AIR HANDLING SYSTEMS

Product Catalogue 2017

| AIR HANDLING UNIT | HEAT RECOVERY UNITS |
| TERMINAL UNITS | SYSTEM SOLUTIONS |

RHOSS

CREATING YOUR COMFORT

RHOSS

CREATING YOUR COMFORT


RHOSS R.&D.

➦ June 2017

COMING SOON

ADV-Next Air
3 new heat recovery systems

Diversified recovery solutions

- Vast choice of Erp 2018 recovery systems to meet various plant and climate needs

Guaranteed performance

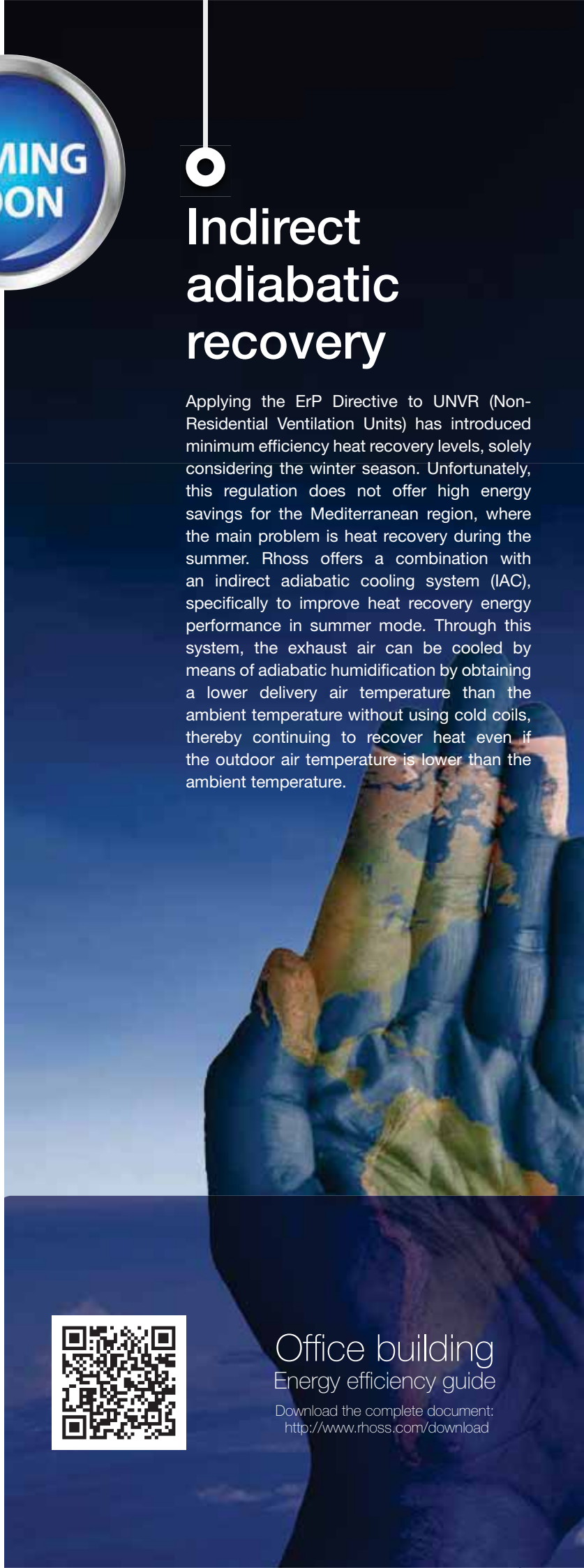
- Eurovent Certification
- Thorough Rhoss R&D laboratory testing

Plug and Play Version

- All heat recovery systems are available in the plug&play version with integrated Rhoss heat regulation

Indirect adiabatic recovery

Applying the ErP Directive to UNVR (Non-Residential Ventilation Units) has introduced minimum efficiency heat recovery levels, solely considering the winter season. Unfortunately, this regulation does not offer high energy savings for the Mediterranean region, where the main problem is heat recovery during the summer. Rhoss offers a combination with an indirect adiabatic cooling system (IAC), specifically to improve heat recovery energy performance in summer mode. Through this system, the exhaust air can be cooled by means of adiabatic humidification by obtaining a lower delivery air temperature than the ambient temperature without using cold coils, thereby continuing to recover heat even if the outdoor air temperature is lower than the ambient temperature.



Office building
Energy efficiency guide

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INVERTER EUROVENT CERTIFIED PERFORMANCE BRUSHLESS EC ErP READY 2018 APPLIES TO EUROPEAN DIRECTIVE FOR ENERGY RELATED PRODUCTS

Monodirectional regenerative recovery

Total comfort has become a must even in the summer, both for new and renovated systems. Air must be dehumidified to properly control humidity, by bringing it to between 14 and 12°C, then reheating it. This requires a heat source (boiler, electric coils) even in the summer, which is not always possible and is always energetically disadvantageous.
MONODIRECTIONAL REGENERATIVE RECOVERY resolves this problem by supplying post-reheating heat at no cost, returning the heat drawn from the outdoor air by the pre-cooling coil.
This ensures summer comfort even in existing systems supplied by heat pumps in conventional 2-pipe systems.

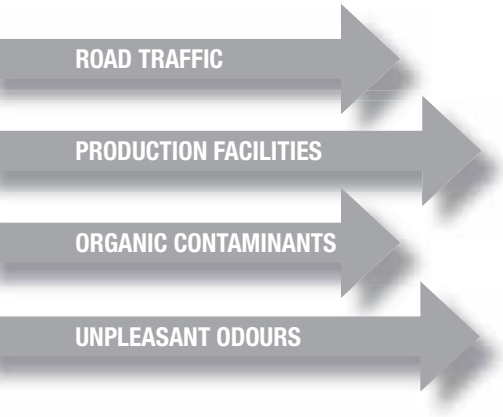
Twin coil recovery

Rhoss introduces ErP 2018-compliant twin coil recovery systems, using extremely high-efficiency heat exchangers and optimising the hydraulic circuits and fluid dynamics of the machine.
This solution proves to be an effective solution for installations where there must be no contamination between the two air flows and when retrofitting existing systems where the installation space is limited to up to 30% of the refrigerant gas content used.

As is clearly evident in the Rhoss Guide to energy efficiency, there is no single ideal system which is applicable to all situations. Each type of building, set in a different climate, gives priority to a specific system which behaves better than the others by far. Precisely for this reason, Rhoss expands the heat recovery solutions available in the ADV - Next range, integrating them in the selection software. Alongside the rotary and crossed flow heat recovery units, we also provide our customers with series of twin coil, regenerative monodirectional and indirect adiabatic recovery units to efficiently meet various plant requirements.

Biocidal filtration

Living in a clean environment is a concept closely linked to breathing “clean air”. It has been established that the concept of clean air, i.e. free from any additional factors, such as odours or pathogens, which can directly or indirectly affect or alter a person’s physical or mental state, must be related to high standards of Indoor Air Quality.
It is no longer possible to believe that outdoor air is clean: the increase in production facilities, with varyingly controlled emissions in the atmosphere, and vehicular traffic make it actually impossible to use outdoor air to dilute indoor contaminants without proper handling.
Rhoss sets a new “indoor” environment comfort standard by improving the hedonistic nature of the air introduced into rooms by means of a broad spectrum “biocidal filtration” treatment. This is the result of the studies, expertise and know-how gained over the years by Rhoss Spa and Labiotest srl, in their respective professional fields and emphasised by an agreement between the two companies to exclusively distribute new Air’Suite® filters for HVAC applications.
A new way to treat the air in confined spaces that we breathe every day. It requires systems for olfactometric conditioning and the “filter” range, that is the line of filters applicable to the world of ventilation and air conditioning.
A new concept of biocidal filtration that allows for the removal of microbiological contamination without requiring additional solutions to be installed or modifying existing systems.



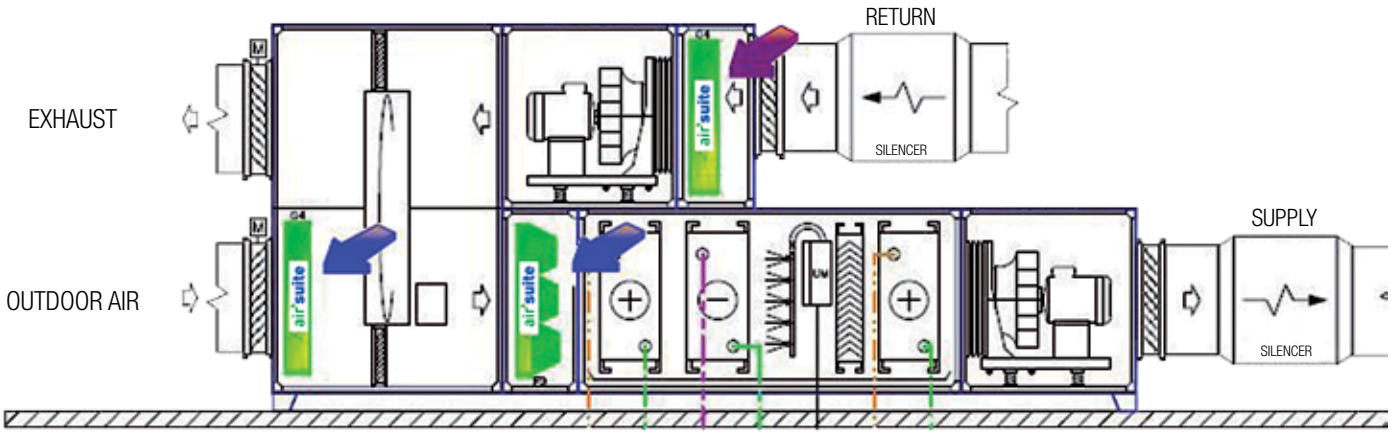

External sources of pollution


Internal sources of pollution

Air’Suite
Indoor filtering systems

Download the complete document:
http://www.rhoss.com/download

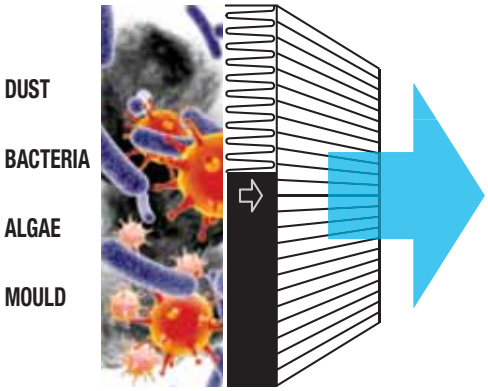
air’suite® by Labiotest



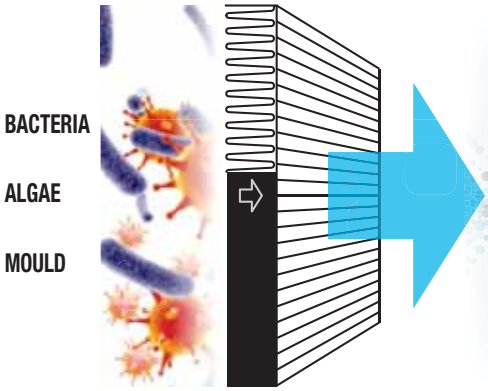
Example of Air'Suite application

contamination from the indoor environment
contamination from the outdoor environment

The term biocidal filtration refers to the combination of granular filtration (classical) and deactivating the biological load (innovative) on the same amount of air going through the same filtering means. This process is achieved by using a new, specifically designed bio-polymer featuring: wide availability in nature, biocompatibility, non-toxicity and intrinsic infection prevention properties.
The Air'Suite® filters were tested with new, state-of-the-art techniques that measure the actual biocidal ability on the filter surface and that do not make use of cultures but count each organism/cell and its integrity or ability to reproduce.
The bacteria removal efficiency was measured through a study protocol with IRSA-CNR certified flow cytometry techniques.
The resulting efficiency is more than 50% "instantaneous" reduction and 100% reduction within 30 hours after contamination.

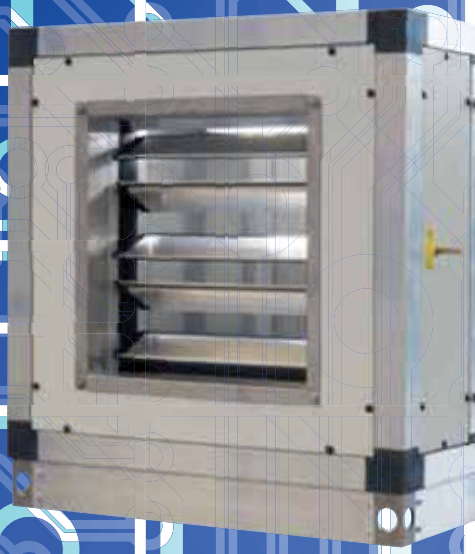


FIRST STEP - Mechanical filtration

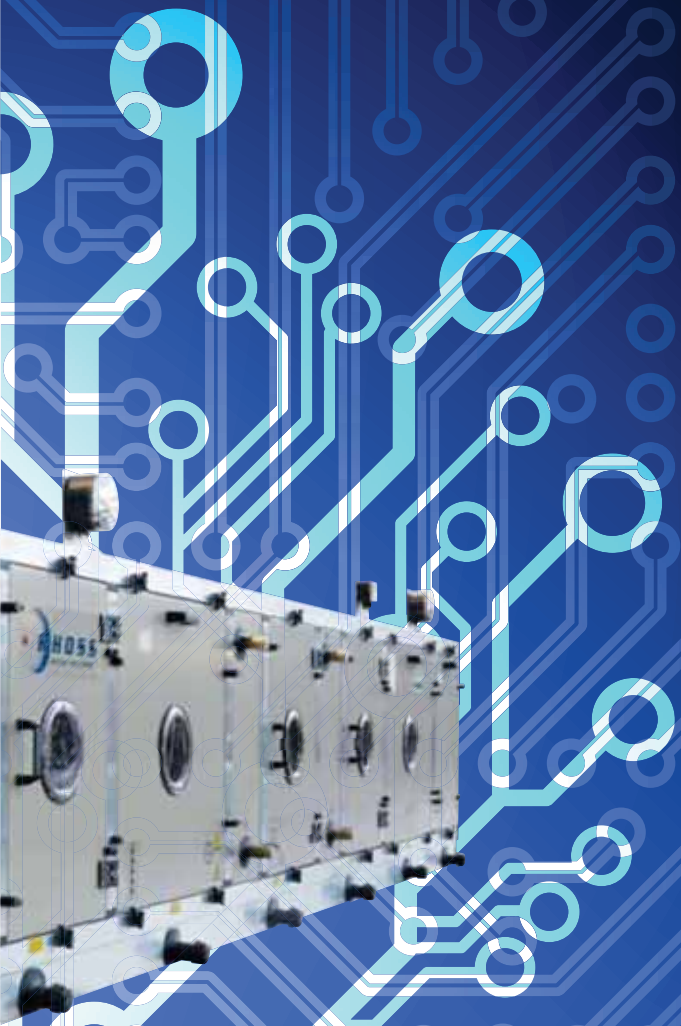


SECOND STEP - Biocidal filtration

CTA ADV Custom Hygienic



The range of ADV Custom Hygienic air handling units is designed according to high engineering standards and is ideal for applications where cleanliness and hygiene requirements are mandatory.
The units have been awarded the Hygiene compliance certificate for Air Handling Units by TUV NORD according to standards VDI 6022 Part 1 and DIN 1946 Part 4.
The air flow features and mechanical performance are certified by Eurovent according to standards EN1886 and EN13053.
The VDI 6022 Guideline contains the minimum hygiene requirements for HVAC systems, ventilation and air handling units for design, manufacture, operation, management and maintenance aspects. It therefore also defines the hygiene requirements of Air handling units regarding: usable materials, components, manufacturing, mechanical features, accessibility and serviceability, in accordance with the highest technical standards.
By complying with these requirements the CTA ADV Custom Hygienic units provide an excellent solution for designers, installers, maintenance technicians and end users.



Operating theatres

In order for these “critical” settings to work at their full potential, all systems must operate at top efficiency and be optimised. This concerns not only the work team or the hospital or laboratory equipment, but also the ventilation and air conditioning systems serving these types of settings. Any service outage due to failure or unplanned maintenance has very high potential risks.

Laboratories and clean rooms

Food industry

In the pharmaceutical or food sectors or in other specific areas, air handling directly affects the production process. The air handling unit – the core of the system – must meet the highest requirements.

Pharmaceutical industry

The perfect combination of industrial precision and artisanal love

ADV Next Air range air handling units are the perfect balance between industrial precision and craftsmanship, between love, care of the product and the ability to meet market demands, between innovation and tradition.

In fact, the particular type of material to be processed and the precision complexity of the required operations are what make handling these processes extremely delicate. The significant investment made in flexible automation has allowed Rhoss Spa to: ensure constant excellence in quality over time through extremely stable and precise production processes; significantly improve operating efficiency by reducing product run through times; make human labour more sustainable and safer; reduce material consumption, production waste and energy consumption, while better respecting the environment.
These are excellent results that make us proud.


FUTURE
START

RHOSS: a product range to achieve LEED® credits





The **LEED®** standard was developed in the USA in 1998 by the U.S. Green Building Council (USGBC), which is a non-profit organisation that promotes and offers a global approach towards sustainability, recognising virtuous performance in key areas of health regarding mankind and the environment.

LEED® is a voluntary system based on consent to design, construct and manage high-performance green buildings, and the system is constantly developing on an international level. It can be used on any type of building and promotes an integrated design system that concerns the entire building.

LEED® is a flexible system that can be applied to all types of buildings - commercial, residential, and neighbourhoods, and is based on the entire life cycle of the building from design and construction to management and maintenance.

It is a certification protocol for buildings that is redefining the way we think of the places where we live, work, and study.

It is internationally recognised as a symbol of excellence.

It offers building owners and operators a reference point to identify and implement sustainable measurable design, construction, and management.






Guide to the LEED principles **LEED®**
Leadership in Energy & Environmental Design

Download the complete document:
http://www.rhoss.com/download

Rhoss has studied the **LEED®** standard and assessed the credit requirements, comparing them to its product range features and identifying which can meet the **LEED®** credit requirements and how.

Rhoss participates in the **LEED®** building certification protocol. The international system is based on the whole building's life cycle from design and construction, to management and maintenance.

Rhoss: certified quality.

- Rhoss participates in Eurovent certification programs for chillers, heat pumps and fan coils, according to the EN 14511 - EN 9614 - EN 1397 standards.
- Rhoss participates in the Eurovent certification program for Air handling units with the ADV range according to EN 13053 and EN1886.
- Rhoss participates in the Casa Clima program, a protocol that ensures buildings with a high level of living comfort despite reduced energy and management costs, thereby contributing significantly to protecting the environment.
- Rhoss offers solutions that promote sustainable construction in terms of energy efficiency, meeting the requirements of the most important Green-Building certifications, specifically LEED certification. In fact, these products or systems are designed with a technology that is concretely conducive to reducing HVAC system energy requirements. Rhoss solutions that excel in sustainability are easily recognisable by the Green Line mark, representing Rhoss' commitment to respecting the environment.

