625,00	667,00	743,00	1142,00	919,00	1211,00
SFP int. lim. 2018	W/(m³/s)	1127	1118	1109	1227	1031	1253
Filters face velocity	m/s	1,8	2,0	1,8	2,2	2,2	2,1
Nominal external pressure Δp (3)	Pa	200	250	250	250	250	225
Useful static supply pressure	Pa	191	218	169	134	215	143
Useful static recovery pressure	Pa	196	233	175	152	255	184
Supplied internal pressure drop Δp_s int.	Pa	174	198	219	319	304	372
Recovered internal pressure drop Δp_s int.	Pa	176	189	227	355	293	379
Fans static efficiency (4)	%	61,7	57,2	57,2	61,8	66,9	62,7
Internal leakage (5)	%	0,3	0,3	0,3	0,1	0,3	0,2
External leakage	%	< 3	< 3	< 3	< 3	< 3	< 3
Air filter							
Delivery filter energy classification		B					
Recovery filter energy classification		On request					

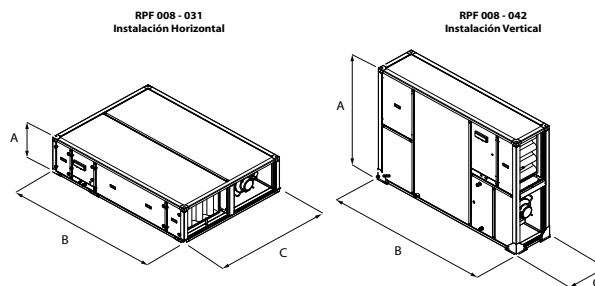
(1) Expelled air: Tdb=25°C; Twb<14°C. Fresh air: Tdb=5°C.

(2) Relation between the inlet air heating gain and the expulsion air heating loss, both relating to the outside temperature, measured in dry reference conditions, with balanced mass flow and an internal/external air heating difference of 20K, excluding the heating gain generated by the fan motors and the internal leakage.

(3) Performances referring to clean filters

(4) According to regulation EU 327/2011

(5) External leakage test performed at +400 Pa and -400 Pa; internal leakage test performed at 250 Pa



DIMENSIONS

HRF			008	010	013	020	031	042
A	O,P	mm	450	450	524	560	700	-
	V,Z	mm	1054	1258	1374	1694	1948	1550
B	O,P	mm	1915	1915	2174	2334	2654	-
	V,Z	mm	1915	1915	2174	2334	2654	2974
C	O,P	mm	1054	1258	1374	1694	1948	-
	V,Z	mm	450	450	524	560	700	1130
Empty weight	O,P	kg	194	220	264	328	452	-
	V,Z	kg	194	220	264	328	452	585

The dimensions and weights are subject to changes.



Applications for the service sector

Recent research shows that people nowadays spend almost 90% of their time in closed spaces. In this situation, the **Roof-top** system must be able to guarantee comfort, energy efficiency and the health of the occupants. Comfort, in other words maintaining the right internal hygrothermometric conditions for human occupancy, for a long time was the only parameter for assessing the suitability of a system. Over the years, thanks also to the evolution in regulations, energy efficiency has taken on a significant role in guaranteeing the sustainability of the building-system as a whole. The future challenge for tertiary systems will instead focus on the issue of people's health: guaranteeing air with a high degree of purity (free from dust, substances, microorganisms) and therefore high standards of IAQ (Indoor Air Quality) of the environments.

The "service sector" application covers a multitude of situations such as hotels, offices, shops, banks, restaurants and cafés, shopping centres and multi-purpose structures. The mechanical systems – and therefore the air conditioning units – have to adapt to the specific needs.

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RFM N1-N8

Roof top unit for applications with an average degree of crowding
Cooling capacity from 13 to 51 kW

Product characteristics

The roof top units of the RFM range are designed for applications with an average degree of crowding such as shopping centres, shops, offices and production areas as they can operate with 30% of fresh and exhaust air (MB4 version).

The units stand out for their:

- low running costs thanks to precise technological choices for ventilation, the cooling circuit and the electronics;
- simplified installation thanks to compact dimensions and the “Plug & Play” logic;
- adaptability to meet specific needs and guarantee of excellent air quality with a wide selection of configurations and accessories.



TECHNICAL DATA

RFM		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1									
Cooling performances (1)									
Cooling capacity	kW	12,70	15,50	19,10	22,20	28,60	33,00	43,00	47,00
Sensible cooling capacity	kW	8,60	10,40	12,80	14,80	19,00	22,40	28,80	32,10
Compressors absorbed power	kW	3,30	4,20	5,00	6,00	7,20	8,70	11,40	12,50
EER compressors		3,87	3,71	3,82	3,69	3,98	3,79	3,75	3,75
Heating performances (2)									
Heating capacity	kW	13,50	16,10	19,90	23,00	29,60	34,00	44,70	48,50
Compressors absorbed power	kW	3,07	3,65	4,28	5,15	6,23	6,86	9,43	10,02
COP compressors		4,40	4,41	4,64	4,47	4,75	4,96	4,74	4,84

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

RFM		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB2									
Cooling performances (1)									
Cooling capacity	kW	13,42	16,34	20,16	23,35	30,21	34,79	45,26	49,44
Sensible cooling capacity	kW	8,92	10,86	13,40	15,40	19,70	23,40	30,00	33,50
Compressors absorbed power	kW	3,33	4,22	5,04	6,07	7,29	8,85	11,65	12,74
EER compressors		4,03	3,87	4,00	3,85	4,14	3,93	3,88	3,88
Heating performances (2)									
Heating capacity	kW	13,65	16,24	20,02	23,18	29,87	34,22	45,17	48,94
Compressors absorbed power	kW	2,77	3,31	3,86	4,65	5,62	6,15	8,58	9,22
COP compressors		4,92	4,91	5,18	4,99	5,32	5,57	5,26	5,31

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

RFM		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB4									
Cooling performances (1)									
Cooling capacity	kW	13,49	16,49	20,33	23,58	30,45	35,16	45,65	49,95
Sensible cooling capacity	kW	8,93	10,91	13,40	15,50	19,80	23,50	30,20	33,60
Compressors absorbed power	kW	3,27	4,12	4,92	5,90	7,13	8,59	11,39	12,43
EER compressors		4,13	4,00	4,13	4,00	4,27	4,10	4,01	4,02
Heating performances (2)									
Heating capacity	kW	14,00	16,81	20,69	24,05	30,77	35,50	46,63	50,79
Compressors absorbed power	kW	2,81	3,36	3,92	4,73	5,71	6,27	8,74	9,38
COP compressors		4,98	5,00	5,28	5,08	5,39	5,67	5,33	5,41

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

RFM		N1	N2	N3	N4	N5	N6	N7	N8	
Energy Index										
SEER	H	W/W	3,73	3,60	3,76	3,70	3,86	3,86	3,80	3,77
nsc	H	%	146.1%	141.2%	147.5%	144.8%	151.5%	151.5%	148.8%	147.8%
Pdesignh	H	kW	7	9	11	13	16	19	25	26
SCOP	H	W/W	3,47	3,34	3,46	3,36	3,29	3,50	3,47	3,44
nsh	H	%	135.6%	130.5%	135.4%	131.2%	128.7%	137.1%	135.7%	134.4%

GENERAL TECHNICAL DATA

RFM		N1	N2	N3	N4	N5	N6	N7	N8
Power supply									
Power supply		400V~3N 50Hz	400V~3N 50Hz	400V~3N 50Hz	400V~3N 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor									
Type	type	Scroll							
Number	n°	2	2	2	2	2	2	2	2
Circuit	n°	2	2	2	2	2	2	2	2
Refrigerant	type	R410A							
Sound data									
Sound power level	dB(A)	73,3	73,7	76,4	76,3	81,2	79,7	82,8	82,9
Sound pressure level (1)	dB(A)	65,3	65,8	68,5	68,3	73,2	71,7	74,8	74,9

(1) MB1 configuration sound pressure measured in free field (Q=2), 1m away from the outer surface of the ducted unit, high static pressure 50 Pa (EN ISO 9614-2). 3 dB(A) tolerance on sound power level (Eurovent 8/1).