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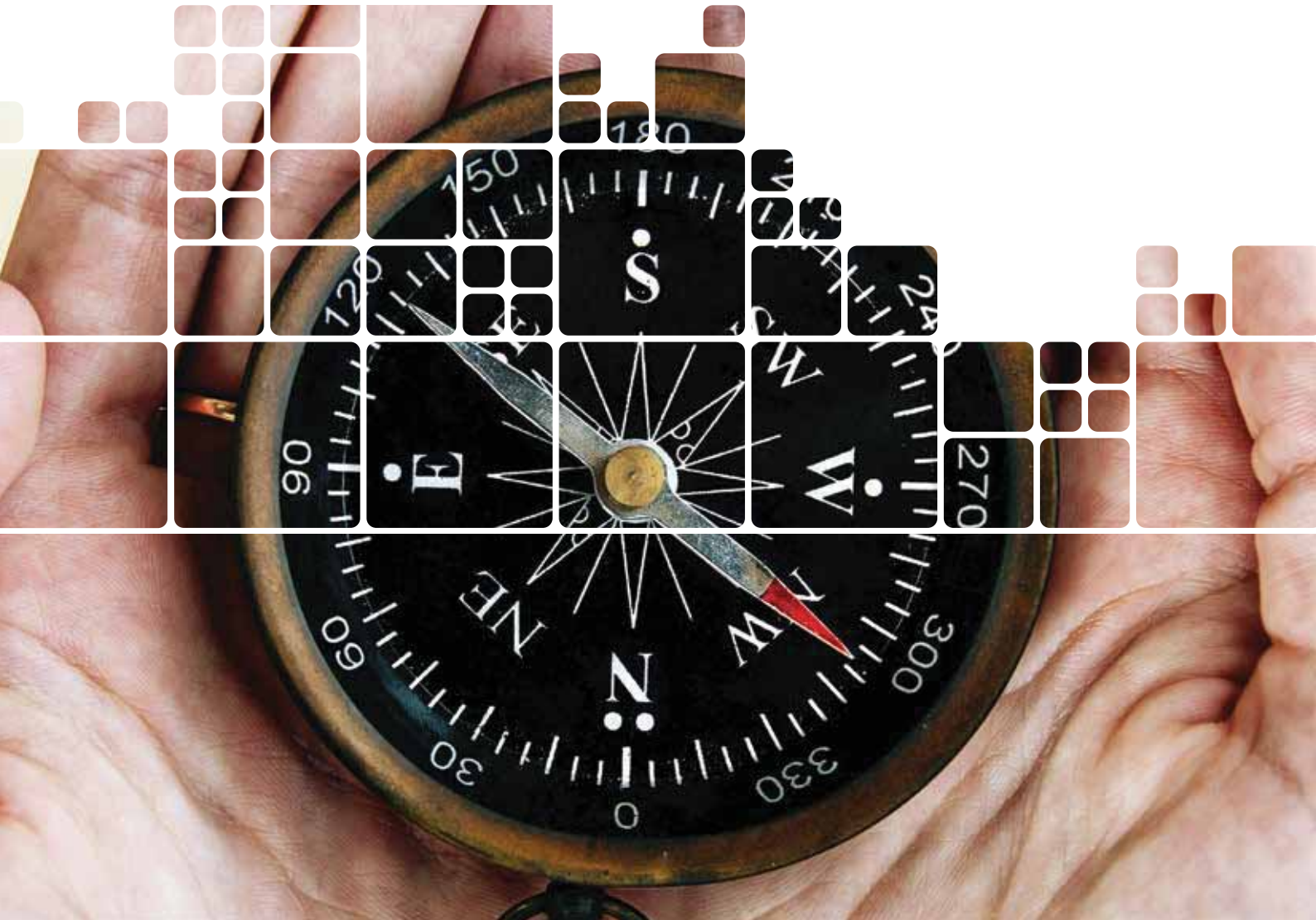
Partner
KlimaHaus CasaClima®

GREEN LINE

Rhoss services: customised solutions for your business.

"RHOSS SERVICE" is the service par excellence that Rhoss offers its clients in order to add value to the HVAC systems
Rhoss can create service programmes and instruments that makes it possible for us to always serve you better.
What are the most significant added value aspects for a HVAC system user?

1. obtaining constant performance without problems or concerns
2. optimising equipment operation
3. minimising energy consumption
4. keeping maintenance costs low
5. eliminating operational losses
6. limiting downtimes
7. foreseeable cost management
8. compliance with local governmental and environmental regulations



CONTRACTS - WARRANTY EXTENSION

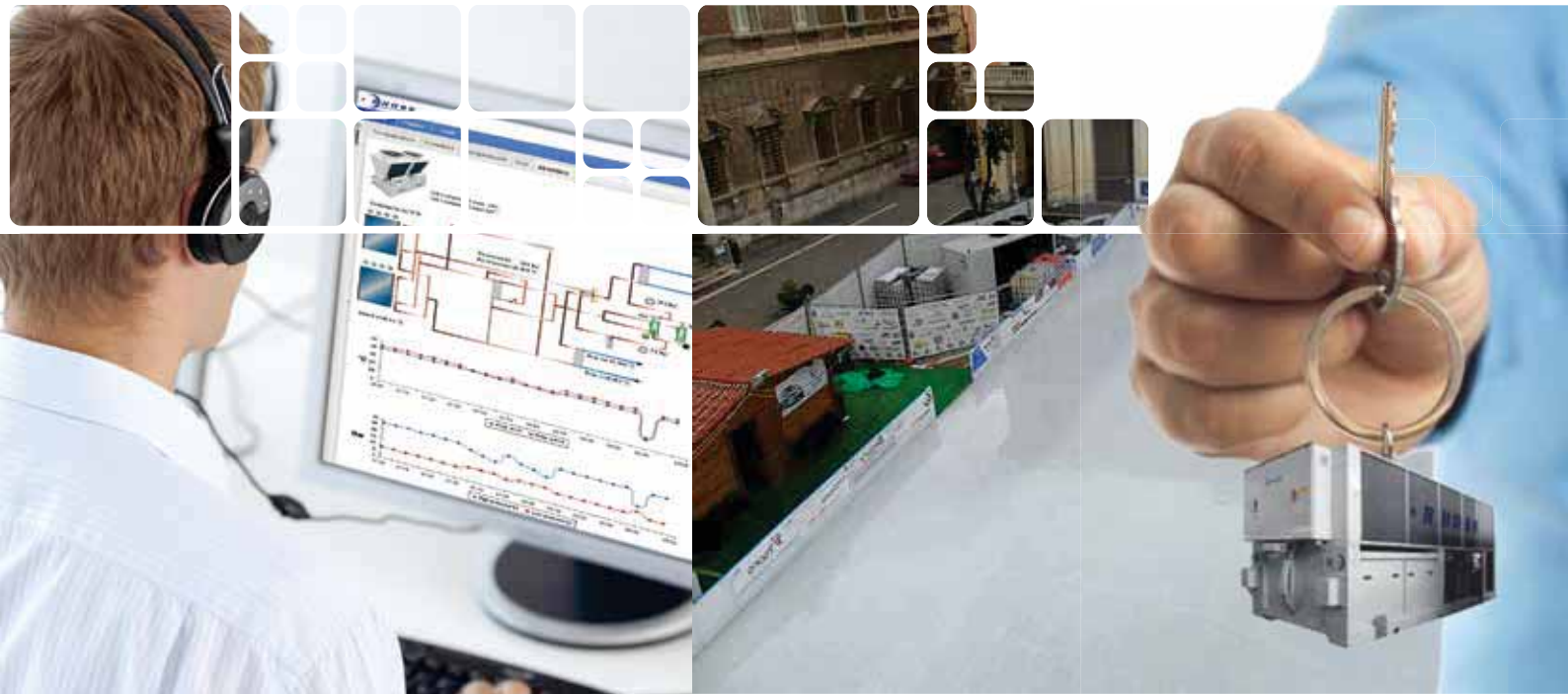
- Extended warranties are possible for all Rhoss units, which include labour and replacement of parts that are defective during the preselected extension period.
- The scheduled maintenance contracts (Basic, Program, Full Service and Global) are designed to offer operative efficiency, extend the useful life of your system and help reduce operational costs.

MACHINE FOR TEMPORARY USE - RENTING

- Rhoss Service also means medium and long term renting of air conditioning and heating equipment.
- Rhoss Service offers a wide range of versatile machines that can satisfy all cooling needs with an “all inclusive” formula. The supply foresees a turn-key rental, quick and timely coverage of any risk connected to maintenance and operating costs.
- The main field of use are ice rinks (specific machines for working at low temperatures) and machines for the wine sector.

EXTRAORDINARY MAINTENANCE - UNIT RE-ASSEMBLY

- Increasingly often, architectural barriers and structural constraints make it impossible to replace units in areas that are difficult to reach due to weights and dimensions that do not conform with the available spaces. Rhoss Service has a team of specialised technicians who are able to perform on site disassembly and reassembly operations for the machine to be positioned.
- The Rhoss Service team can take on any request for assistance and organise the following rapidly: technical inspection, drafting of a estimate for the repairs, decisive action following approval, a warranty of 12 months on the intervention performed and the comprehensive warranty restarting for a further 6 months from when the intervention is completed.



Terminal unit - UTNA Platinum 013÷120

Terminal unit - UTNV 015÷270

COMFORT

Air handling terminal units 850÷16500 m^3/h

Terminal unit

UTNA Platinum 013÷120

Cooling capacity: 6.4÷70 kW - Heating capacity: 4.9÷78 kW

INVERTER

- **Complying with ErP 2018 NRVU**
- **BRUSHLESS EC fan**
- **F7 high efficiency filters**

Modular and ductable air handling terminal units

Construction features

- Terminal air handling unit: with modules for horizontal or vertical installation (013-050) with or without ducting.
- Structure with double wall sandwich type freestanding panelling, 30mm-thick with closed cell polyurethane foam insulation with high soundproofing and thermal insulation capacity.
- Routine machine maintenance from the bottom (for the horizontal version with installation in false ceiling or hanging from ceiling) or frontally (for the vertical version) with removable panels.
- BA Coil module (horizontal) / BAV coil module (vertical up to size 050) complete with: G4 standard filter, optional fine F7 filter. All filters are supplied complete with differential pressure switch to signal filter clogging condition in compliance with European regulation no. 1253/2014.
  Finned coil heat exchanger, in copper pipes and 2 rows of aluminium fins for heating or reheating only and 4-6 rows for cooling and/or heating with right or left connections to be selected on order. Condensate drain pan in aluminium both for horizontal BA4R and BA6R versions and vertical BAV4R and BAV6R versions.
- SV fan module complete with centrifugal plenum fan EC Brushless single suction directly coupled to electric motor. Static and dynamic balancing of the entire assembly, constructed in accordance with standard DIN ISO 1940. Degree of balancing G6.3. Standard control of the rotation speed via special 0-10V analogue input. Electrical connection panel fitted as standard complete with disconnect switch, protection fuses and connecting terminal block.

Accessory modules

- PMA - Intake/outlet plenum with pre-cut side outlets.
- SIL - Plenum with absorbent cartridge silencer to be placed on supply or intake.
- MUV-PRV - Plenum with steam humidifier and external electric generator.
- BE - Additional electrical coil for channel connection.

Factory mounted accessories

- SG - Optional drop separator at low load losses in polypropylene.
- TAG - Optional antifreeze thermostat.

Separately supplied accessories

- KSG - Drop separator at low load losses in polypropylene (only for BA).
- KTAG - Antifreeze thermostat (only for BA).
- KSER - Kit in combination with PMA consisting of: damper with aluminium blades and frame, fitted with seal gasket, certified class 2 according to En 1751 for fresh air (max 30%) or recirculated air and a fastening panel to PMA module. The damper is sized for treating up to 100% of the UTNA air capacity and may be positioned at the front, top or bottom of the PMA.
- KMS - Manual control for KSER damper.
- KB2R - Separately supplied additional reheat coil.

	UTNAP MODEL			013	025	035	050	070	090	120
❷	Coil thermal power Only hot	BA 2R/BAV 2R	kW	4,9	8,4	11,7	16,8	25,1	32,8	39,1
❶	Cooling capacity	BA/BAV 4R	kW	6,4	11,1	14,6	21,3	31,9	45,2	53,6
❷	Heating capacity	BA/BAV 4R	kW	7,6	13,6	18,4	26,5	39,7	52,3	64,4
❶	Cooling capacity	BA/BAV 6R	kW	8,1	14,9	20,2	27,5	41,2	56,8	68,9
❷	Heating capacity	BA/BAV 6R	kW	9,1	16,6	22,8	32,2	48,3	62,1	78,2
❸	Heater power	230V-1ph-50Hz	kW	3	-	-	-	-	-	-
	electrical BE	400V-3ph-50Hz	kW	-	6	9	13	17	24	24
❹	Air flow rate	NOM	m³/h	1300	2500	3500	5000	7500	9000	12000
		MIN	m³/h	800	1100	1500	2100	3100	5000	5000
		MAX	m³/h	2100	3700	4800	6700	10500	14400	15500
❹	Useful static head.	NOM	Pa	300	300	300	300	300	300	300
❺	Irradiated sound power		dB(A)	47	50	54	54	56	55	59
❺	Intake sound power		dB(A)	64	65	69	68	71	70	74
❺	Delivery sound power		dB(A)	70	71	75	75	78	77	80
❹	SFP Int (Erp 2018<230)		W/m³/s	80	121	137	128	143	101	146
	Filtration degree EN779			G4/F7	G4/F7	G4/F7	G4/F7	G4/F7	G4/F7	G4/F7
	PRV Maximum steam production		Kg/h	3	5	5	8	10	15	18
	Electrical supply		V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	400-3-50	400-3-50	400-3-50
	DIMENSIONS AND WEIGHTS			**013**	**025**	**035**	**050**	**070**	**090**	**120**
	L - Width		mm	945	1245	1545	1645	1645	2045	2045
	H - Height		mm	387	387	387	504	687	837	837
	PMA -SIL-MUV-SV- Depth		mm	480	480	480	596	780	931	931
	BA - Depth		mm	750	750	750	750	750	750	750
	BAV - Height		mm	812	812	862	962	-	-	-
❻	UTNA Weight		kg	53	60	67	88	94	132	142

Data at the following conditions:

❶ Air T in 26°C BS; 18.6°C BU.(50% U.R.); water T in 7°C with Δt 5°C; nominal air flow.

❷ Air T in 20°C BS; 13.7°C BU.(50% U.R.); water T in 40°C with Δt 5°C; nominal air flow.

❸ Air T in 20°C BS; 13.7°C BU.(50% U.R.); nominal air flow.

❹ Air T in 20°C BS; 13.7°C BU.(50% U.R.); nominal air flow; 4-row coil BA/BAV 4R; clean type F7 filter.

❺ Of SV only with work point at nominal air flow; and total head calculated in configuration: 4-row coil BA/BAV 4R; clean type F7 filter;300 Pa static useful. In accordance with EN ISO 11546-2.

❻ SV. Weight

Controls

- KPTZ - Rotating potentiometer for wall installation, for manual fan speed control. The speed of supply and return fans is calibrated with a single potentiometer.
- KTVDIM - Electronic control panel with display, for semi-recessed wall installation, including ON/OFF button, MODE, 3 Speeds+AUTO, SETPOINT change; auxiliary contacts to control ON/OFF valve in 2-pipe and 4-pipe systems; summer/winter switchover; manual/automatic/ from contact; continuous/thermostat ventilation; configurable digital inputs (SCR, ECO, SIC, ALARM), weekly time bands management., complete with RS485 resident serial interface (Modbus RTU protocol).
- KRCA1 - Electronic control panel with display, for semi-recessed wall installation, including ON/OFF button, MODE, 2 Speeds, SETPOINT change; summer/winter switchover from button or remote digital input; continuous ventilation, weekly time bands management room probe; 3 analogue outputs to control modulating fan, 1 or 2 modulating valves in 2-pipe or 4-pipe systems, modulating damper; 1 auxiliary contact to control on/off electric heater (1 stage) in 2-pipe systems + electrical heater; 2 configurable digital inputs and 2 configurable analogue inputs. Compete with RS485 resident serial interface (Modbus RTU protocol).

Terminal unit

UTNA Platinum 013÷120

Cooling capacity: 6.4÷70 kW - Heating capacity: 4.9÷78 kW

INVERTER

Full Control Checks

- KRFCS - Electrical panel complete with: DDC programmable microprocessor regulator. BMS interfacing Integrated as standard with Modbus RTU protocol, main disconnecting switch, relay to control various users, terminal blocks for quick connection of all machine components, auxiliary circuit supply with suitable transformer 230/12-24V.

USER PANELS (for KRFCS)

- KHMIG -Interface terminal with black monochrome graphic display with LED backlighting.
- KHMIR - Interface terminal complete with integrated room temperature probe with black monochrome graphic display with LED backlighting.
- KTOUCH - Black and white touch screen control panel.
- KCOLOR - Colour touch screen control panel.
- KCW - White decorative plate for control panel.
- KCB - Black decorative plate for control panel.
- KWMS - Wall mounting installation support for control panel.

Valves and actuators

- KV3V - PN40 Mixer/diverter 3-way regulation ball valves, female threaded hydraulic connections.
- KV2V - PN40 2-way regulation ball valves, female threaded hydraulic connections.
- KVMM - Actuator for ball regulation valves with modulating control 0/10 Vdc 24 Vac power supply.
- KVOM - Actuator for On/Off 230V valves.
- KDMA-S - Actuator for modulating damper 0-10V 24V with spring return.
- KDMA - Actuator for modulating damper 0-10V 24V without spring return.
- KDOA - Actuator for ON/OFF damper with spring return.

All the probes, actuators and valves you can find in the Full Control section are also available.

Full Control regulation

The Full Control kit allows integrated management of all the functions in the UTNAP, guaranteeing total control of room comfort in a simple and complete manner:

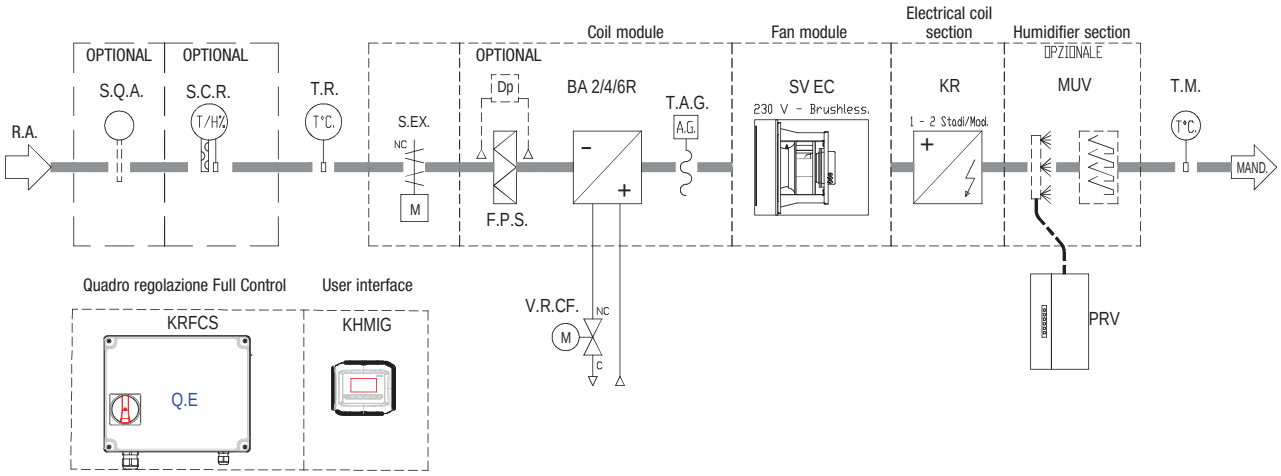
- **Simple installation: all components are designed for on site maximum simplicity and flexibility of installation and supplied separately to not hinder handling and the installation of the units in a false ceiling and in confined spaces. The electrical panel can also be installed remotely. Pre-assembled and pre-wired at the factory on request.**
- **Easy to use: intuitive and user friendly functions and menus.**
- **Weekly time schedule.**
- **Easy start-up: pre-calibrated regulators, pre-set and tested at the factory, specifically developed to manage all functions of the chosen configuration, avoiding any complication.**
- **Easily and immediately interfaced: controller comes standard with a USB port, RS 485 for dialogue via Modbus RTU and Canbus port to develop local networks.**

The following functions are present according to the selected machine composition:

- S.Q.R. - Duct or ambient air quality sensor to manage the fan speed or automatic modulation of the dampers.
- S.C.R. - Combined temperature and humidity return air or environment probe to manage air units with humidification and/or dehumidification functions.
- T.R. - Air return temperature probe.
- S.EX. - Shut-off damper.
- F.P.S. - Standard pleated filter.
- DP - Differential clogging filters pressure switch.
- BA - Hot/cold water coil.
- V.R.CF. - Hot-cold coil adjustment valve.
- T.A.G. - Antifreeze thermostat.
- SV EC - Brushless EC ventilated section.
- SV - 3-speed ventilated section.
- B.E. - Electrical coil.
- PV - Steam producer.
- T.M. - Supply temperature probe.
- KRFCS - Full Control power and regulation electrical panel.
- KHMIG - Control panel with graphic display.