FANS

RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2, MB4										
External fans										
Type	H	type	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Number	H	n°	2	2	2	2	2	2	2	2

RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2, MB4										
Internal fans										
Nominal air flow rate	H	m³/h	2000	2800	3500	4000	5000	6500	8000	9500
Minimum air flow rate	H	m³/h	1800	1800	2700	2700	4000	4000	6500	6500
Maximum air flow rate	H	m³/h	2900	2900	4100	4100	6900	6900	10100	10100

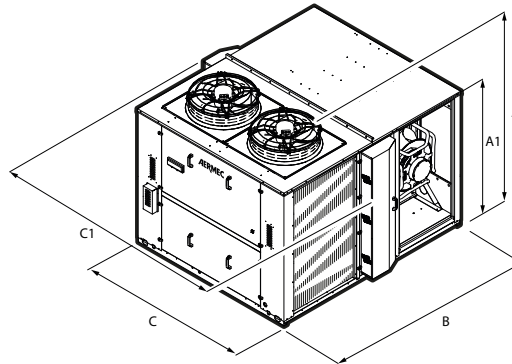
RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2										
Delivery										
Type	H	type	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC
Number	H	n°	1	1	1	1	1	1	1	1
Maximum useful head (1)	H	Pa	755	575	460	555	435	460	575	765
High static pressure (EN14511) (1)	H	Pa	100	100	124	124	124	150	150	200

(1) At the nominal/maximum flow rate with a new clean air filter.

RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB4										
Delivery										
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	n°	1	1	1	1	1	1	1	1
Maximum useful head (1)	H	Pa	755	575	460	555	435	460	575	765
High static pressure (EN14511) (1)	H	Pa	100	100	124	124	124	150	150	200

(1) At the nominal/maximum flow rate with a new clean air filter.

DIMENSIONS



RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	1560	1560	1560	1560	1910	1910	1910	1910
C1	H	mm	-	-	-	-	-	-	-	-
Empty weight	H	kg	335	335	405	405	594	594	745	745
RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB2										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	1560	1560	1560	1560	1910	1910	1910	1910
C1	H	mm	-	-	-	-	-	-	-	-
Empty weight	H	kg	335	335	405	405	594	594	745	745
RFM			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB4										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	-	-	-	-	-	-	-	-
C1	H	mm	1850	1850	1850	1850	2200	2200	2200	2200
Empty weight	H	kg	345	345	429	429	619	619	775	775

The dimensions and weights are subject to changes.

RFM 09-16

Roof top unit for applications with an average degree of crowding

Cooling capacity from 50 to 135 kW

Product characteristics

The roof top units of the RFM range are autonomous air-to-air units designed to completely treat the air.

The units stand out for their:

- low running costs obtained through the technologies used for ventilation, the cooling circuit and the electronics.
- easy installation thanks to the small dimensions and "Plug & Play" logic. adaptability to requirements and a guarantee of a high quality of air achievable by selecting from a vast range of configurations and accessories. These units are ideal for places with an average degree of crowding such as shopping centres, shops, offices and production areas, as they can operate with 30% of fresh and exhaust air (MB2 - MB3 - MB4 - MBT version).



TECHNICAL DATA

RFM		09	10	11	12	13	14	15	16
Configuration: MB1									
Cooling performances (1)									
Cooling capacity	kW	50,00	60,10	68,60	81,00	93,40	103,50	114,00	125,30
Sensible cooling capacity	kW	40,10	46,10	52,70	63,20	70,90	81,80	89,30	97,10
Compressors absorbed power	kW	11,90	14,40	18,80	17,90	23,10	25,60	30,50	35,50
EER compressors		4,20	4,17	3,65	4,53	4,04	4,04	3,74	3,53
Heating performances (2)									
Heating capacity	kW	49,40	61,10	69,30	80,60	93,70	102,20	113,70	126,60
Compressors absorbed power	kW	9,80	12,20	15,50	15,70	20,60	21,00	24,40	28,40
COP compressors		5,04	5,01	4,47	5,13	4,55	4,87	4,66	4,46

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

RFM		09	10	11	12	13	14	15	16
Configuration: MB2									
Cooling performances (1)									
Cooling capacity	kW	52,90	63,30	72,30	85,30	98,40	108,80	120,10	131,60
Sensible cooling capacity	kW	42,70	48,80	55,90	67,10	75,00	86,70	94,80	102,80
Compressors absorbed power	kW	12,10	14,60	19,00	18,10	23,30	25,90	30,90	35,90
EER compressors		4,37	4,34	3,81	4,71	4,22	4,20	3,89	3,67
Heating performances (2)									
Heating capacity	kW	50,50	61,90	70,60	82,20	94,90	103,60	115,30	128,10
Compressors absorbed power	kW	9,00	11,20	14,10	14,30	18,90	19,20	22,50	26,00
COP compressors		5,61	5,53	5,01	5,75	5,02	5,40	5,12	4,93

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

RFM		09	10	11	12	13	14	15	16
Configuration: MB3									
Cooling performances (1)									
Cooling capacity	kW	53,40	63,70	73,10	86,10	99,30	110,00	121,30	133,30
Sensible cooling capacity	kW	43,00	48,90	56,20	67,40	75,30	87,00	95,10	103,20
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,53	4,49	3,95	4,86	4,36	4,38	4,03	3,83
Heating performances (2)									
Heating capacity	kW	52,10	64,10	74,10	85,00	98,60	107,80	120,60	134,30
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
COP compressors		5,66	5,62	5,15	5,82	5,16	5,56	5,27	5,03

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

RFM		09	10	11	12	13	14	15	16
Configuration: MB4									
Cooling performances (1)									
Cooling capacity	kW	53,40	63,70	73,10	86,10	99,30	110,00	121,30	133,30
Sensible cooling capacity	kW	43,00	48,90	56,20	67,40	75,30	87,00	95,10	103,20
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,53	4,49	3,95	4,86	4,36	4,38	4,03	3,83
Heating performances (2)									
Heating capacity	kW	52,10	64,10	74,10	85,00	98,60	107,80	120,60	134,30
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
COP compressors		5,66	5,62	5,15	5,82	5,16	5,56	5,27	5,03

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

TECHNICAL DATA

RFM		09	10	11	12	13	14	15	16
Configuration: MBT									
Cooling performances (1)									
Cooling capacity	kW	57,10	67,80	78,00	90,50	103,70	116,90	128,80	140,60
Sensible cooling capacity	kW	46,60	53,00	61,20	71,90	79,70	94,00	102,60	110,60
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,84	4,77	4,22	5,11	4,55	4,66	4,28	4,04
Heating performances (2)									
Heating capacity	kW	55,40	68,00	78,30	90,10	103,60	114,40	127,50	141,40
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
COP compressors		6,02	5,96	5,44	6,17	5,42	5,90	5,57	5,30
Recovery efficiency	%	84%	92%	87%	90%	85%	85%	82%	78%

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

RFM			09	10	11	12	13	14	15	16
Energy index										
SEER	H	W/W	4,24	3,94	3,76	3,92	3,89	4,22	4,10	4,05
η_{sc}	H	%	166.6%	154.5%	147.2%	153.9%	152.7%	165.7%	161.1%	159.1%
Pdesignh	H	kW	29	34	38	46	52	57	62	71
SCOP	H		3,59	3,50	3,30	3,27	3,22	3,47	3,41	3,38
η_{sh}	H	%	140.5%	137.0%	128.8%	127.7%	126.0%	135.9%	133.5%	132.3%

GENERAL TECHNICAL DATA

RFM			09	10	11	12	13	14	15	16
Power supply										
Power supply	H		400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor										
Type	H	type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Numer	H	n°	2	2	2	2	2	2	2	2
Circuit	H	n°	1	1	1	1	1	1	1	1
Refrigerant	H	type	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Partialization step	H	n°	2	2	3	3	3	2	3	3

FANS

RFM			09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT										
External fans										
Type	H	type	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC
Number	H	n°	2	2	2	2	2	2	2	2

RFM			09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT										
Internal fans										
Nominal air flow rate	H	m ³ /h	9500	11000	13000	15000	17000	20000	22000	24000
Minimum air flow rate	H	m ³ /h	6650	7700	9100	10850	12600	14000	15400	16800
Maximum air flow rate	H	m ³ /h	9500	11000	13000	15500	18000	20000	22000	24000

RFM			09	10	11	12	13	14	15	16
Configuration: MB3										
Recovery										
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	n°	1	1	1	2	2	2	2	2