UTNA SV EC

UTNA fan unit



UP·TO·DATE

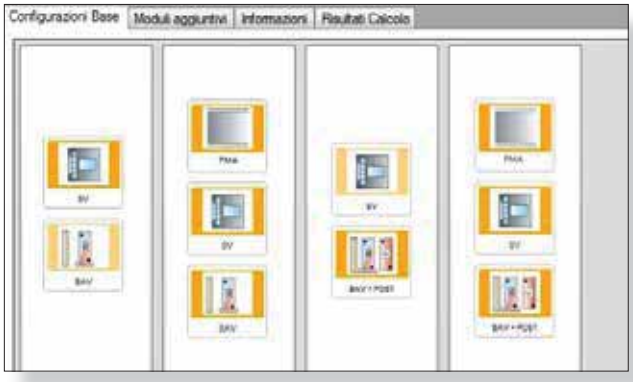
Readily available Rhoss solutions

UpToDate is the ideal tool for selecting the Rhoss product range and verify the technical data of each model.
The integrated calculation engine requires the verification of feasibility of the proposed solution, the selection and technical dimensioning of the catalogue models.
A unique and fast way to always find the ideal solution for any application together with the high technology proposed by Rhoss products.

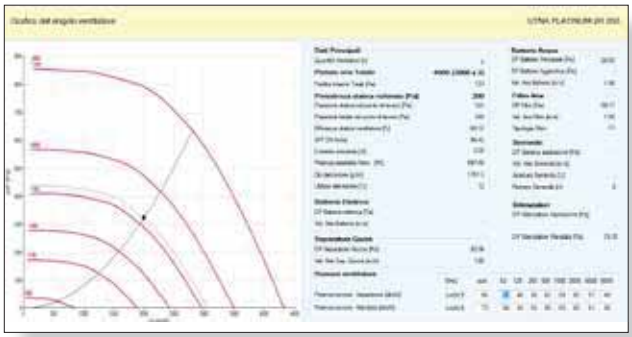
- Complete tool to choose the configuration that best suits your needs.
- Rapid search of the most suitable size and treatment
- Rapid selection of all available accessory modules, which match your selection
- Always updated on the latest news.
- Detailed technical reports in 7 languages.

UTNA Platinum selection

Selection of the final configuration



Timely performance of the fans



Web code: **UTNV1**

Terminal unit

UTNV 015÷270

Cooling capacity: 7.4÷123.6 kW - Heating capacity: 12.4÷195.2 kW

ErP READY 2015 APPLIES TO EUROPEAN DIRECTIVE FOR ENERGY RELATED PRODUCTS

- **New sizes**
- **Vertical installation**
- **Compact size**

Air conditioning and thermal ventilation terminal units.

Construction features

- Air conditioning and thermal ventilation terminal units: for vertical installation with ducting or direct entry of the ambient air.
- Structure: monobloc consisting of a treatment section and fan motor unit with a supporting frame made of extruded aluminium double chamber profiles with concealed screws, corner joints made of black nylon and reinforced glass.
- Removable double sheet panelling made of galvanised steel within and pre-painted with protective film on the outside, with interposed polyurethane foam (density 45 kg/m3) and a total thickness of 25 mm.
- Base with extruded aluminium profiles.
- Treatment section consisting of: multi-section renewable pleated filters with G3 efficiency which can be removed from the front (or the side with the KEF accessory), a finned coil heat exchanger with 2-4-6 rows in the hydronic version with right or left fittings on request and a condensate drain tray made of galvanised steel with natural drainage. On request, the hydraulic connections can be placed on the left or right side of the unit.
- Fan motor unit: with upper or front supply consisting of centrifugal double inlet fans with forward blades with an anti-vibration mount on an outlet side, three-phase motor (IP55), V-belt drive and variable pulley (up to model 080) and rubber anti-vibration mounts.

Versions

- Single-phase motor for models 030-050 with an adjustable pulley.
- Three-phase 4 pole motor with an adjustable pulley.
- Three-phase 4-6 pole motor with an adjustable pulley.
- Three-phase 4-8 pole motor with an adjustable pulley.
- BA2R-PRE - Additional coil with 2 rows for 4-pipe systems for UTNV 4R and UTNV 4R.
- BA2R-POST - Additional coil with 2 reheating rows for UTNV 4R and UTNV 6R.
- EFL - Lateral extraction of the filters on the opposite side of the hydraulic connections.

Accessory modules

- PMA - Outlet plenum, created with the same characteristics as the unit, with adjustable fin double row aluminium nozzles.
- PMZ - Inlet plenum, created with the same characteristics as the unit, with adjustable fin double row galvanised sheet steel nozzles.

Separately supplied accessories

- KGA - Aluminium return grille.
- KGZ - Galvanised steel return grille.

Controls supplied separately

- KTCV2 - Control and regulation panel consisting of: ON/continuous ventilation/thermostat ventilation switch; room thermostat, summer/winter switch, speed switch; auxiliary contacts to control the ON/OFF valves in 2 or 4-pipe systems.
- KSO - Air probe with remote control option (2 m) for KTCV2.

UTNV with plenum plenum.

Side filter extraction on request.

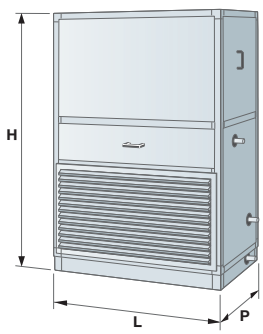
	UTNV MODEL		015	022	030	040	050	080	100	125	150	180	210	240	270
❷	UTNV 2R nominal heating capacity	kW	12,4	16,0	22,3	30,8	40,5	61,3	77,5	95,1	114,9	128,9	149,8	170,8	195,2
❶	Nom. cooling capacity UTNV 4R	kW	7,4	10,1	14,5	18,8	27,6	40,5	52,6	63,6	77,6	83,3	100,1	110,0	123,6
❷	UTNV 4R nominal heating capacity	kW	19,1	27,5	37,6	52,4	68,3	101,6	130,1	159,2	190,8	226,3	263,0	299,7	342,5
❶	Nom. cooling capacity UTNV 6R	kW	8,9	12,2	19,2	23,2	33,9	51,8	65,5	81,4	98,2	103,8	115,0	131,1	153,1
❷	UTNV 6R nominal heating capacity	kW	22,8	32,8	44,9	61,9	80,6	122,1	153,8	189,2	226,8	269,0	312,6	356,2	407,1
❷	B2R-B2P add. coil nominal heating capacity	kW	12,4	16,0	22,3	30,8	40,5	61,3	77,5	95,2	114,9	128,9	149,8	170,8	195,2
	BA DX cooling capacity	kW	8,2	11,6	16,0	20,2	30,6	48,2	58,0	72,3	85,2	95,7	109,0	123,2	139,4
	BA DX heating capacity	kW	9,2	13,0	17,9	22,6	34,3	54,0	65,2	81,0	95,4	107,2	122,1	138,0	158,0
	Max. air flow speed	m³/h	1600	2300	3150	4300	5600	8500	10600	13100	15600	18500	21500	24500	28000
	UTNV 4R max. available static head	Pa	170	170	170	170	170	170	170	170	170	170	170	170	170
❸	Max. speed sound pressure	dB(A)	56,0	58,0	60,0	61,0	62,9	62,7	69,2	66,0	64,6	65,0	65,8	66,5	68,0
❶❷	Absorbed power	kW	0,37	0,55	0,75	1,50	1,50	2,20	3,00	4,00	4,00	5,50	7,50	7,50	2 x 5,5
	Electrical supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50							
			400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
	DIMENSIONS AND WEIGHTS		**015**	**022**	**030**	**040**	**050**	**080**	**100**	**125**	**150**	**180**	**210**	**240**	**270**
	L - Width	mm	840	1000	1000	1200	1200	1500	1750	2050	2400	2400	2850	2800	2800
	H - UTNV 2R/4R/6R/4R+2R/2R+4R height	mm	1530	1600	1600	1800	1800	2000	2000	2000	2000	2300	2300	2350	2350
	H - 6R+2R height	mm	1730	1800	1800	2000	2000	2200	2200	2200	2200	2500	2500	2550	2550
	P - Depth	mm	660	680	680	760	760	840	840	840	840	1000	1000	1040	1160
	Weight	kg	140	155	165	230	270	360	465	520	570	620	665	720	780

Data at the following conditions:

❶ Air: 27°C D.B.; 19°C W.B. - Water: 7/12°C. Maximum speed.

❷ Air: 20°C - Water: 70/60°C. Maximum speed.

❸ At 3 m from the point of air outlet.



Terminal unit

UTNV 015÷270

Cooling capacity: 7.4÷123.6 kW - Heating capacity: 12.4÷195.2 kW

ErP READY 2015 APPLIES TO EUROPEAN DIRECTIVE FOR ENERGY RELATED PRODUCTS

Full Control Adjustment

The Full Control kit allows integrated management of all the functions in the UTNV, guaranteeing total control of room comfort in a simple and complete manner:

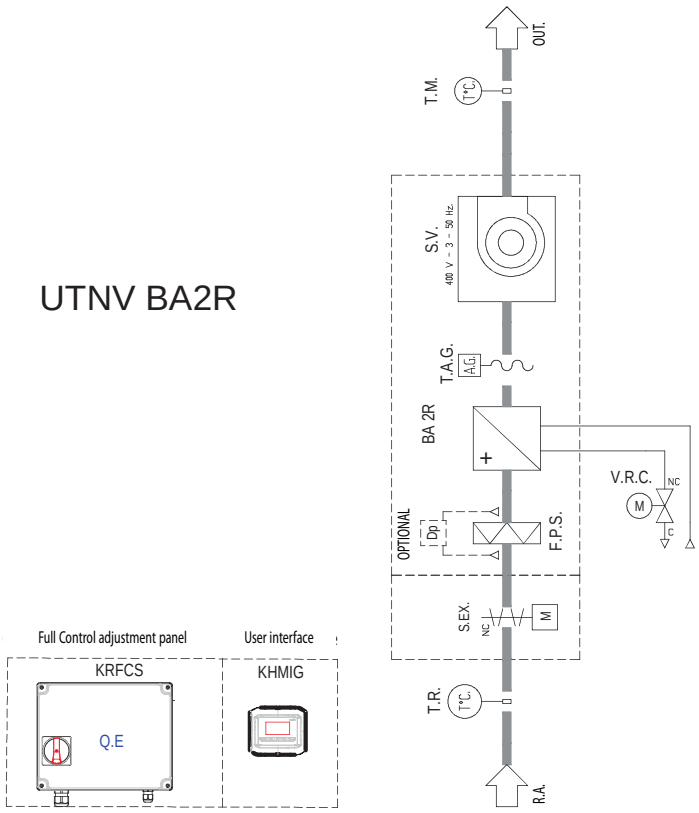
- **Simple installation: all components are designed for on site maximum simplicity and flexibility of installation and supplied separately to not hinder handling and the installation of the units in a false ceiling and in confined spaces. The electrical panel can also be installed remotely.**
  Pre-assembled and pre-wired at the factory on request.
- **Easy to use: intuitive and user friendly functions and menus.**
- **Weekly time schedule.**
- **Easy start-up: pre-calibrated regulators, pre-set and tested at the factory, specifically developed to manage all functions of the chosen configuration, avoiding any complication.**
- **Easily and immediately interfaced: controller comes standard with a USB port, RS 485 for dialogue via Modbus RTU and Canbus port to develop local networks.**

The following functions are present according to the selected machine composition:

- S.C.R. - Combined temperature and humidity return or environment air probe.
- T.R. - Air return temperature probe.
- S.EX. - Shut-off damper.
- F.P.S. - Standard pleated filter.
- DP - Differential clogging filters pressure switch.
- BACF - Hot/cold water coil.
- V.R.P. - Hot-cold coil adjustment valve.
- BAC - Hot water coil.
- V.R.C. - Hot coil adjustment valve.
- T.A.G. - Anti-freeze thermostat.
- SV - Single or double polarity ventilated section.
- T.M. - Supply temperature probe.
- KRFCS - Full Control power and regulation electrical panel.
- KHMIG - Control panel with graphic display.

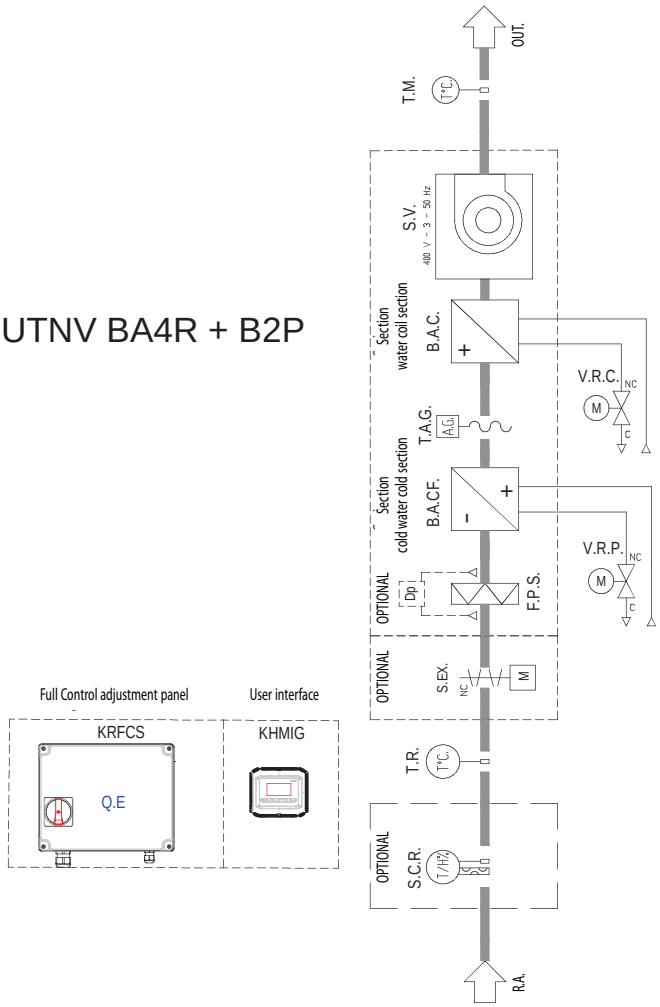
UTNV

UTNV BA2R



UTNV DX

UTNV BA4R + B2P



Heat recovery unit - UTNR-A Platinum 040÷500

Heat recovery unit - UTNR-HE Platinum 040÷400

Heat recovery unit - UTNR-HP 035÷450

Heat recovery unit - UTNR-HP 035÷450

Heat recovery unit - VMC-E 025÷100

COMFORT

Compact heat recovery units 100÷5300 m^3/h

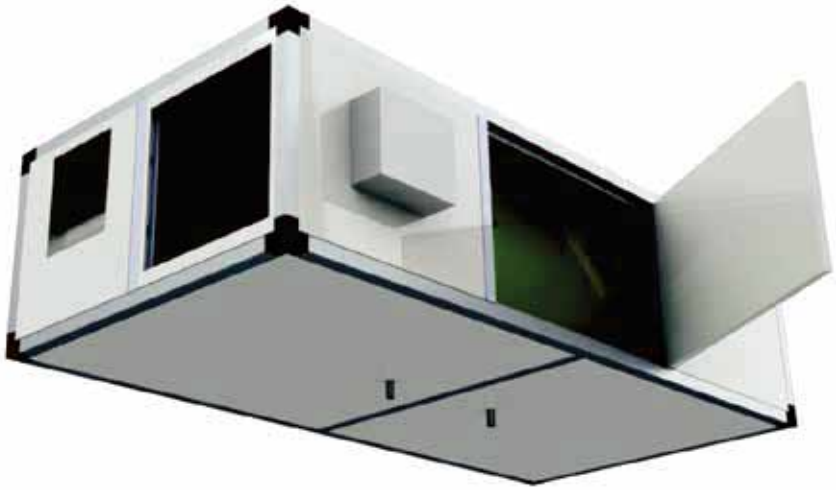
Web code: **UTNR3**

Heat recovery unit

UTNR-A Platinum 040÷500

Air flow rate: 400÷4,050 m³/h

INVERTER



- Complying with ErP 2018 NRVU
- Eurovent certified very high efficiency heat recovery
- Multi-speed fans or Brushless EC
- F7 and M5 high efficiency filters
- Double-walled sandwich with high insulating power
- Full control kit

Fresh air terminal unit with opposing counterflow static heat recovery.

Construction features

- Recovery unit: with very high static type efficiency with counterflow aluminium plates with a close pitch. Extraction of the lateral exchange pack (except for size 40 with extraction from below).
- Fans: fresh air inlet and double intake centrifugal expulsion type with a continuously adjustable directly coupled electric motor; alternatively, Brushless EC high efficiency electric motors. Fan unit installed on anti-vibration mountings to prevent vibrations being transmitted to the structure.
- Structure: frame made with extruded aluminium profile with preloaded nylon joints. Sandwich damping panels, 20 mm thick, made internally with galvanised sheet metal and pre-painted externally with thermal and acoustic insulation in injected polyurethane with density 45 kg/m^3 at very high heat and sound insulation power.
- Filtering section: filtration sections made of compact cell filters with a polypropylene mean at low pressure drop, removable from the side, in F7 efficiency class in the renewal flow and M5 in the ejection flow.
- Condensation drain pan made of galvanised sheet steel with condensation drain connection from the bottom.
- Integrated free cooling or thawing bypass system. The presence of a motorised damper at the side of the heat recovery can lead to a bypass system to control the free cooling or defrosting according to the temperature and humidity requirements or issues.

Versions

- UTNR-A/O PLATINUM - Recovery unit with opposing flow heat exchanger, installed horizontally and with standard multi-speed fans
- UTNRE-A/O PLATINUM - Recovery unit with opposing flow heat exchanger, installed horizontally and with Brushless EC fans that can reduce the consumed power for ventilation at equal performance.

Available orientation

- 01 - Right-hand connections
- 02 - Left connections side

The selected orientation must be indicated for the job order to be fulfilled.

Installation

- EXT- Outdoor installation including rain cover, 80mm high base and an outdoor electrical box

Factory fitted accessories

- BER - Reheating electrical heater installed inside, complete with filament-type safety thermostats and control relays to contain pressure drops. 230/1/50 single-phase electrical supply for models 040. 400/3/50 three-phase for models 075÷500.
- BA - Post-heating internal hot water coil.
- BAATG - Antifreeze thermostat installed downstream of the water reheating coil.
- ERF7M5PF - Differential pressure switch for dirty filters installed on standard filters (F7 outdoor air and M5 inlet).
- ERF7-Efficiency recovery filter F7
- ERF7PF-Differential pressure switch for dirty filters installed on F7 outdoor air and F7 inlet filters.

Separately supplied accessories

- KSBFR - Section containing hot/cold water coil to reheat or recool, placed outside the machine in front of the inlet. Includes stainless steel condensation drain pan with drain connection from the bottom.
- KSBFR + ATG - Hot/cold water coil section with mounted antifreeze thermostat.
- KSRE - Regulation damper set for servo-control, consisting of a galvanised sheet steel frame with adjustable fins.
- KSSC - Duct silencer with a rectangular base made of glass wool covered with a protective film of glass fibre and micro-stretched sheet metal.
- KRMS - Sections with 3 dampers for air mixing and recirculating (only for the horizontal installation).
- KSPC - Panel with round fittings.

	UTNR-A PLATINUM MODEL		40	75	100	150	200	320	400	500
	Type of Unit					Non-residential- Bidirectional				
	Outdoor air filters					F7				
	Return air filters					M5				
	Bypass					Motorisable lateral bypass damper				
	TECHNICAL DATA									
	Nominal air flow rate	m^3/h	400	750	1000	1.600	2.050	3.150	3.700	4.700
	STANDARD FANS									
❶	Nominal available static pressure	Pa	100	100	100	100	100	100	100	n.d.
❷	Specific fan power (SFP)	$W/(m^3/s)$	1286	921	1107	926	854	1143	1175	n.d.
❸	Sound pressure level	dB(A)	59	60	63	63	63	69	69	n.d.
	Speed N°/Type of Adjustment		1	3	3	3	3	3	2	n.d.
	Electrical supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	n.d.
	BRUSHLESS EC FANS									
❶	Nominal available static pressure	Pa	100	100	100	100	100	100	100	100
❶	Max available static pressure	Pa	250	375	570	535	535	270	660	335
❷	Specific fan power (SFP)	$W/(m^3/s)$	538	863	839	794	652	880	839	1226
❸	Sound pressure level	dB(A)	60	61	62	64	62	68	68	69
	Speed N°/Type of Adjustment		0-10 V							
	Electrical supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
	COUNTERFLOW HEAT RECOVERY									
❹	Winter Efficiency	%	81,8	86,8	85,3	81,8	82,3	80,8	81	81,1
❺	Summer Efficiency	%	76,5	80	77,9	75,4	76,5	75,5	76,3	76,2
❻	Efficiency Regulation EC 1253/2014	%	77,2	83,4	81,5	77,4	77,8	73	73	73
	DIMENSIONS AND WEIGHTS		**40**	**75**	**100**	**150**	**200**	**320**	**400**	**500**
	Length/Height/Depth UTNR-A PLATINUM	mm	1480/380/800	1940/480/990	1940/480/990	2200/550/1000	2200/550/1400	2500/680/1400	2500/680/1400	2500/680/1700
	UTNR-A/P O weight	kg	90	140	150	170	200	210	240	270

Data at the following conditions:

❶ Values referred to the nominal air flow considering the pressure drops of the heat recovery and the F7 filter

❷ Values referred to the nominal air flow and Nominal available static pressure

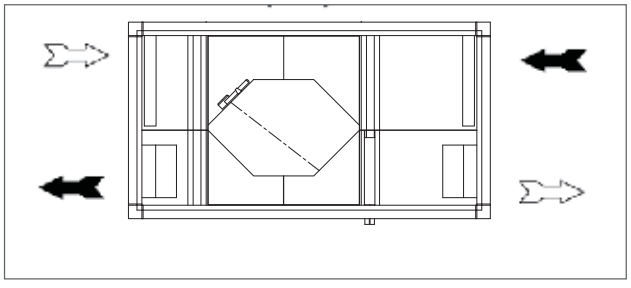
❸ Sound pressure level referring to 1 m from the machine inlet in free field

❹ Outdoor air T: -5°C, 80% RH ; Ambient air T: 20°C, 50% RH.

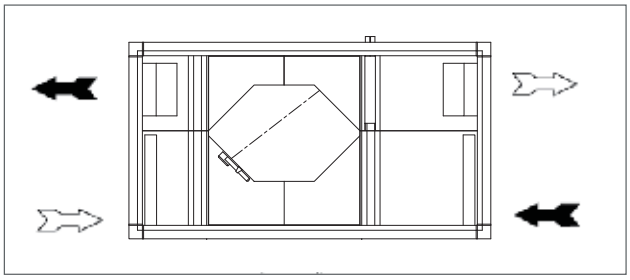
❺ Outdoor air T: 32°C, 50% RH ; Amb. air T: 26°C, 50% RH.

❻ Dry nominal conditions, measured according to En 308 in balanced flows.Outdoor air 5°C D.B.; Ambient air 25°C D.B.

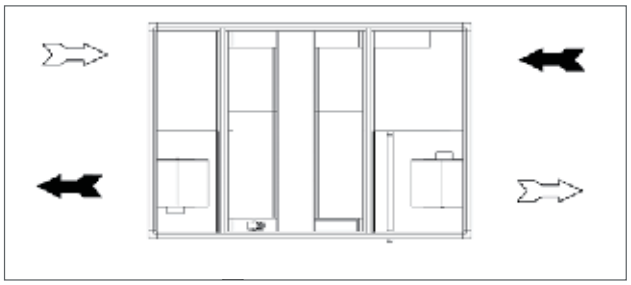
ORIENTATION TYPE 01 (MOD.40)



ORIENTATION TYPE 02 (MOD.40)

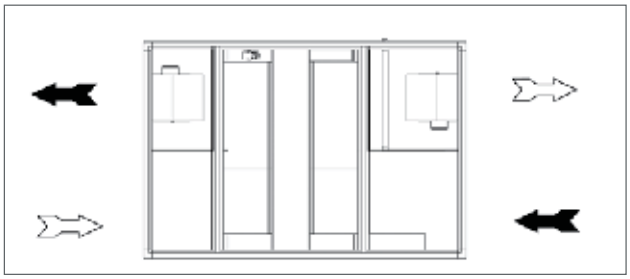


ORIENTATION TYPE 01



Expelled air
Fresh air

ORIENTATION TYPE 02



Expelled air
Fresh air

The illustrated guidelines concerning the machine seen from above

Heat recovery unit

UTNR-A Platinum 040÷500

Air flow rate: 400÷4,050 m³/h

INVERTER

Controls

- KVVM 3 (only for 040 models) - Electronic speed regulator suitable for wall mounting installation, which allows the fan with single-phase motor to be adjusted: ON/OFF switch, handle for continuous speed adjustment (only for the standard fan version).
- KCV2 - Speed selector for wall mounting installation, allows the 3 speeds to be switched (excluding model 40): Off/heating/cooling switch; 3-speed switch; 230V power supply.
- PCU-KPCUE - Control panel for wall mounting installation, allows the winter/summer environment temperature to be controlled, gives consent to activate or exclude the water coil or the electrical resistance.Selects the operating speed of the fan between minimum, medium, maximum (excluding model 40 for which the speed is unique) or by means of 0/10 V regulation (KPCUE for EC fans) and controls the free-cooling function.
- KPTZ - Rotating potentiometer for wall mounting installation, dedicated to manual fan speed control. The speed of delivery and return fans is calibrated with a single potentiometer (only for the EC Brushless fan version).

Full Controls

- KRFCS - Electrical panel complete with: DDC programmable microprocessor regulator. BMS interfacing Integrated as standard with Modbus RTU protocol, main disconnecting switch, relay to control various users, terminal blocks for quick connection of all machine components, auxiliary circuit supply with suitable transformer 230/12-24V.

USER PANELS (for KRFCS)

- KHMIG -Interface terminal with black monochrome graphic display with LED backlighting.
- KHMIR - Interface terminal complete with integrated room temperature probe with black monochrome graphic display with LED backlighting.
- KTOUCH - Black and white touch screen control panel.
- KCOLOR - Colour touch screen control panel.
- KCW - White decorative plate for control panel.
- KCB - Black decorative plate for control panel.
- KWMS - Wall mounting installation support for control panel.

Valves and actuators

- KV3V - PN40 Mixer/diverter 3-way regulation ball valves, female threaded hydraulic connections.
- KV2V - PN40 2-way regulation ball valves, female threaded hydraulic connections.
- KVMM - Actuator for ball regulation valves with modulating control 0/10 Vdc 24 Vac power supply.
- KVOM - Actuator for On/Off 230V valves.
- KDMA-S - Actuator for modulating damper 0-10V 24V with spring return.
- KDMA - Actuator for modulating damper 0-10V 24V without spring return.
- KDOA - Actuator for ON/OFF damper with spring return.

All the probes, actuators and valves you can find in the Full Control section are also available.

PCU Panel

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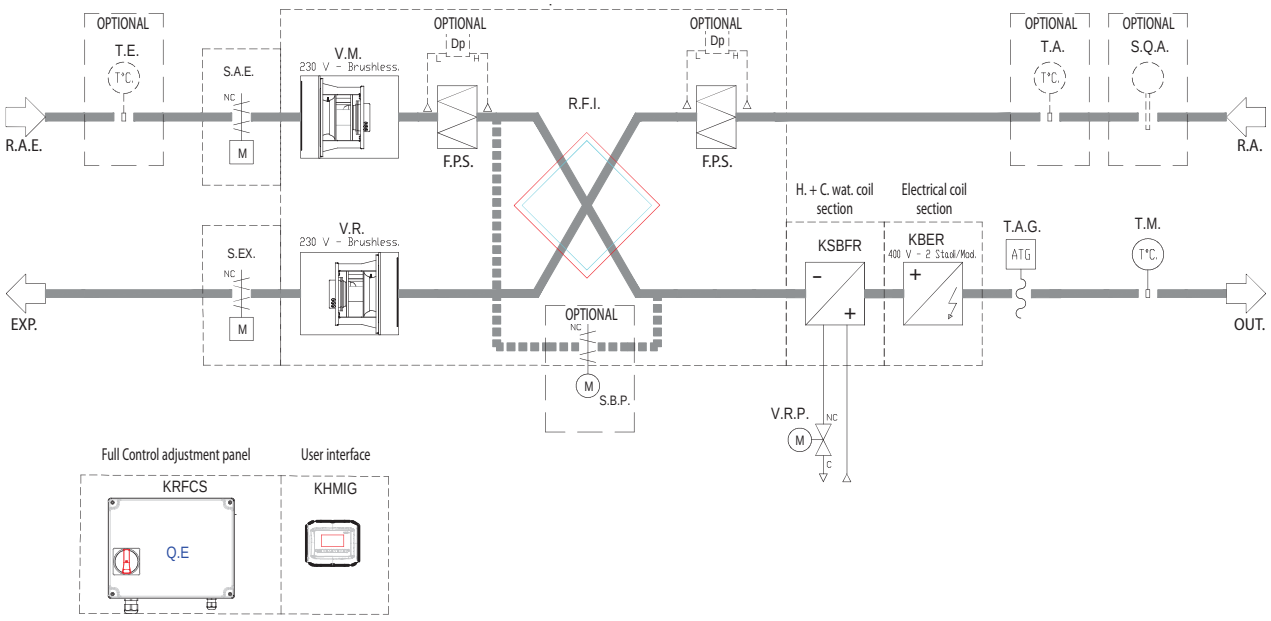
KPCUE Panel

UTNRE-A Platinum



Full Control regulation

The Full Control kit allows integrated management of all the functions in the UTNRA-P, guaranteeing total control of room comfort in a simple and complete manner:

- **Simple installation: all components are designed for on site maximum simplicity and flexibility of installation and supplied separately to not hinder handling and the installation of the units in a false ceiling and in confined spaces. The electrical panel can also be installed remotely.**
  Pre-assembled and pre-wired at the factory on request.
- **Easy to use: intuitive and user friendly functions and menus.**
- **Weekly time schedule.**
- **Easy start-up: pre-calibrated regulators, pre-set and tested at the factory, specifically developed to manage all functions of the chosen configuration, avoiding any complication.**
- **Easily and immediately interfaced: controller comes standard with a USB port, RS 485 for dialogue via Modbus RTU and Canbus port to develop local networks.**

The following are present according to the composition of the selected machine and accessories:

- T.E. - Outdoor air temperature probe.
- S.A.E. - Outdoor air damper.
- V.M. - Supply fan.
- F.P.S. - Standard pleated filter.
- Dp - Differential clogging filters pressure switch.
- KSBFR - Hot-cold additional coil module.
- V.R.P - Mixed coil adjustment valve.
- BCR - Integrated hot water coil.
- V.R.C - Hot coil adjustment valve.
- BER - Integrated electrical coil.
- T.A.G. - Antifreeze thermostat.
- T.M. - Supply temperature probe.
- S.Q.A. - Environmental air quality probe.
- T.A. - Environmental air temperature probe.
- V.R. - Return fan.
- S.EX. - Shut-off damper.
- KRFCS - Full Control power and regulation electrical panel.
- KHMIG - Control panel with graphic display.

Heat recovery unit

UTNR-HE Platinum 040÷400

Air flow rate: 310÷4,250 m³/h

INVERTER

- **Complying with ErP 2018 NRVU**
- **Eurovent certified very high efficiency heat recovery**
- **Multi-speed fans or Brushless EC**
- **F7 and M5 high efficiency filters**
- **Double-walled sandwich with high insulating power**
- **Full control kit**

Fresh air terminal unit with enthalpy rotary heat recovery.

Construction features

- Recovery unit: high yield rotary type made of aluminium with hygroscopic surface. Electric induction motor with belt and pulley transmission. Recovery unit-motor group easily removed from the side for periodic maintenance.
- Fans: fresh air inlet and double intake centrifugal expulsion type (for model 033 simple intake) with a directly coupled electric motor. Fan unit installed on anti-vibration mountings to prevent vibrations being transmitted.
- Structure: side panels that can be removed completely in Aluzink sheet metal.
- Filtering section: consisting of two class G4 filters (one on the fresh air intake and one on the ambient inlet), both can be removed from the side.
- Insulation: acoustic and thermal panel insulation with polyethylene/polyester having an average thickness of 20 mm.
- Terminal block: already present on the machine to facilitate the electrical connections, fan controls and rotary recovery.

Versions

- UTNR-HE/O PLATINUM - Recovery unit with rotary heat exchanger, installed horizontally and with standard multi-speed fans
- UTNRE-A/O PLATINUM - Recovery unit with rotary heat exchanger, installed horizontally and with Brushless EC fans that can reduce the consumed power for ventilation at equal performance.

Available orientation

- 01 - Right-hand connections
- 02 - Left connections side

The selected orientation must be indicated for the job order to be fulfilled.

Installation

- EXT- Outdoor installation

Factory fitted accessories

- ERF7M5PF - Differential pressure switch to indicate dirty filters installed on the standard filters (outdoor air F7 and return M5).
- ERF7-F7 efficiency return filter
- ERF7PF-Differential pressure switch to indicate dirty filters installed on the outdoor air F7 and return F7 filters.
- BP-Bypass control for free-cooling including:NC relay on board the panel (suitable for PCU and KPCUE) and 2 NTC probes on board the machine

Separately supplied accessories

- KBER - Reheating electrical resistance installed outside in a duct dedicated module, complete with filament-type safety thermostats and control relays to contain pressure drops.
  230/1/50 single-phase electrical supply for model 040 and 075. 400/3/50 three-phase for 100 - 400 models.
- KSBFR - Section containing hot/cold water coil to reheat or recool, placed outside the machine in front of the inlet. Includes stainless steel condensation drain pan with drain connection from the bottom.
- KSBFR + ATG - Hot/cold water coil section with mounted antifreeze thermostat.
- KSRE - Regulation damper preset for servo-control, consisting of a galvanised sheet steel frame with adjustable fins.
- KSSC - Duct silencer with a rectangular base made of glass wool covered with a protective film of glass fibre and micro-stretched sheet metal.
- KRMS - Sections with 3 dampers for air mixing and recirculating (only for the horizontal installation).
- KSPC - Panel with round fittings.

	UTNR-HE PLATINUM MODEL		40	75	100	150	200	320	400
	Type of Unit				Non-residential- Bidirectional				
	Outdoor air filters				F7				
	Return air filters				M5				
	Bypass				Motorisable lateral bypass damper				
	TECHNICAL DATA								
	Nominal air flow rate	m³/h	310	650	1150	1.900	2.320	3.600	4.250
	STANDARD FANS								
❶	Nominal available static pressure	Pa	100	100	100	100	100	100	n.d.
❷	Specific fan power (SFP)	W/(m³/s)	1409	1443	1580	1036	806	1226	n.d.
❸	Sound pressure level	dB(A)	59	60	63	63	63	69	n.d.
	Speed N°/Type of Adjustment		1	3	3	3	3	3	n.d.
	Electrical supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	
	BRUSHLESS EC FANS								
❶	Nominal available static pressure	Pa	100	100	100	100	100	100	100
❶	Max available static pressure	Pa	230	180	280	600	550	260	680
❷	Specific fan power (SFP)	W/(m³/s)	1045	1263	1102	842	617	869	1029
❸	Sound pressure level	dB(A)	60	61	62	64	62	68	68
	Speed N°/Type of Adjustment		0-10 V						
	Electrical supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
	COUNTERFLOW HEAT RECOVERY								
❹	Winter efficiency temp/enthalpy	%	84/81	74/71	73/71	73/70	76/73	73/71	73/71
❺	Summer efficiency temp/enthalpy	%	84/78	74/69	74/69	73/69	76/72	74/69	74/69
❻	Efficiency Regulation EC 1253/2014	%	84	74	73	73	76	73	73
	DIMENSIONS AND WEIGHTS		**40**	**75**	**100**	**150**	**200**	**320**	**400**
	Length/Height/Depth UTNR-A PLATINUM	mm	1075/480/800	1075/480/800	1205/550/1000	1400/550/1000	1720/680/1290	1720/680/1290	1780/680/1400
	UTNR-A/P O weight	kg	90	140	150	170	200	210	240

Data at the following conditions:

❶ Values referred to the nominal air flow considering the pressure drops of the heat recovery and the F7 filter

❷ Values referred to the nominal air flow and Nominal available static pressure

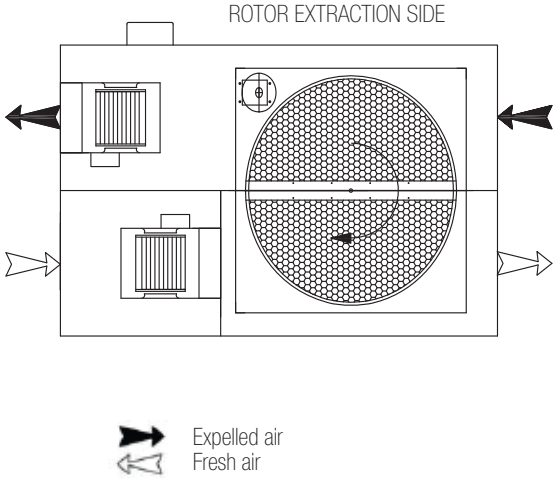
❸ Sound pressure level referring to 1 m from the machine inlet in free field

❹ Outdoor air T: -5°C, 80% RH ; Ambient air T: 20°C, 50% RH.

❺ Outdoor air T: 32°C, 50% RH ; Amb. air T: 26°C, 50% RH.

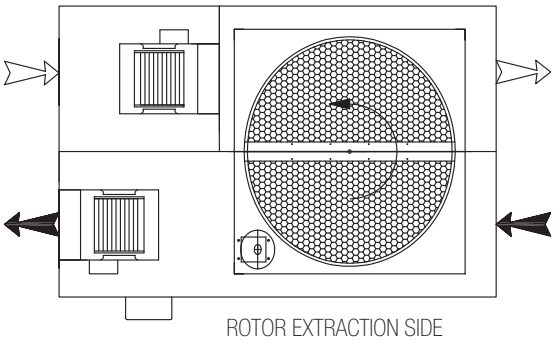
❻ Dry nominal conditions, measured according to En 308 in balanced flows.Outdoor air 5°C D.B.; Ambient air 25°C D.B.

ORIENTATION TYPE 01



Expelled air
Fresh air

ORIENTATION TYPE 02



Expelled air
Fresh air

Heat recovery unit

UTNR-HE Platinum 040÷400

Air flow rate: 310÷4,250 m³/h

INVERTER

PCU Panel
•
KPCUE Panel

Controls

- KVVM 3 (only for 040 models) - Electronic speed regulator suitable for wall mounting installation, which allows the fan with single-phase motor to be adjusted: ON/OFF switch, handle for continuous speed adjustment (only for the standard fan version).
- KCV2-Speed selector for wall mounting installation, allows the 3 speeds to be switched (excluding model 40): Off/heating/cooling switch; 3-speed switch; 230V power supply.
- PCU-KPCUE, Control panel for wall mounting installation, allows the winter/summer environment temperature to be controlled, gives consent to activate or exclude the water coil or the electrical resistance.Selects the operating speed of the fan between minimum, medium, maximum (excluding model 40 for which the speed is unique) or by means of 0/10 V regulation (KPCUE for EC fans) and controls the free-cooling function.
- KPTZ - Rotating potentiometer for wall mounting installation, dedicated to manual fan speed control. The speed of delivery and return fans is calibrated with a single potentiometer (only for the EC Brushless fan version).