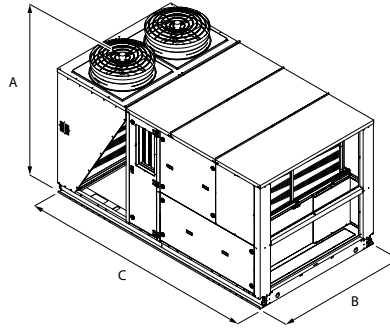
RFM			09	10	11	12	13	14	15	16
Configuration: MBT										
Exhaust										
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	n°	1	1	1	2	2	2	2	2

TECHNICAL DATA

RFM			09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT										
Delivery										
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	n°	1	1	1	2	2	2	2	2
Maximum useful head (1)	H	Pa	770	510	445	555	740	640	525	675
High static pressure (EN14511) (1)	H	Pa	200	200	200	200	250	250	250	300

(1) At the nominal/maximum flow rate with a new, clean air filter.

DIMENSIONS



RFM			09	10	11	12	13	14	15	16
A	H	mm	2061	2061	2061	2373	2373	2440	2440	2440
B	H	mm	1900	1900	1900	2100	2100	2200	2200	2200
C	H	mm	3400	3400	3400	3400	3400	4000	4000	4000

The dimensions and weights are subject to changes.

RFM 17-23

Roof top unit for applications with an average degree of crowding

Cooling capacity from 152 to 305 kW

Product characteristics

The roof top units of the RFM range are autonomous air-to-air units designed to completely treat the air.

The units stand out for their:

- reduced running costs thanks to precise technological choices for ventilation, the cooling circuit and the electronics
- simplified Plug & Play installation thanks to the compact dimensions
- adaptability to meet specific needs and guarantee of excellent air quality, with a wide selection of configurations and accessories
- extended operating limits (from -20 °C up to +48 °C).

These units are ideal for places with an average degree of crowding such as shopping centres, shops, offices and production areas, as they can operate with 30% of fresh and exhaust air.



TECHNICAL DATA

Size		17	18	19	20	21	22	23
Configuration: MB1								
Cooling performances (1)								
Cooling capacity	kW	151,90	170,10	191,70	213,30	231,70	246,10	289,10
Sensible cooling capacity	kW	114,30	125,40	136,10	151,60	164,70	178,50	202,30
Compressors absorbed power	kW	32,70	39,20	45,30	54,00	60,70	69,00	68,90
EER compressors		4,65	4,34	4,23	3,95	3,82	3,57	4,20
Heating performances (2)								
Heating capacity	kW	152,70	170,80	192,80	216,20	230,80	245,50	296,30
Compressors absorbed power	kW	28,20	33,90	39,20	43,90	46,30	51,20	58,60
Compressor COP		5,41	5,04	4,92	4,92	4,98	4,79	5,06

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

Size		17	18	19	20	21	22	23
Configuration: MB2								
Cooling performances (1)								
Cooling capacity	kW	160,20	179,40	201,80	224,60	243,90	258,90	304,50
Sensible cooling capacity	kW	120,90	132,60	143,20	159,70	173,50	188,30	212,90
Compressors absorbed power	kW	33,10	39,50	45,60	54,60	61,60	69,80	69,70
EER compressors		4,84	4,54	4,43	4,11	3,96	3,71	4,37
Heating performances (2)								
Heating capacity	kW	155,10	174,20	195,50	219,50	234,00	248,60	300,70
Compressors absorbed power	kW	25,80	31,10	35,70	40,40	42,50	47,00	54,10
Compressor COP		6,01	5,60	5,48	5,43	5,51	5,29	5,56

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

Size		17	18	19	20	21	22	23
Configuration: MB3								
Cooling performances (1)								
Cooling capacity	kW	161,30	181,10	203,70	226,90	246,70	262,10	307,20
Sensible cooling capacity	kW	121,30	133,30	143,80	160,50	174,50	189,20	213,90
Compressors absorbed power	kW	32,50	38,80	44,50	53,20	59,90	67,70	68,30
EER compressors		4,96	4,67	4,58	4,27	4,12	3,87	4,50
Heating performances (2)								
Heating capacity	kW	159,10	179,00	202,30	227,70	243,60	259,90	310,90
Compressors absorbed power	kW	26,20	31,40	36,30	41,00	43,30	47,90	55,00
Compressor COP		6,07	5,70	5,57	5,55	5,63	5,43	5,65