Full Controls

- KRFCS - Electrical panel complete with: DDC programmable microprocessor regulator. BMS interfacing Integrated as standard with Modbus RTU protocol, main disconnecting switch, relay to control various users, terminal blocks for quick connection of all machine components, auxiliary circuit supply with suitable transformer 230/12-24V.

Optional commissioning

User panels (for KRFCS)

- KHMIG -Interface terminal with black monochrome graphic display with LED backlighting.
- KHMIR - Interface terminal complete with integrated room temperature probe with black monochrome graphic display with LED backlighting.
- KTOUCH - Black and white touch screen control panel.
- KCOLOR - Colour touch screen control panel.
- KCW - White decorative plate for control panel.
- KCB - Black decorative plate for control panel.
- KWMS - Wall mounting installation support for control panel.

Valves and actuators

- KV3V - PN40 Mixer/diverter 3-way regulation ball valves, female threaded hydraulic connections.
- KV2V - PN40 2-way regulation ball valves, female threaded hydraulic connections.
- KVMM - Actuator for ball regulation valves with modulating control 0/10 Vdc 24 Vac power supply.
- KVOM - Actuator for On/Off 230V valves.
- KDMA-S - Actuator for modulating damper 0-10V 24V with spring return.
- KDMA - Actuator for modulating damper 0-10V 24V without spring return.
- KDOA - Actuator for ON/OFF damper with spring return.

All the probes, actuators and valves you can find in the Full Control section are also available.

Full Control regulation

The Full Control kit allows integrated management of all the functions in the UTNRHE, guaranteeing total control of room comfort in a simple and complete manner:

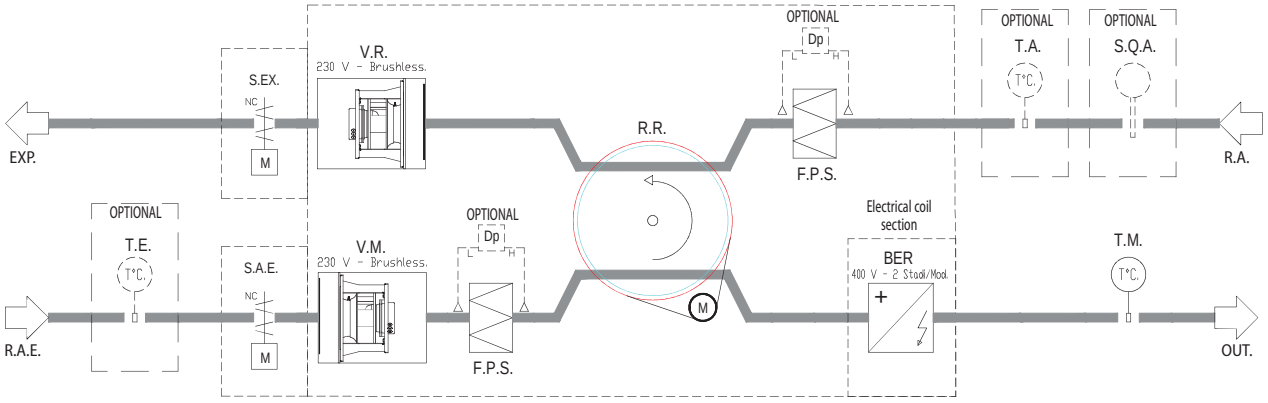
- **Simple installation: all components are designed for on site maximum simplicity and flexibility of installation and supplied separately to not hinder handling and the installation of the units in a false ceiling and in confined spaces. The electrical panel can also be installed remotely. Pre-assembled and pre-wired at the factory on request.**
- **Easy to use: intuitive and user friendly functions and menus.**
- **Weekly time schedule.**
- **Easy start-up: pre-calibrated regulators, pre-set and tested at the factory, specifically developed to manage all functions of the chosen configuration, avoiding any complication.**
- **Easily and immediately interfaced: controller comes standard with a USB port, RS 485 for dialogue via Modbus RTU and Canbus port to develop local networks.**

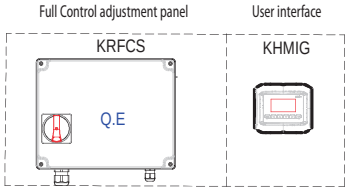
The following are present according to the composition of the selected machine and accessories:

- T.E. - Outdoor air temperature probe.
- S.A.E. - Outdoor air damper.
- V.M. - Supply fan.
- F.P.S. - Standard pleated filter.
- Dp - Differential clogging filters pressure switch.
- KSBFR - Hot-cold additional coil module.
- V.R.P - Mixed coil adjustment valve.
- BCR - Integrated hot water coil.
- V.R.C - Hot coil adjustment valve.
- BER - Integrated electrical coil.
- T.A.G. - Antifreeze thermostat.
- T.M. - Supply air thermostat.
- S.Q.A. - Environmental air quality probe.
- T.A. - Air return or ambient temperature probe.
- V.R. - Return fan.
- S.EX. - Shut-off damper.
- KRFCS - Full Control power and regulation electrical panel.
- KHMIG - Control panel with graphic display.

UTNR-HE Platinum version E brushless

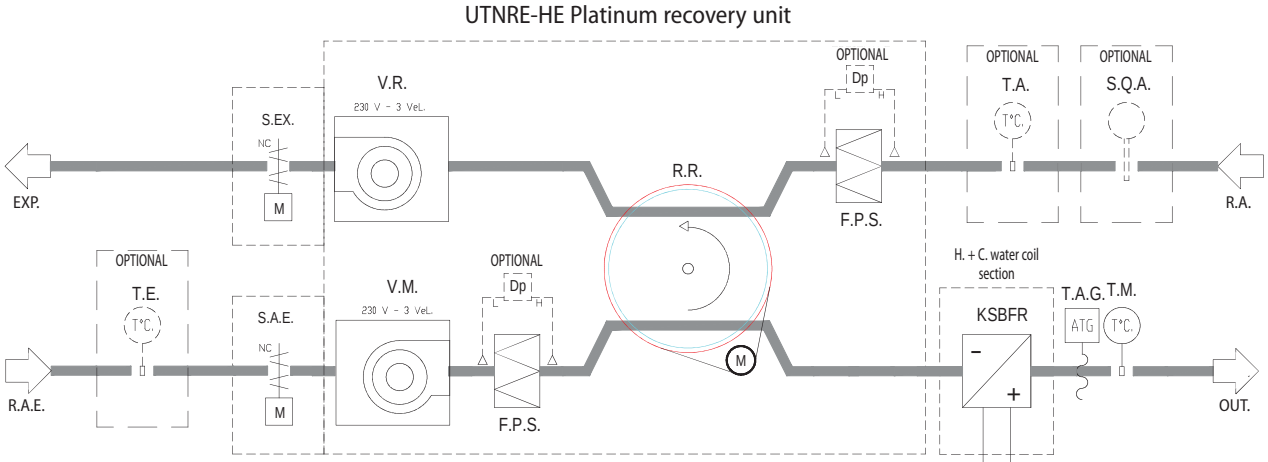
UTNRE-HE Platinum recovery unit

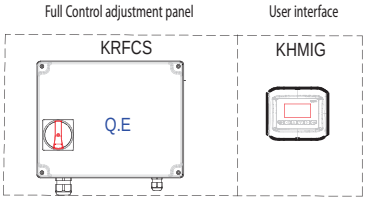




UTNR-HE Platinum

UTNRE-HE Platinum recovery unit





Controls
FULL CONTROL

The Full Control adjustment system aims to meet all the adjustment requirements of our units in the UTNA - UTNV - UTNR A/P and HE comfort range starting from the most basic up to fully-equipped units.

MAIN CONTROL LOGIC SETTINGS

Temperature adjustment at a supply fixed point (primary air)
The Tm fixed point probe controls the supply temperature using the modulating actuator of the control valve.

"Sliding" adjustment of the supply temperature according to the ambient set-point (all air)
The supply set-point is calibrated according to the difference between the room temperature and set-point, with the authority set. This function allows the performance of a control loop with a high degree of difficulty to be improved, thereby reducing the delay with which the ambient/return probe indicates the interference that occurs in the supply and is used as a base when the ambient temperature is to be set.

Result
The supply air temperature varies according to the difference between the actual ambient temperature and that prescribed.

Benefits for the end user
The ambient temperature control is faster and more accurate, and the gap on the ambient set-point is smaller than that achieved with separate ambient/return temperature control.

Antifreeze protection function
The TAG antifreeze thermostat protects the coil from frost (in case of intervention) when the outdoor air damper closes and the unit stops

Filter clogging monitoring
The cleanliness and healthiness of the filters is constantly monitored by the differential pressure switch as required by the relevant EU regulation

2-pipe systems
In case of the mixed coil, the season must be selected from the control panel or the remote selector.
The E/I selector also lets you exclude antifreeze protection while the coil is powered by cold water.

4-pipe systems
The hot and cold valve control is in automatic sequence, with central dead band to prevent instability.

Supply summer temperature compensation in relation to the outdoor one

Adjusting the ambient/return humidity
The humidity probe on the return controls the humidity. During winter, it modulates the delivery of the steam humidifier. During the summer period it acts on the actuator of the control valve of the cold coil, thereby modulating the performance.

Temperature free-cooling
This type of function is ONLY possible if you have selected a unit with heat recovery and it is set to achieve maximum savings.
Energy will be saved in systems with internal foreign heat production in cooling mode since the typical outdoor temperatures of the winter or intermediate seasons (approx. 10 to 20°C), the ambient temperature controller controls the outdoor air dampers and expulsion on opening and recirculation on closing, thereby eliminating the added heat with a corresponding percentage of outdoor air.
The function must be activated on start-up.

UNIT		UTNA/UTNV		UTNR A-P-HE	
FUNCTION		**AP**	**TA**	**AP**	**TA**
CONFIGURATIONS / FUNCTIONS	2-pipe single coil (Hot, Cold, Mixed)	●	●	●	●
	4-pipe second coil (Hot, Mixed)	●	●	●	●
	Fan control 1, 2 or 3V	●	●	●	●
	Fan control control (operated manually from the control panel or from the external input/potentiometer or according to the pressure/IAQ/Humidity probes)	●	●	●	●
	On/off damper control (operated electro-mechanically when the machine is switched on and the optional antifreeze thermostat, in case of alarm)	●	●	●	●
	Mixture chamber module damper control (potentiometer/from controller)	**n/a**	●	**n/a**	**n/a**
	Separate control for double vent.	**n/a**	**n/a**	●	●
	Recovery unit bypass command (for free-cooling control)	**n/a**	**n/a**	●	●
	Recovery unit antifreeze control	**n/a**	**n/a**	●	●
	On/off dehumidifier command	●	●	●	●
	Modulating dehumidifier command	●	●	●	●
	Coil on/off command Electric (ONLY 2-pipe versions alternative to the second hot coil for UTNA and UTNR)	●	●	●	●
	Coil modul. command Electric (ONLY 2-pipe versions alternative to the second hot coil for UTNA and UTNR)	**OPT**	**OPT**	**OPT**	**OPT**
PROBES	Antifreeze Thermostat	●	●	●	●
	Supply temperature probe	●	●	●	●
	Ambient/Return temperature probe and combined return/ambient temperature + humidity probe	●	●	●	●
	Ambient/Return Humidity Probe	●	●	●	●
I/O OPT.	IAQ input probe* (Modulating damper control or fan speed)	●	●	●	●
	Channel const. pressure probe input (Speed modulation of the fans on VAV systems with separate zone dampers or pressurised control)**	●	●	●	●
	Outdoor air temperature probe outlet (for supply set-point compensation, recovery/free-cooling bypass)	●	●	●	●
	Dp filter pressure switch input	**n/a**	●	**n/a**	●
	Remote temperature recalibration potentiometer input and remote damper positioning	●	●	●	●
	Input Remote E/I selection input (ONLY 2 pipes)	●	●	●	●
	Remote On/Off input	●	●	●	●
	Economy input (from external timer, micro window, badge reader, etc.)	●	●	●	●
	Ext. alarm input (general alarm, fire protection etc) for emergency stop	●	●	●	●
	Alarm repeat output (Relay)	**n/a**	**n/a**	**n/a**	**n/a**
	Thawing input from heat pump	●	●	**n/a**	**n/a**
	E/I switching output for heat pump	●	●	●	●
	Pump control 1 (auxiliary, not power, for the pump or generator to service the coil/circuit 1)	●	●	●	●
	Pump control 2 (auxiliary, not power, for the pump or generator to service the coil/circuit 2)	●	●	●	●
ADDITIONAL FUNCTIONS	Modbus serial communication	●	●	●	●
	Weekly time schedule	●	●	●	●
	Holiday schedule	●	●	●	●

** only with the Brushless EC fan
n/a: not available
OPT: option

Controls
FULL CONTROL

Separately supplied accessories
- KSEZM - Single-phase main disconnecting switch on the front of the electrical panel interrupts the power supply before allowing the door to be opened. It can be blocked with a padlock.
  Separately supplied accessories
- KSEZT - Three-phase main disconnecting switch on the front of the electrical panel interrupts the power supply before allowing the door to be opened. It can be blocked with a padlock.
- KPD - Differential air pressure switch (20-300Pa) to indicate the alarm when the point of intervention set to detect a dirty filter or air flow is reached.
- KTAG - Antifreeze thermostat (with brackets).
- KPOTS - Remote potentiometer for damper calibration.
- KLS - Damper manual command lever

Probes
- KATS - Ambient air NTC temperature probe (in the diagrams: TA).
- KDTS - NTC temperature probe from the channel (in the diagrams: TM/TR/TX).
- KOTS - Outdoor air NTC temperature probe (in the diagrams: TE).
- KDHS - Active humidity probe from channel with 0/10Vdc signal (in the diagrams: TUR/TUM).
- KATHS - Ambient temperature/humidity probe (in the diagrams: TUA).
- KDTHS - Channel temperature/humidity probe (in the diagrams: UR/UM).
- KAVOCS - Ambient IAQ VOC probe (in the diagrams: IAQ).
- KDVOCS - Channel IAQ VOC probe (in the diagrams: IAQ).
- KAIAQS - Ambient IAQ VOC+CO2 probe.
- KDIAQS - Channel IAQ VOC/CO2 probe.
- KDAPS - Air pressure probe.

Mixing/diverter 3-way ball PN40 VALVE. With body and shaft in brass and chrome plated brass ball. Sealed with an EPDM ring, female THREADED hydraulic connections
- KV3V15-x_x - 3-WAY threaded VALVE. DN15 kv from 1.6 to 6.3 depending on the sizes.
- KV3V20-6_3 - 3-WAY threaded VALVE DN20 kv 6.3.
- KV3V25-10 - 3-WAY threaded VALVE DN25 kv 10.
- KV3V20-6_3 - 3-WAY threaded VALVE DN32 kv 16.
- KV3V40-25 - 3-WAY threaded VALVE DN40 kv 25.
- KV3V50-xx - 3-WAY threaded VALVE DN50 kv 40 or 63 depending on the sizes.

Adjustment 2-way ball PN40 VALVES. With body and shaft in brass and chrome plated brass ball. Sealed with an EPDM ring, female THREADED hydraulic connections.
- KV2V15-x_x - 2-WAY threaded VALVE. DN15 kv from 1.6 to 6.3 depending on the sizes.
- KV2V20-6_3 - 2-WAY threaded VALVE DN20 kv 6.3.
- KV2V25-10 - 2-WAY threaded VALVE DN25 kv 10.
- KV2V32-16 - 2-WAY threaded VALVE DN32 kv 16.
- KV2V40-25 - 2-WAY threaded VALVE DN40 kv 25.
- KV2V50-40 - 2-WAY threaded VALVE DN50 kv 40.

Actuators for regulation BALL valves with 0/10Vdc 24Vac power supply modulating control
- KVMM25 - ACTUATOR V.DN MAX25 24V 0-10Vdc.
- KVMM50 - ACTUATOR V.DN MAX50 24V 0-10Vdc.

On/Off valve actuators, 230V TO OPERATE WITH 2-position control FAN-COIL THERMOSTATS
- KV0M25 - ACTUATOR V. DN MAX 25 230V On/Off SPDT.
- KV0M025 - ACTUATOR V. DN MAX 25 230V On/Off SPRING RET. SPST.
- KV0M050 - ACTUATOR V. DN MAX 50 230V On/Off SPRING RET. SPST.

ACTUATORS FOR MODULATING DAMPERS 0-10V 24V
- KDMAxS - ROT. DAMP. ACTUATOR 2/7/18Nm modulating with 24V spring return
- KDMAx b - ROT. DAMP. ACTUATOR 5/10/15Nm modulating without 24V spring return

ACTUATORS FOR ON-OFF 24V DAMPERS
- KD0AxS - ROT. DAMP. ACTUATOR 2/7/18 Nm on/off with 24V spring return

BASIC CONTROLS

User panels
With these accessories you can easily manage all active control functions by means of symbols and clear icons and intuitive including:
change the set-point, manage summer/winter seasonal switching, manage the ON/OFF power, manage the ventilation mode, display the temperature, humidity and all the values measured by the connected probes, set a weekly program schedule or a timer for prolonged absences (holiday mode), view alarms, reset alarms and manually position any motorised dampers in modulating control.
The features described above are common to all the following control panels
All Panel controls are used for box recessed installation (BTicino 506 type). You can customise the terminal to integrate it aesthetically in environments with the KCW or KCB plates according to the price list or the several Bticino series “Living” and “Light” plaques.

- KHMIG - Vgraph control panel. Interface terminal with black monochrome graphic display with LED backlighting.
- KHMIR - Control panel with ambient temperature probe (Vroom). In addition to the functions of the previous control panel implemented a temperature probe in the panel.
- KTOUCH - Black and white monochrome touch screen control panel 320x240 pixels.
- KCOLOR - Colour touch screen control panel 320x240 pixels.
- KCW - White decorative plate for control panel.
- KCB - Black decorative plate for control panel.
- KWMS - Wall mounting installation support for control panel.


KHMIG and KHMIR

KCOLOR


KCW

Electrical panel in a resin case, with IP55 protection, compliant with IEC EN 60204-1, complete with:

- DDC programmable microprocessor regulator that can manage up to 40 I/O with Rhoss software and configuration specifically designed to make sure the optimal automatic control of all functions can be managed on the machine, via continuous comparisons made between the set values and the temperature and humidity conditions detected by the sensors. The adjustment, optimised with proportional-type algorithms plus integral (PI), assures accurate and safe operation of the air handling unit.
  The regulator is equipped with a Real Time Clock to set the date, time and time program, with a backup battery to keep the saved data even in case of a prolonged power cut (up to 2 days). Interfaced with BMS Integrated as standard with Modbus RTU protocol.
- Main disconnecting switch.
- Fuse holder to protect single phase fan motors with power up to 1.6 kW with isolating function for phase and neutral on opening (*).
- Motor protection fuses for the motor of a rotary recovery, the 230/12V transformer and the 24V auxiliary circuit.
- Relay to control various utilities.
- Spring terminal blocks with removable connectors for quick connection of all components on the machine.
- Electrical supply 1F+N 230V 50Hz.
- Auxiliary power supply with a converter transformer 230/12-24V.
  (*) An external panel with specific protection and drive devices must be added required for higher power and three-phase loads .
- KRFCS - Full Control power and regulation electrical panel for UTNB-UTNA-UTNR-UTNV Single-phase Max Pow. 2x1.6 kW.