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

Size		17	18	19	20	21	22	23
Configuration: MB4								
Cooling performances (1)								
Cooling capacity	kW	161,30	181,10	203,70	226,90	246,70	262,10	307,20
Sensible cooling capacity	kW	121,30	133,30	143,80	160,50	174,50	189,20	213,90
Compressors absorbed power	kW	32,50	38,80	44,50	53,20	59,90	67,70	68,30
EER compressors		4,96	4,67	4,58	4,27	4,12	3,87	4,50
Heating performances (2)								
Heating capacity	kW	159,10	179,00	202,30	227,70	243,60	259,90	310,90
Compressors absorbed power	kW	26,20	31,40	36,30	41,00	43,30	47,90	55,00
Compressor COP		6,07	5,70	5,57	5,55	5,63	5,43	5,65

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

Size			17	18	19	20	21	22	23
Energy index									
SEER	H	W/W	4,01	3,94	4,18	3,92	4,15	3,94	3,85
η _{sc}	H	%	157.6%	154.6%	164.3%	153.8%	162.9%	154.5%	150.9%
P _{designh}	H	kW	89	98	109	123	130	141	168
SCOP	H		3,47	3,31	3,45	3,36	3,49	3,43	3,26
η _{sh}	H	%	135.7%	129.4%	134.8%	131.5%	136.4%	134.2%	127.3%

GENERAL TECHNICAL DATA

Size			17	18	19	20	21	22	23
Power supply									
Power supply	H		400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor									
Type	H	type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Number	H	no.	4	4	4	4	4	4	4
Circuits	H	no.	2	2	2	2	2	2	2
Refrigerant	H	type	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Partialisation step	H	no.	6	6	6	6	6	6	6

FANS

Size			17	18	19	20	21	22	23
Configuration: MB1, MB2, MB3, MB4									
External fans									
Type	H	type	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC
Number	H	no.	4	4	4	4	4	4	4

Size			17	18	19	20	21	22	23
Configuration: MB1, MB2, MB3, MB4									
Internal fans									
Nominal air flow rate	H	m ³ /h	26000	29000	33000	37000	40000	44000	48000
Minimum air flow rate	H	m ³ /h	18200	20300	23100	25900	28000	30800	33600
Maximum air flow rate	H	m ³ /h	36000	36000	44000	44000	53000	53000	53000

Size			17	18	19	20	21	22	23
Configuration: MB3									
Recovery									
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	3	3	3	3	3	3	3

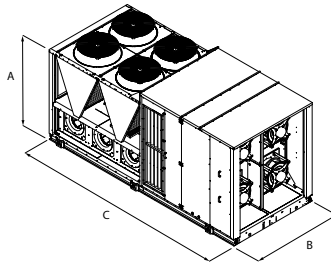
Size			17	18	19	20	21	22	23
Configuration: MB4									
Exhaust									
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	2	2	2	2	2	2	2

Size			17	18	19	20	21	22	23
Configuration: MB1									
Delivery									
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	2	2	3	3	3	4	4
Maximum useful head (1)	H	Pa	700	475	520	580	520	690	550
High static pressure (EN14511) (1)	H	Pa	350	350	350	350	350	350	350

Size			17	18	19	20	21	22	23
Configuration: MB2, MB3, MB4									
Delivery									
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	2	2	3	3	3	4	4
Maximum useful head (1)	H	Pa	519	341	330	470	460	636	467
High static pressure (EN14511) (1)	H	Pa	350	350	350	350	350	350	350

At the nominal/maximum flow rate with a new, clean air filter.

DIMENSIONS



Size			17	18	19	20	21	22	23
Dimensions and weights									
A	H	mm	2430	2430	2430	2430	2430	2430	2430
B	H	mm	2200	2200	2200	2200	2200	2200	2200
C	H	mm	5210	5210	5210	5210	7750	7750	7750

The dimensions and weights are subject to changes.

RFE 01-10

Unità Roof-Top per applicazioni ad elevato affollamento
Potenze frigorifere da 30 a 140 kW

Product characteristics

The roof top units of the RFE range are autonomous air-to-air units designed to completely treat the air.

The units stand out for their:

- low running costs obtained through the technologies used for ventilation, the cooling circuit and the electronics.
- easy installation thanks to the small dimensions and “Plug & Play” logic.
- adaptability to requirements and a guarantee of a high quality of air achievable by selecting from a vast range of configurations and accessories.

These units are ideal for places where there is a high degree of crowding such as cinemas, conference halls, restaurants, cafés and discos, as they can operate with 80% of fresh and exhaust air.



TECHNICAL DATA

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Cooling performances (1)											
Cooling capacity	kW	30,20	39,60	48,70	65,40	75,30	84,30	90,90	107,60	121,40	133,60
Sensible cooling capacity	kW	21,20	27,10	32,60	43,10	48,90	55,20	61,10	70,50	80,60	87,40
Compressors absorbed power	kW	5,30	8,40	9,70	13,10	15,20	17,50	18,50	23,30	27,60	32,60
EER compressors		5,70	4,71	5,00	5,00	4,96	4,82	4,92	4,61	4,39	4,09
Heating performances (2)											
Heating capacity	kW	29,30	39,70	48,50	66,50	76,60	85,80	91,40	110,40	123,40	137,90
Compressors absorbed power	kW	4,40	7,00	8,40	12,40	14,20	15,70	15,50	19,20	21,80	25,50
Compressor COP		6,67	5,68	5,77	5,38	5,39	5,47	5,89	5,73	5,66	5,41

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.

(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

Size			17	18	19	20	21	22	23
Energy index									
SEER	H	W/W	4,01	3,94	4,18	3,92	4,15	3,94	3,85
ηsc	H	%	157.6%	154.6%	164.3%	153.8%	162.9%	154.5%	150.9%
Pdesignh	H	kW	89	98	109	123	130	141	168
SCOP	H	W/W	3,47	3,31	3,45	3,36	3,49	3,43	3,26
ηsh	H	%	135.7%	129.4%	134.8%	131.5%	136.4%	134.2%	127.3%

GENERAL TECHNICAL DATA

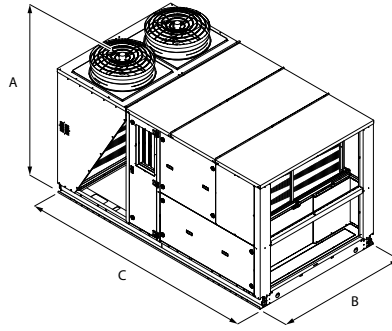
Size			01	02	03	04	05	06	07	08	09	10
Configuration: MB3												
Power supply												
Power supply	H							400V 3 ~ 50Hz				
Compressor												
Type	H	type						Scroll				
Number	H	no.	2	2	2	2	2	2	2	2	2	2
Circuits	H	no.	1	1	1	1	1	1	1	1	1	1
Refrigerant	H	type						R410A				
Partialisation step	H	no.	3	3	3	3	3	3	3	3	3	3

FANS

Size			01	02	03	04	05	06	07	08	09	10
Configuration: MB3												
External fans												
Type		type	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Number		no.	1	1	2	2	2	2	2	2	2	2
Internal fans												
Nominal air flow rate		m ³ /h	3500	4500	5500	7000	8000	9500	11500	14000	15000	16500
Minimum air flow rate		m ³ /h	2450	3150	3850	4900	5600	6650	8050	9800	10500	11550
Maximum air flow rate		m ³ /h	3500	4500	5500	7000	8000	9500	11500	14000	15000	16500
Recovery												
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	1	1	1	1	1	1	1	2	2	2
Exhaust												
Type	H	type	-	-	-	-	-	-	-	-	-	-
Number	H	no.	-	-	-	-	-	-	-	-	-	-
Delivery												
Type		type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number		no.	1	1	1	1	1	1	1	1	1	2
Maximum useful head (1)		Pa	150	150	200	200	200	250	250	250	300	300
High static pressure (EN14511) (1)		Pa	-	-	-	-	-	-	-	-	-	-

(1) At the nominal/maximum flow rate with a new, clean air filter.

DIMENSIONS



RFE		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
A	mm	2061	2061	2061	2373	2373	2373	2373	2373	2373	2373
B	mm	1900	1900	1900	2100	2100	2100	2100	2100	2100	2100
C	mm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400

The dimensions and weights are subject to changes.



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