- KDTR - Usable with all UTNA-V-R with 1 coil.
  Simple and reliable regulator to be installed in the delivery duct, in the same case which already holds the temperature probe and is designed to handle simple air handling units operating at a supply fixed point. Operating range 0-50°C:
- KPOTR - Remote potentiometer for damper recalibration (in combination with KDTR).

AMBIENT regulators for wall mounting with software application, display, ambient sensor, RS485 serial board and clock with control of up to 9 I/O.

- KRCA1 - Ambient regulator with integrated temperature probe to control the following functions:
  - 2 modulating coils, antifreeze, 1 modulating damper, 1 on/off resistance
  - modulating coils, antifreeze, 1 modulating fan, 1 on/off resistance
  - 2 modulating coils, antifreeze, 1 modulating resistance, 1 on/off fan
  - 2 modulating coils, antifreeze, 1 modulating fan, recovery bypass
- KRCA2 - Ambient regulator with integrated temperature probe to control the following functions:
  - 2 modulating coils, antifreeze, 1 on/off fan, 1 aux. on/off control
  - 2 modulating coils, antifreeze, 1 on/off fan, recovery bypass, 1 aux. on/off control
  - 2 modulating coils, antifreeze, 1 on/off resistance, recovery bypass, 1 aux. on/off control

Web code: **UTHP1**

Heat recovery unit

UTNR-HP 035÷450

Air flow rate: 350÷4500 m³/h

INVERTER

- **Combined cross flow and active thermodynamic heat recovery**
- **Standard air filter with G4 efficiency**
- **Integrated electronics**

Fresh air terminal units with two-stage heat recovery unit.

Construction features

- Recovery unit:
  - First stage of the crossed flow air-air static heat recovery with aluminium heat exchanger plates; lower condensation drain pan along the entire heat treatment area.
  - Second stage of the active thermodynamic heat recovery unit with heat pump cooling circuit (with R410A gas) consisting of hermetic compressor (rotary or scroll type depending on the unit size), evaporating and condensing coils with copper pipes and continuous aluminium fins, electronic expansion valve, liquid separator and receiver, 4-way valve for cycle inversion, high and low pressure switches, freon filter and liquid indicator.
- Fans: fresh air inlet and double intake centrifugal expulsion type with a directly coupled electric motor. Fan unit installed on anti-vibration mountings to prevent vibrations being transmitted.
- Structure and panels: frame made with extruded aluminium profile, Anticorodal 63 alloy, with preloaded nylon angular joints. Sandwich damping panels, 23 mm thick, made internally with galvanised sheet steel and externally with galvanised pre-painted sheet steel (RAL 9002), with thermal and acoustic insulation made of injected polyurethane, whose density is 45 kg/m^3.
- Filtering section: consisting of two class G4 filters (one on the fresh air intake and one on the ambient inlet), both can be removed from the bottom and the side.
- Electrical panel: with integrated adjustment and power; NTC temperature probes on both the delivery and return air circuits; micro-processor electronic control for automatic room temperature management, winter/summer switch and defrosting cycles; remote control panel from up to 20 m from the unit, already equipped with Modbus RTU protocol for communication with the supervision system.

Versions

Available orientation:

- UTNR-HP 01, 02 – Heat recovery unit with crossed flow and active thermodynamic double heat exchanger with 01 or 02 orientation (right connection side) or 01s or 02s (left connection side).
  The selected orientation must be indicated for the job order to be fulfilled.

Installation

- EXT - Protective canopy for external installation.

Factory fitted accessories

- BER - Filament type reheating electrical resistance installed internally, complete with safety thermostats and control relays. 230/1/50 single-phase for models 035÷150. 400/3/50 three-phase for models 230÷450.
- BEP - Filament type reheating electrical heater installed internally, complete with safety thermostats and control relays. 230/1/50 single-phase for models 035÷150. 400/3/50 three-phase for models 230÷450.
- PF - Differential pressure switch installed in the inlet filter to indicate a dirty filter.
- ATG - Antifreeze thermostat installed downstream of the water coil.
- EG4PF - G4 outdoor air filter with differential pressure switch.
- ERG4PF - G4 outdoor air filter and G4 return air with differential pressure switch.
- EF7 - F7 outdoor air filter.
- ERF7 - F7 outdoor and return air filter.
- EG7PF - F7 outdoor air filter with differential pressure switch.
- ERF7PF - F7 outdoor and return air filter with differential pressure switch.

Separately supplied accessories

- KSBFR - Section containing hot/cold water coil to reheat or recool, placed outside the machine in front of the inlet. Includes a stainless steel condensation drain pan with drain connection from the bottom.
- KSBFR + ATG - Hot/cold water coil section with mounted antifreeze thermostat.
- KV2V ON/OFF - 2 way valve kit with On/Off servo-control.
- KV3V ON/OFF - 3 way valve kit with On/Off servo-control.
- KSRE - Regulation damper set for servo-control, consisting of a galvanised sheet steel frame with adjustable fins.
- KSMR 230 - Damper actuator with spring return.
- KSSC - Duct silencer with wool baffles covered with glass fibre and micro-stretched sheet.

Controls supplied separately

- KPTZ - Potentiometer for Brushless EC fan control.

	UTNR-HP MODEL		35	60	100	150	230	320	450
	Nominal air flow rate	m³/h	350	600	1000	1500	2300	3200	4500
	Delivery available static pressure	Pa	165	170	195	155	155	185	175
	Available return static pressure	Pa	140	100	140	95	95	115	110
❶	Sound pressure level	db (A)	59/47/52	64/50/55	62/49/54	67/54/57	65/51/59	68/54/59	70/56/59
	Delivery max available static pressure - Version E Brushless	Pa	270	285	295	290	365	265	270
	Max. available return static pressure - Version E Brushless	Pa	245	215	240	230	305	195	205
	FUNCTIONAL LIMITS		**35**	**60**	**100**	**150**	**230**	**320**	**450**
❷	Limit operating conditions	°C / %	MIN -10°C OUT & MIN 19°C 50% IN MAX 38°C 50% OUT & MAX 27°C IN						
	Flow variation range	%	-7 ÷ +7						
	ELECTRICAL DATA		**35**	**60**	**100**	**150**	**230**	**320**	**450**
	Electrical supply	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	400/3/50	400/3/50	400/3/50
	Max. absorption	A	5,3	9,0	13,2	20,2	10,0	15,4	16,4
❸	**PERFORMANCE IN HEATING MODE**		**35**	**60**	**100**	**150**	**230**	**320**	**450**
	Static recovery efficiency	%	62	51	50	50	50	50	50
	Active recovery	W	1740	2960	5010	7690	11090	16300	17300
	Total power	W	3580	5790	9410	14390	21190	30260	36010
	Treated air temperature	°C	24	23	22	22	22	22	18
❹	overall COP	W/W	10,90	9,60	9,22	8,64	8,90	9,90	12,60
❺	**PERFORMANCE IN COOLING MODE**		**35**	**60**	**100**	**150**	**230**	**320**	**450**
	Static recovery efficiency	**%**	**56**	**50**	**50**	**50**	**50**	**50**	**49**
	Active recovery	W	1810	2860	4890	7270	10580	15310	16990
	Total power	W	2210	3450	5840	8720	12830	18390	21440
	Treated air temperature	°C	19	20	20	20	20	20	21
❹	overall EER	W/W	4,2	3,9	4,2	3,9	3,9	4,1	5,01

Data at the following conditions:

❶ Sound pressure level assessed at 1 m from: permanent ducted socket/intake socket/compressor compartment. Generally, the operating noise level differs from the indicated values depending on the operating conditions, reflected noise and peripheral noise.

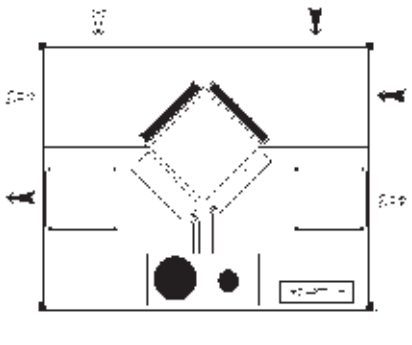
❷ Referred to the nominal flow rate.

❸ Outdoor air -5°C RH 80%; ambient air 20°C RH 50%.

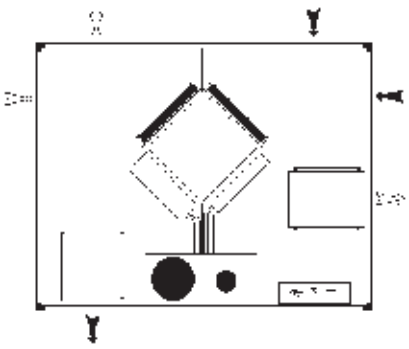
❹ Excluding ventilation power consumption.

❺ Outdoor air 32°C RH 50%; ambient air 26°C RH 50%.

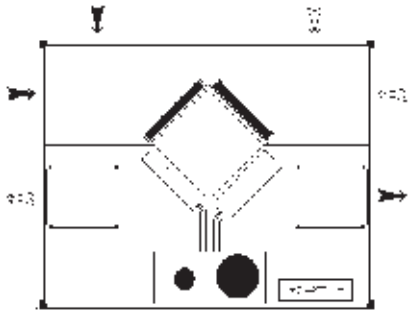
ORIENTATION TYPE 01



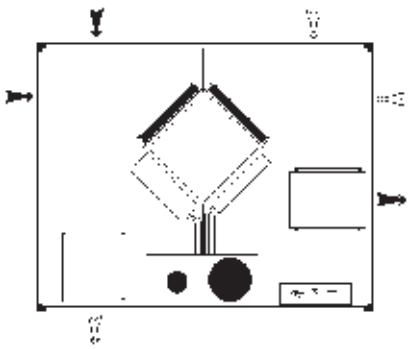
ORIENTATION TYPE 02



ORIENTATION TYPE 1S



ORIENTATION TYPE 2S



Expelled air
Fresh air

Expelled air
Fresh air

The illustrated guidelines concerning the machine seen from above

Web code: **VMC01**

Heat recovery unit

VMC-E 025÷100

Air flow rate: 250÷1,000 m³/h

INVERTER

- **Extremely compact**
- **High efficiency recovery**
- **Very low noise level**
- **Brushless DC fans**

Fresh air terminal unit with countercurrent flows static heat recovery.

Construction features

- Galvanised sheet steel self-bearing structure, insulated internally and externally.
- Recovery unit: thanks to a high yield static type heat exchanger with counterflows consisting of flat layers of special paper that allow total heat exchange, thereby recovering both sensitive and latent heat. The air flows are kept separate by relevant sealing. Maintenance is easily performed on the heat exchanger and filters thanks to the lateral extraction.
- By-pass motorised system of the recovery unit actuated automatically by the electronic control
- Fresh air and ambient inlet class F7 filters.
- Fans: fresh air inlet and centrifugal expulsion with BRUSHLESS DC motors that allow higher efficiency to be achieved with respect to traditional motors with an energy saving of up to 60%. 3 speed management option.
- Ducting connections with plastic circular fittings.
- Incorporated electrical panel with electronic board to control the free-cooling and fan functions.

Controls

- KCVE: remote panel with ON/OFF function, speed selection and programmable weekly timer. It is suitable for wall mounting installation on "502" electrical boxes.
- KTLCM: infrared remote control to be combined with the KCVE.
- KTCV2: remote panel for wall mounting installation, summer/winter environment temperature control, electrical resistance activation consent (KSBE) and min-med-max speed selection.

- Remote panel KCVE
- Remote control KTLCM
- Remote panel KTCV2

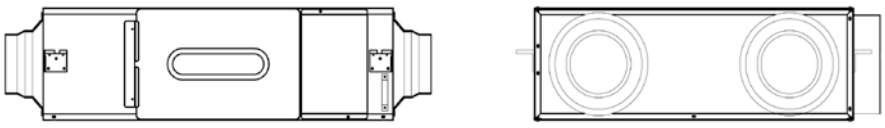
	VMC MODEL			25	35	50	80	100	120
	Air flow rate	MAX (V)	m³/h	260	330	500	750	950	1180
	Speed	MED (V)	m³/h	260	330	500	660	740	1080
		MIN (V)	m³/h	170	250	360	560	600	980
	Head Pressure	MAX (V)	Pa	70	70	70	70	70	80
	Speed	MED (V)	Pa	70	70	70	50	40	70
		MIN (V)	Pa	30	40	35	35	25	55
	Absorbed power	MAX (V)	W	90	120	135	300	310	490
	Speed	MAX (V)	A	1,1	1,4	2,0	2,8	3,0	3,7
	Int S.F.P.		W/m³/s	1043	1032	1178	990	1238	1570
❶	Sound pressure	MAX (V)	dB(A)	27	31	33	38	39	42
	exhaust. Speed	MED (V)	dB(A)	26	29	31	36	37	37
		MIN (V)	dB(A)	22	25	27	32	33	32
	Electrical supply		V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
	HEAT RECOVERY								
❷	Winter efficiency (temp/enthalpy)		%	75/61	77/64	77/62	73/59	74/60	71/56
❷	Winter recovered heating capacity		kW	2,2	3,1	4,3	6,5	8,2	9,1
❸	Summer efficiency (temp/enthalpy)		%	62/60	63/61	62,5/60	59/57	59,5/57,5	57/54
❸	Summer recovered heating capacity		kW	0,8	1,2	1,7	2,5	3,2	3,7
	DIMENSIONS AND WEIGHTS			**25**	**35**	**50**	**80**	**100**	**120**
	Length/Depth/Height		mm	885/666/272	885/806/272	970/997/312	1322/882/390	1322/1132/390	1322/1132/390
	Weight		Kg	27	32	42	63	76	76

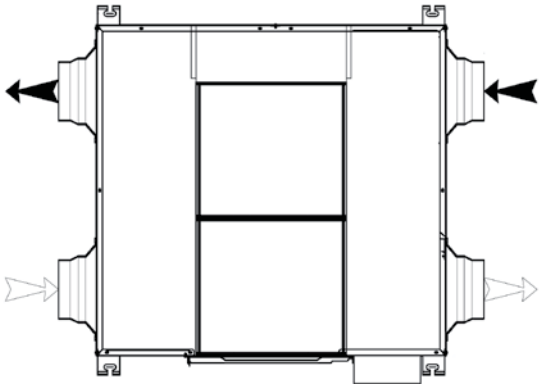
Data at the following conditions:

❶ Values with reference to 1.5 metres from the intake in free field.

❷ Nominal winter conditions: outdoor air: –5°C; 80% UT. Ambient air: 20°C; 50% RH.

❸ Nominal summer conditions: outdoor air: 32°C; 50% UT. Ambient air: 26°C; 50% RH.





PROFESSIONAL

Special air handling units 800÷41000 m^3/h

Web code: **NA001**

Advance

ADV Next Air 01÷16

Air flow rate: 800÷41.000 m³/h

INVERTER

- **High performance new generation structure**
- **Excellent energy efficiency**
- **ErP 2018 Ready range**
- **Integrated plug and play intelligence**
- **Exclusive solutions for Indoor Air Quality**

Modular air handling units.

- The ADV Next Air range derives from the new Rhoss vision of air handling.
  Innovative ideas and advanced technology are the winning combination that distinguish it.
  The new innovative line of air handling units derives from here and from our thirty years of experience in the industry, which faces the future of air conditioning.
  The strength of the product lies in using latest generation creative engineering solutions, while preserving qualitative excellence and the reliability for which Rhoss is well-known. Complete modularity and the extensive configurability give life to the perfect balance between customisation and standardisation in the Next Air range, between flexibility and industrialisation.

STRUCTURE

- Innovative, robust and self-supporting structure, made from a single 50 mm thick monocoque sandwich panel, with internal and external hot galvanised sheet metal and painted with oil-free polyester paint, highly resistant to corrosion. The internal surfaces are completely smooth in order to inhibit microbial growth and prevent the accumulation of dust.
- Self-extinguishing polyurethane resin based with a density of 48 kg/m3 injected polyurethane insulation. Euroclass Cs3d0 reaction to fire.
- Stepped-type full-face front inspection sandwich panels are housed in the profile seat, with complete thermal cut interruption, a double soft PVC gasket that simultaneously guarantees resistance to leaks and prevents humidity, water or any other undesirable element to infiltrate the machine.
- The fastening profiles are made of new generation plastic (PVC-RAU). Produced on an exclusive Rhoss design, thanks to their geometry they ensure perfect thermal insulation of the structure and complete interruption in the thermal bridge, excellent resistance against exposure to light (UV) and weather conditions, guaranteeing exceptional resistance to ageing and corrosion.
- The condensate collection tanks are made of magnesium and aluminium alloy sheet metal, guaranteeing excellent resistance to corrosion. They are installed inside the structure of the machine and are completely isolated in this way.
  Thanks to the double tilt, complete drainage of the fluids is guaranteed, thereby avoiding any type of undesired stagnation.
- All the units are suitable to be installed indoors as well as outdoors.

Mechanical features EN 1886 achieved by the ADV Next-Air Range
Mechanical Resistance D1
Leakage (-400Pa) L1
Leakage (+700Pa) L1
Filter Bypass factor F9
Thermal Transmittance T2
Thermal bridge factor TB1

STANDARD SET-UPS

Each section is equipped with the following as standard:

- Pressure outlet that allows and facilitates the installation of any sensors and measurements of air performance required by the commissioning activities as specified by the reference LEED guide.
- Holes to pass the signal or power cables protected internally and externally by a multi-hole cable gland with IP 65D protection rating so as not to alter the mechanical performance of the machine in any way and to facilitate on site works.

MAIN COMPONENTS

Heat recovery units

- Sensitive or enthalpic rotary recovery unit
- Crossed flow recovery unit with integrated bypass

Fans

- High efficiency backward blade fans
- EC Brushless freely rotating fans
- Plenum fan freely rotating fans

Filters

- Biocide Airsuite or standard G4 pleated synthetic filters
- Metal mesh flat filters G1
- Biocide Airsuite or standard rigid bag filters M6 F7 F8 F9
- Soft bag filters M6 F7 F8 F9

Heat exchangers

- Water-powered coils
- Electric coils

Humidifiers

- Evaporating pack humidifiers with throwaway water
- Evaporating pack humidifiers with recirculation pump
- Steam humidifiers with independent producer with immersed electrodes
- Set-up for installation of other types of humidifiers

Various sections

- Dampers for outdoor/mixing/ejection air intake with
  - Servo controlled dampers
  - Manual dampers
- Empty inspection sections
- Silencers

Available versions:

- Type A uni-directional machine
- Type B machine with mixing chamber
- Type C cross flow heat recovery unit for primary air
- Type D cross flow heat recovery unit for all air systems
- Type E Rotary heat recovery unit for primary air
- Type F Rotary heat recovery unit for all air systems

Factory fitted accessories

- Filter soiling monitoring system
- Rotary recovery unit and fan motor inverter
- Internal lighting system
- Anti-vibration fittings for duct connections
- Anti-intrusion and rain protection grilles

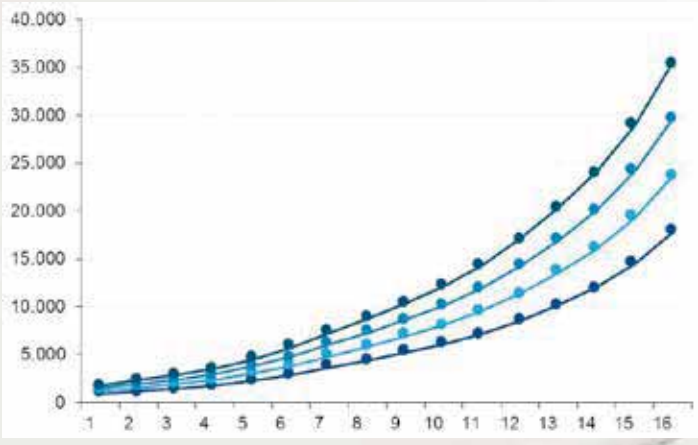
A new comfort level

The special high sealing filters frame and the bactericidal filtration system developed by Labiotest in collaboration and exclusive for Rhoss, **Air'suite® Filter**, are a guarantee for the well-being of the occupants.

ADV Next Air

Air Handling Units

In 2016 comes to life Next Air, take place the new idea of Rhoss air treatment.
When ideas meet technology, innovation is born.
From here, and from our thirty years of experience in the AHU business, is born a new innovative line of air handling units looking to the future of the air conditioning.
The strength of this product is the use of creative and innovative engineering solutions, while preserving the qualitative excellence and the characteristics of reliability for which Rhoss is known.



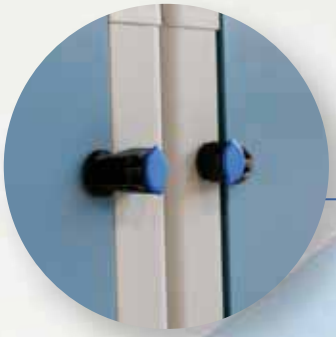
The complete modularity and the wide configurability create, in the Next Air range, the perfect balance between customization and standardization,flexibility and industrialization.

Perfect in any weather conditions

Thanks to the careful study of materials and the extreme attention payed to the thermal decoupling of the structure we can guarantee the absence of condensation in a very wide area of operating temperature and humidity both in summer and winter season.

Thermal bridge factor Class TB1.

Our units installed outdoors excellently resist both to the rain that UV guaranteeing performance unchanged over time.



No Waste

The perfect fit of the panels, the valuable seals and the Rhoss monocoque structure are the best guarantee against air leakage and the related energy waste.

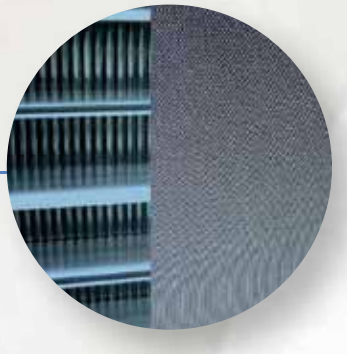
Air Leakage class L1.

The new generation plastic profiles with very low thermal conductivity and the highly insulating panels of are the unique solutions that we give to our customers in order to eliminate energy waste.

Thermal transmittance Class T2.

Built-in intelligence

The integrated Rhoss control system ensures the best energy performance, fast connectivity, ease of use and management, full integration to supervisory systems of buildings.



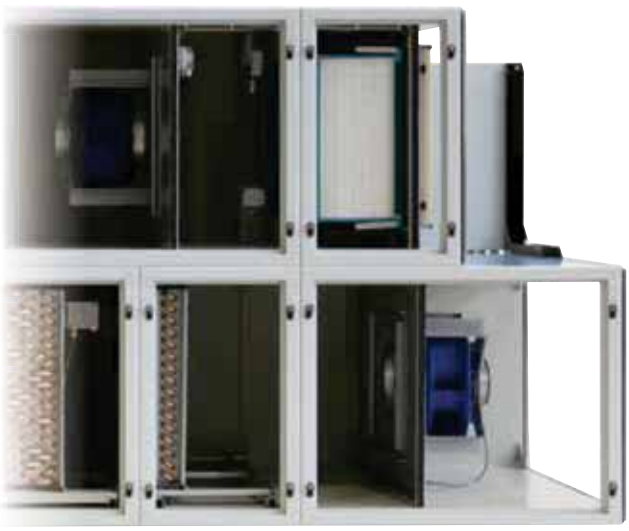
Best efficiency in minimum space

The entire range meets the **2018 step of Erp Directive** for NRVU ensuring a sustainable energy savings.
The energy efficiency is guaranteed with low operating costs.

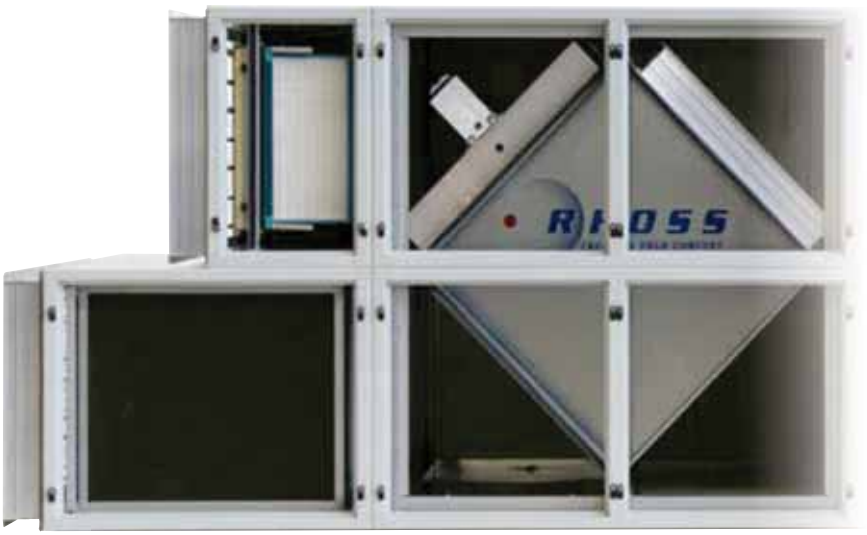
Advance

ADV Next Air 01÷16

ADV Next Air MODEL		01	02	03	04	05	06	07	08
Air flow rates									
Flow rate at 1.5 m/s	m³/h	890	1160	1430	1770	2250	2860	3610	4360
Flow rate at 2 m/s	m³/h	1180	1550	1910	2360	3000	3820	4820	5820
Flow rate at 2.5 m/s	m³/h	1480	1930	2390	2950	3750	4770	6020	7270
Flow rate at 3 m/s	m³/h	1770	2320	2860	3550	4500	5730	7230	8730
Flow rate at 3.5 m/s	m³/h	2070	2700	3340	4140	5250	6680	8430	10180
External front dimensions									
Base	mm	790	875	975	1075	1175	1275	1375	1480
Height	mm	520	640	720	720	760	840	840	950
Crossed flow heat recovery									
Recovery at total air flow rate									
Recovery unit nominal flow rate	m³/h	1300	1700	2100	2600	3300	4200	5300	6400
Minimum flow rate	m³/h	600	800	1000	1300	1600	2100	2600	3200
Maximum flow rate	m³/h	1700	2200	3000	3700	4900	5500	6900	8800
Balanced flow rate dry efficiency	%	73,5	73,2	73,7	69,8	73,4	75,1	75,1	74,9
Efficiency EN 308	%	80,5	80,4	79,3	77,3	79	80,8	80,8	80,6
Recovery unit at partial flow rate									
Recovery unit nominal flow rate	m³/h	650	850	1050	1300	1650	2100	2600	3200
Minimum flow rate	m³/h	300	400	500	600	800	1000	1300	1600
Maximum flow rate	m³/h	850	1100	1350	1700	2200	3000	3700	4900
Balanced flow rate dry efficiency	%	73,5	73,5	73,5	73,5	73,6	73,7	69,8	73,3
Efficiency EN 308	%	80,6	80,5	80,5	80,5	80,5	79,3	77,3	78,9
Rotary heat recovery									
Recovery at total air flow rate									
Sensitive recovery									
Recovery unit nominal flow rate	m³/h	1150	1650	2100	2600	3300	4200	5250	6300
Balanced flow rate dry performance	%	73,0	73,1	74,4	74,9	74,9	74,5	73,0	73,1
Hygroscopic recovery									
Recovery unit nominal flow rate	m³/h	1200	1700	2100	2600	3300	4200	5300	6400
Balanced flow rate dry performance	%	73,3	73,7	75,1	75,4	75,5	75,2	73,9	73,8
Recovery unit at partial flow rate									
Sensitive recovery									
Recovery unit nominal flow rate	m³/h	1150	1150	1150	1650	1650	2250	2900	3700
Balanced flow rate dry performance	%	73,0	73,0	73,0	73,1	73,1	73,2	73,0	73,0
Hygroscopic recovery									
Recovery unit nominal flow rate	m³/h	1200	1200	1200	1750	1750	2400	3100	3950
Balanced flow rate dry performance	%	73,3	73,3	73,3	73,2	73,2	73,2	73,0	73,0

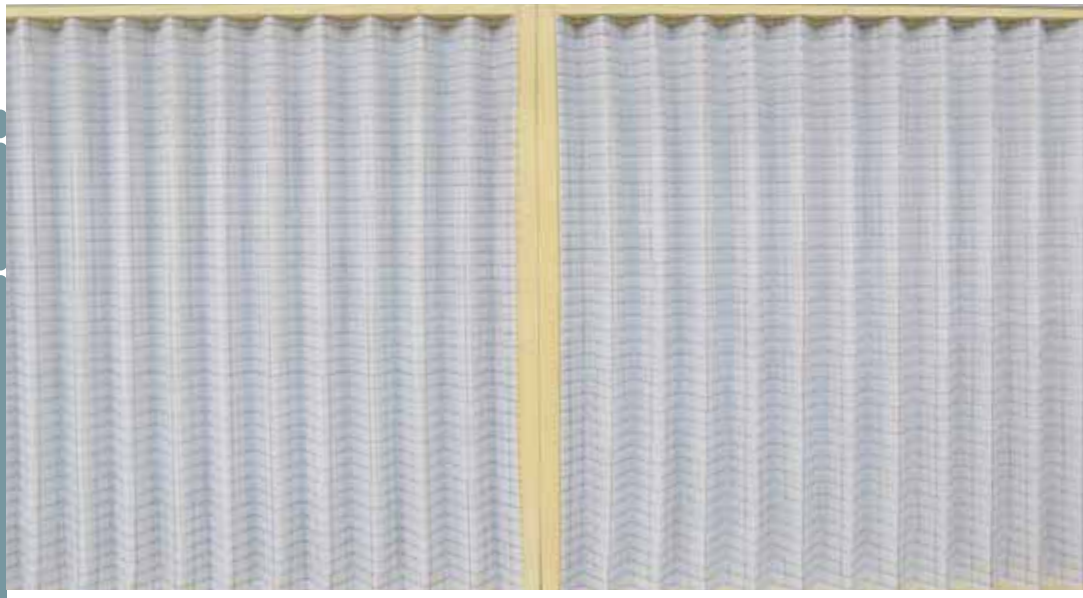


ADV Next Air MODEL		09	10	11	12	13	14	15	16
Air flow rates									
Flow rate at 1.5 m/s	m³/h	5180	6070	7160	8520	10160	12000	14450	17730
Flow rate at 2 m/s	m³/h	6910	8090	9550	11360	13550	16000	19270	23640
Flow rate at 2.5 m/s	m³/h	8640	10110	11930	14200	16930	20000	24090	29550
Flow rate at 3 m/s	m³/h	10360	12140	14320	17050	20320	24000	28910	35450
Flow rate at 3.5 m/s	m³/h	12090	14160	16700	19890	23700	28000	33730	41360
External front dimensions									
Base	mm	1575	1775	1925	1980	2085	2275	2535	2665
Height	mm	1000	1100	1100	1200	1320	1500	1500	1680
Crossed flow heat recovery									
Recovery at total air flow rate									
Recovery unit nominal flow rate	m³/h	7600	8900	10500	12500	14900	17600	21200	24700
Minimum flow rate	m³/h	3800	4400	5200	5800	6900	8300	10000	11300
Maximum flow rate	m³/h	10500	12300	14500	17600	21000	24800	29600	32000
Balanced flow rate dry efficiency	%	74,9	74,9	74,9	73,4	73,4	73,4	73,4	73,0
Efficiency EN 308	%	80,6	80,6	80,6	79,0	79,0	79,0	79,0	78,6
Recovery unit at partial flow rate									
Recovery unit nominal flow rate	m³/h	3800	4200	5300	6400	7600	8900	10500	12800
Minimum flow rate	m³/h	1900	2100	2500	2700	3000	3600	4200	5100
Maximum flow rate	m³/h	5500	5500	6900	8800	10500	12300	14500	17600
Balanced flow rate dry efficiency	%	73,3	75,1	75,1	74,9	74,9	74,9	74,9	74,9
Efficiency EN 308	%	78,9	80,8	80,8	80,6	80,6	80,6	80,6	80,6
Rotary heat recovery									
Recovery at total air flow rate									
Sensitive recovery									
Recovery unit nominal flow rate	m³/h	7500	8900	10500	12500	14800	17600	21200	25900
Balanced flow rate dry performance	%	73,0	75,2	74,7	73,9	73,0	73,0	73,3	73,0
Hygroscopic recovery									
Recovery unit nominal flow rate	m³/h	7600	8900	10500	12500	14900	17600	21200	26000
Balanced flow rate dry performance	%	73,8	75,7	75,3	74,7	73,9	74,0	74,2	73,8
Recovery unit at partial flow rate									
Sensitive recovery									
Recovery unit nominal flow rate	m³/h	4600	5250	5250	6300	7500	10150	11600	14800
Balanced flow rate dry performance	%	73,0	73,0	73,0	73,1	73,0	73,0	73,0	73,0
Hygroscopic recovery									
Recovery unit nominal flow rate	m³/h	4900	5500	5500	6750	8050	10850	12400	15800
Balanced flow rate dry performance	%	73,0	73,3	73,3	73,1	73,0	73,0	73,0	73,0



INDOOR AIR QUALITY SOLUTIONS

air'suite® by Labiotest



- **Deactivation of biological load**
- **Zero energy impact**
- **No additional maintenance**
- **Immediate retrofit on existing systems**

Rhoss sets a new "indoor" environment comfort standard by improving the air hedonistic nature introduced in the environment by means of broad spectrum "biocide filtration" treatment. This is the result of studies, experience and know-how gained over the years by Rhoss spa and Labiotest srl, in their respective professional fields and highlighted by an agreement signed by both Companies for the exclusive distribution of new Air'Suite® filters for HVAC applications.

Air'Suite®

A new way to treat the air in confined spaces that we breathe every day. It requires systems for olfactometric conditioning and the "filter" range, that is the line of filters applicable to the world of ventilation and air conditioning.
A new concept of biocide filtration that allows for the removal of microbiological contamination without requiring the installation of additional solutions or modification of existing systems.

Healthy environments

Living in a "clean" environment is an essential concept from breathing healthy air.
On average a person inhales air 16,000 times a day, therefore, breathing in a healthy environment allows you to live healthily. But what does clean air mean? Healthy? This means to guarantee adequate thermohygrometric conditions but above all no condition that directly or indirectly affects our mental and physical state, such as odours and pathogens. In other words, a high standard of IAQ (Indoor Air Quality).
Today, this requirement in indoor environments is threatened by intensified outdoor pollution (promiscuity in productive areas, road traffic, etc.) and by the increase in air recirculation in environments where energy saving is strategic and/or where primary air is not easily available.

General regulatory aspects

The European Union, through the "2004-2010 Environment and Health European Action Plan", has set as a priority objective the improvement of air quality and development of new countermeasures to the increase in diseases and syndromes associated with prolonged stays in confined high anthropological density environments (SBS: sick building syndrome). This same objective has inspired our staff, during the design and construction of Air'Suite®.

TRAFFIC

PRODUCTIVE SETTLEMENT

BIOLOGICAL CONTAMINANTS

UNPLEASANT ODOURS

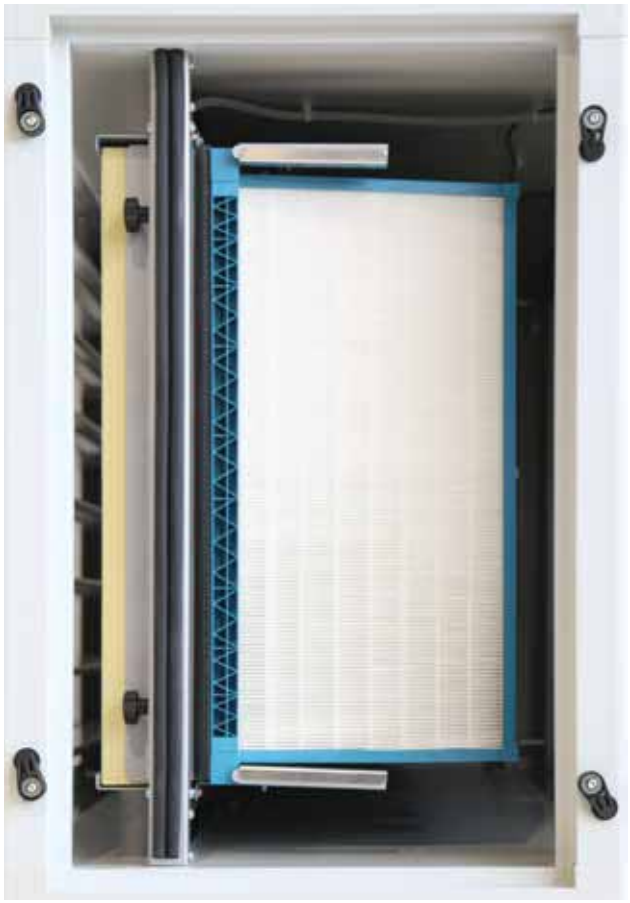
Air'Suite® filter

The application of the Air'Suite® filter to a Rhoss air handling control unit of the ADV Custom or Next Air ranges not only allows the traditional dust removal but also additional decontamination of microbiological agents (bacteria, moulds, viruses, algae, etc.) in the air and the filtering device itself. An effect that requires no change to the new or existing air conditioning device and that does not require any additional cost to install additional devices. Simply replace the classic filter unit with the Air'Suite® filter.
Its development, of course, in order to be used immediately and have no short or long-term contraindications has fulfilled the following essential requirements:

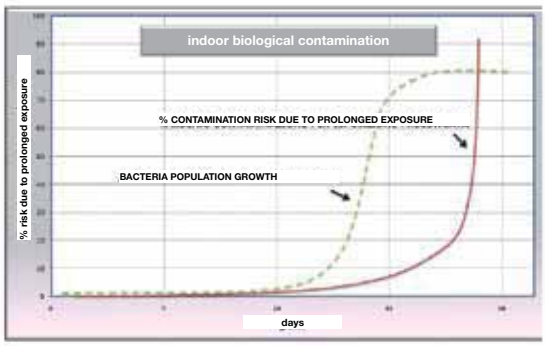
- The electrical loads of the system are not altered;
- The existing filtration levels do not change;
- No multicell compositions or formats other than those existent are required;
- No special frames or specific insertion/filter systems are required
- No additional maintenance is required;

The replacement times are determined by the pressure drops due to dust contamination (such as classic filters) and not by the biocidal power
In addition to this, the Air'Suite® filter line offers the following benefits:

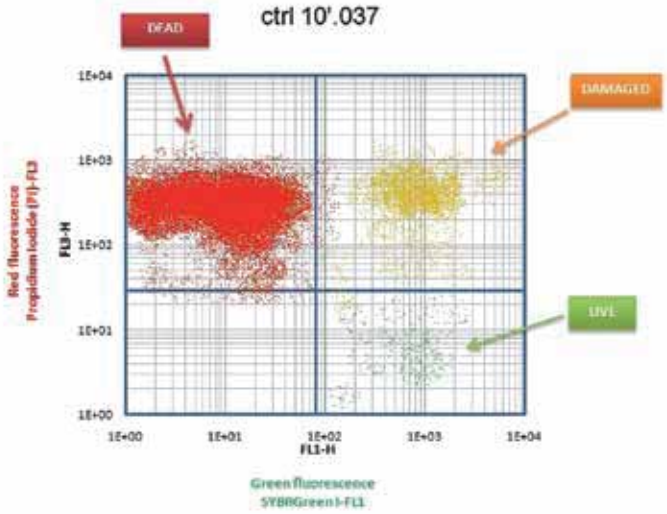
- Contamination due to "proliferation" of algae, mould, fungus or bacteria on the surfaces of the filters is completely inhibited;
- The filter is self-decontaminating. If its presence in the environment does not become a source of contamination;
- The possible release of biological material in the air ducts, unlike classic filters, is not active, therefore, it cannot proliferate again in other parts of the air conditioning system.



Microbiological contamination
of a confined environment.



Noise reduction efficiency
of Air'Suite Filter.



Biocide filtration

The term biocide filtration refers to the combination of the granular filtration (classical) and the deactivation of the biological load (innovative) on the same amount of air which passes through the same means of filtration.
This process is achieved by using a new appropriately functionalized biopolymer which is distinguished by:

- high availability in nature;
- biocompatibility;
- non-toxicity;
- intrinsic prevention properties of infections.

Fields of application

There are no limits of application, however, the areas and particularly sensitive contexts to indoor air quality in which the new line of Air'Suite® filters finds its natural application are:

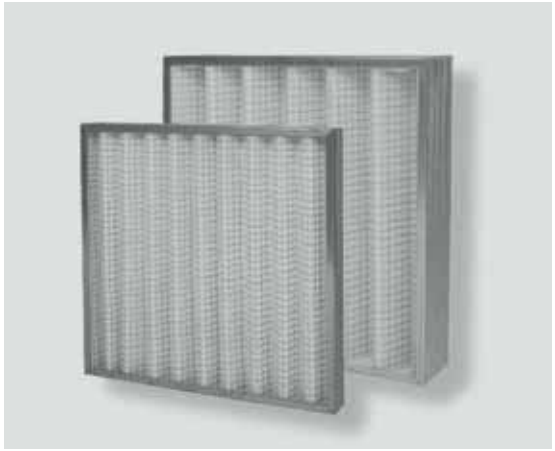
- Boats, planes, trains, buses and subways;
- Hospitals, clinics and nursing homes;
- Meeting rooms and conference halls;
- Waiting rooms, outpatient clinics;
- Restaurants, cafés, bars;
- Spas and fitness centres;
- Swimming pools, gyms;
- Schools and schools for children and not only ...

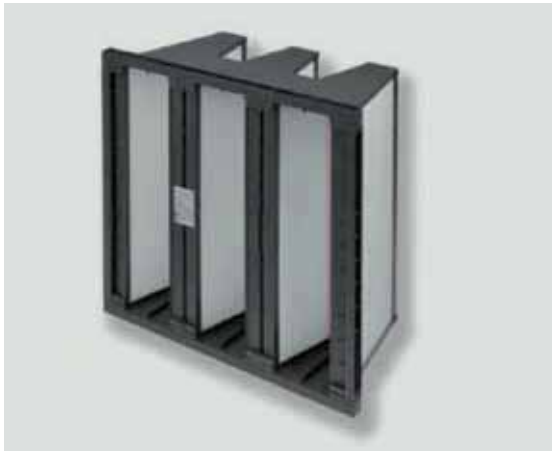
Types of filters available

Air'Suite® biocides filte's are available in the following degrees of filtration:

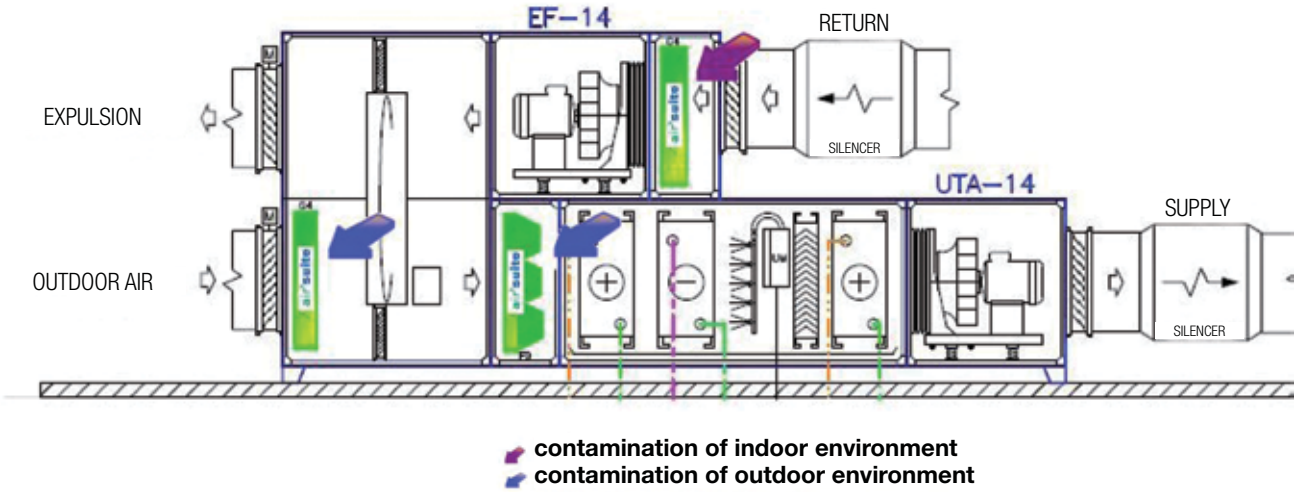
Filters in cells: G4 (EN 779:2012)

Rigid or limp bag filters: F7 F8 F9 (EN 779:2012)





Example of Air'Suite application



Research development and certifications

The biocidal average mode of action has been the subject of study and development of important Italian research institutes.
The decontaminating power of the average has been the subject of experimentation and trials. The classic plate sampling which is usually indicated as a single reference to measure the efficiency of the ability to reduce for example bacteria, in reality is nothing more than a semi-quantitative measuring system of possible contamination that crosses the filter.
The Air'Suite® filters, on the other hand, have been tested with new advanced techniques that measure the effective biocide capacity on the filter surface itself and does not make use of cultures but uses the count of every single organism/cell and its integrity or ability to reproduce.
The bacterial reduction efficiency was then measured through a survey protocol with flow cytometry techniques and certified by IRSA-CNR on a sample of the contaminated filter.
The resulting efficiencies are higher than 50% of "instant" reduction and 100% within 30 hours after contamination.

Custom ADV - CTA ADV 240÷22920

Heat recovery unit - FLUXBLOCK

Heat recovery unit - ROTOBLOCK

Heat recovery unit - RIGENERA

Heat recovery unit - ADIABATIC

PROFESSIONAL

Customised air handling units 850÷104970 m^3/h

Custom ADV

CTA ADV 240÷22920

Air flow rate: 850÷104,970 m³/h

- **Wide and versatile range**
- **Integrated heat regulation**
- **Energy Saving Solutions**
- **Self-sanitising units**
- **Custom solutions**

Modular air handling units.

- The CTA ADV range derivces from decades of Rhoss experience in the field of air handling and is continuously developed to meet the new requirements of the market and our customers.
- The possibility of performing functional and performance tests of the units thanks to the R&D Lab allows us to test the reliability of our machines, the energy efficiency of the proposed systems and test new components and innovative solutions.
- The range of air flows available, the possibility to select a comprehensive range of functional modules and options, and the total flexibility of configurations available makes this range the ideal solution for applications in the service sector as well as those in the industrial sector.

The CTA ADV range guarantees:

- **High quality of the selected components;**
- **Completeness of the offer of the sections and accessories available;**
- **A wide range of flow rates and versatility of the configurations available;**
- **Optimal air quality and comfort energy efficiency;**
- **Unlimited modularity to facilitate portability and on site positioning;**
- **Easy maintenance thanks to easy access to the sections that can be inspected and the set-ups available for service readings.**

VERSIONS

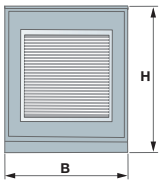
- STANDARD Series with a single fan with a rectangular section.
- NARROW Series with a single fan with a square section: useful to minimise the space on place taken up by the CTA.
- LOWERED Series with a combined fan: useful to minimise the total height of the CTA.
- VERTICAL Series.

SIZES

- 77 sizes are available in total split into the standard, narrow and combined ranges.

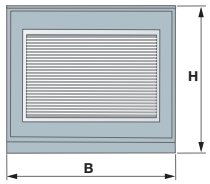
NARROW ADV RANGE

MODEL		371	471	541	661	741	881	1071	1241
Air flow rate at 2.5 m/s	m³/h	1.300	1.700	1.950	2.400	2.700	3.200	3.850	4.500
B front dimension	mm	730	730	770	810	870	880	880	1.030
H front dimension	mm	680	740	740	800	800	900	940	980
MODEL		**1461**	**1751**	**2021**	**2361**	**2831**	**3371**	**3941**	**4571**
Air flow rate at 2.5 m/s	m³/h	5.300	6.300	7.300	8.500	10.200	12.200	14.000	16.500
B front dimension	mm	1.030	1.030	1.050	1.220	1.410	1.610	1.610	1.630
H front dimension	mm	1.120	1.280	1.310	1.340	1.350	1.350	1.520	1.700
MODEL		**5441**	**6561**	**7611**	**9131**	**10711**	**12751**	**15041**	**18361**
Air flow rate at 2.5 m/s	m³/h	19.500	23.500	27.500	33.000	38.500	46.000	55.000	66.000
B front dimension	mm	1.740	2.020	2.150	2.500	2.780	2.900	3.350	3.800
H front dimension	mm	1.880	1.880	2.000	2.000	2.060	2.300	2.300	2.420



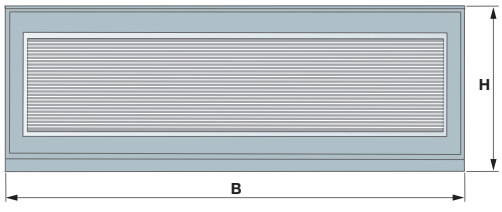
STANDARD ADV RANGE

MODEL		240	300	380	440	570	710	800	920
Air flow rate at 2.5 m/s	m³/h	850	1.080	1.360	1.700	2.050	2.450	2.850	3.300
B front dimension	mm	730	820	950	950	970	1.080	1.080	1.080
H front dimension	mm	630	630	660	720	720	750	820	880
MODEL		**1070**	**1220**	**1380**	**1530**	**1720**	**2080**	**2300**	**2500**
Air flow rate at 2.5 m/s	m³/h	3.850	4.400	4.950	5.500	6.200	7.500	8.300	9.000
B front dimension	mm	1.230	1.360	1.360	1.430	1.480	1.550	1.630	1.630
H front dimension	mm	880	880	920	920	990	1.070	1.070	1.170
MODEL		**2920**	**3270**	**3600**	**4300**	**5250**	**6060**	**7500**	**8480**
Air flow rate at 2.5 m/s	m³/h	10.500	12.000	13.000	15.500	19.000	21.800	27.000	30.500
B front dimension	mm	1.630	1.650	1.650	1.930	2.130	2.310	2.700	2.850
H front dimension	mm	1.300	1.300	1.400	1.560	1.560	1.700	1.700	1.700
MODEL		**9750**	**11400**	**12600**	**13900**	**16580**	**19860**	**22920**	
Air flow rate at 2.5 m/s	m³/h	35.000	41.000	45.500	50.000	59.500	71.500	82.500	
B front dimension	mm	3.000	3.000	3.200	3.600	3.850	4.040	4.540	
H front dimension	mm	1.870	2.050	2.210	2.210	2.210	2.420	2.490	



LOWER ADV RANGE

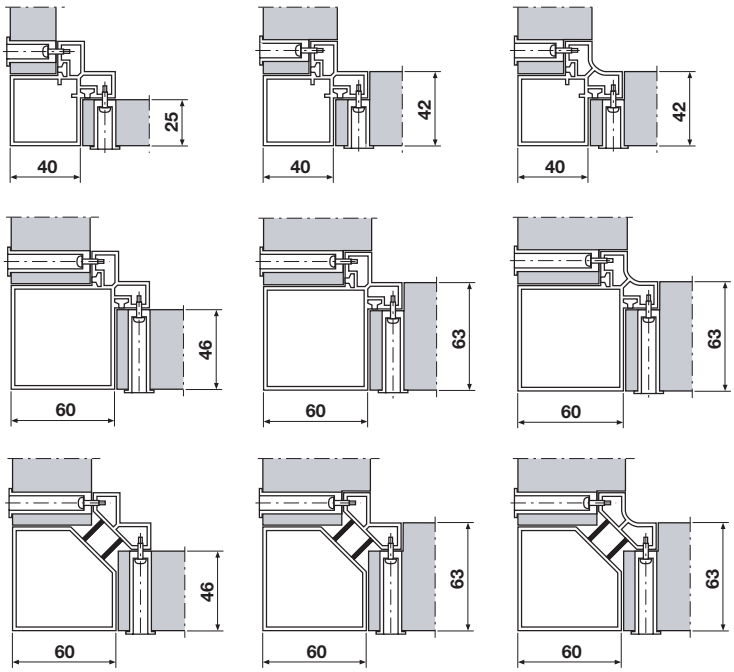
MODEL		420	630	830	990	1180	1400	1580	1850
Air flow rate at 2.5 m/s	m³/h	3.780	5.620	7.420	8.910	10.690	12.630	14.250	16.630
B front dimension	mm	1.400	1.550	1.800	1.950	2.100	2.250	2.500	2.600
H front dimension	mm	750	800	900	950	1.000	1.100	1.200	1.250
MODEL		**2210**	**2550**	**2860**	**3190**	**3650**	**4220**	**4830**	**5550**
Air flow rate at 2.5 m/s	m³/h	19.870	22.950	25.750	28.720	32.880	38.010	43.470	49.950
B front dimension	mm	2.700	2.800	2.950	3.100	3.250	3.550	3.850	4.105
H front dimension	mm	1.350	1.400	1.500	1.550	2.650	1.700	1.800	1.900
MODEL		**6240**	**7060**	**8100**	**9220**	**10400**	**11660**		
Air flow rate at 2.5 m/s	m³/h	56.160	63.500	72.900	82.940	93.630	104.970		
B front dimension	mm	4.405	4.610	4.910	5.210	5.510	5.810		
H front dimension	mm	1.950	2.100	2.200	2.350	2.500	2.600		

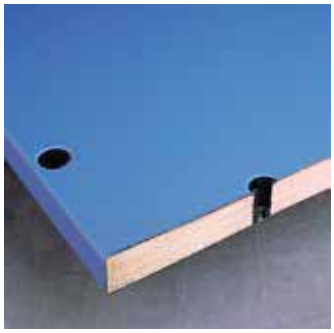


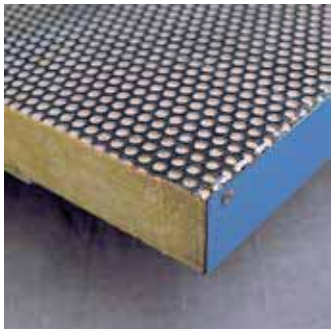
Custom ADV

CTA ADV 240÷22920

Construction details







STRUCTURE

❶ Panels made of double sandwich sheet metal with interposed polyurethane insulation foam with a density of 40 kg/m³ and class 1 fire resistance, or rock wool with oriented and glued fibres with a density of 90 kg/m³ and class 0 fire resistance.

❷ There are several material combinations available for the internal and external parts of the panel, such as galvanised steel, pre-painted and pre-plasticised, AISI 304 stainless steel and aluminium. If the acoustic aspect is a decisive factor, together with a careful selection of the silencers, high sound absorption capacity panels are suggested.

- Load-bearing structure in anti-corodal extruded aluminium sections for concealed screws with double fins and a chamber to guarantee no interruptions in the sections. Thicknesses available: 40x40 (can be combined with 25 and 42 mm thick panels) and 60x60 mm (can be combined with 46 and 63 mm thick panels) in versions with or without an interruption in the thermal bridge and with the inner corner rounded; corner nodes in fibreglass reinforced nylon and profile interlocking balloon gaskets.
- Continuous base beneath each aluminium section.
- Framework inside the unit is made of galvanised sheet steel/aluminium or AISI 304 stainless steel, in accordance with the requirements.
- Inspection doors in line with the various sections are equipped with anti-panic handles that open from both the inside as well as the outside. On request, the doors can be equipped with a double-glazed polycarbonate UV-resistant porthole and the relative sections can have spotlights.
- Outdoor versions: they are equipped with a roof with the same finish as the outer panels of the machine. This guarantees a perfect watertight seal even at the joints.
- On request, lateral technical compartments are available in line with the coils and humidification sections for the valve units to be covered. The depth of the technical compartment depends on the diameter of the collectors of the larger coils installed, in order to guarantee the space required inside the valve unit.
  The technical compartments are the same type of construction as the air handling units.

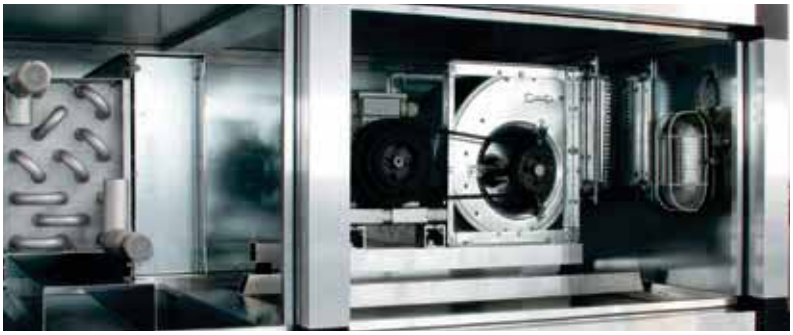
DAMPERS AND MIXING CHAMBERS

- Opposing fin type calibrating dampers made of galvanised steel or opposing fins with a wing profile made of aluminium with a longitudinal seal applied on all fins.
  The dampers are available in the version with manual fixed calibration or preset for a servo-control to be mounted.
- Mixing chambers with two dampers (outdoor and recirculation air) or three dampers (outdoor, recirculation and expulsion air).

FILTERS

- Filters produced by major national companies are used, selected according to the filter class adequate for the specific application for which the unit is designed. The solutions adopted are aimed at obtaining maximum performance in terms of:
  - Filter efficiency;
  - Minimum filter pressure drop;
  - Maximum capacity of accumulation and retention of dust, and therefore useful life of the filter;
  - Recyclable materials that can be incinerated are used.

- An overview of the filters that can be installed in our machines and their classification according to the Standards currently in force is provided below.



CLASSIFICATION OF THE FILTERS [1]					
Unit	CLASS OF THE FILTER	Final pressure drop (test) Pa	Average arrestance (Am) %	Average efficiency (Em) for particles of 0.4 µm %	Minimum efficiency[2] for particles of 0.4 µm %
Thick	G1	250	50 ≤ Am< 65	-	-
	G3	250	65 ≤ Am < 65	-	-
	G4	250	80 ≤ Am < 65	-	-
	G4	250	90 ≤ Am < 65	-	-
Average	M5	450	450	40 ≤ Em < 60	-
	M6	450	450	60 ≤ Em < 80	-
End	F7	450	450	80 ≤ Em < 90	35
	F8	450	450	90 ≤ Em < 95	55
	F9	450	450	95 ≤ Em	70

NOTE:
1) The characteristics of atmospheric dust vary significantly with respect to those of synthetically loaded dust used in the tests. For this reason, the test results do not constitute a basis on which operating performance or maintenance times can be established.
A leak in the filtering means or the spreading of the particles or fibres can have an adverse effect on the efficiency itself.
2) The minimum efficiency is the lowest of the following three values: initial efficiency, efficiency with a drained filter (neutralised filtering means) or the efficiency during the loading process of the test.

EN 1822-1			PrUNI 10339 REV	
FILTER CLASS	Integral efficiency MPPS	Local efficiency MPPS	FILTER CLASS	Filter efficiency
H12	99,5	-	12	AS
H13	99,95	99,75	13	AS
H14	99,995	99,975	14	AS

- The filer section can be accessorised with pressure sockets, differential pressure switches and/or gauges to constantly monitor the cleanliness of the filters.
- Activated carbon filters are also available for chemical and physical deodorisation and absorption of gaseous and organic vapours.

COILS

- Carrier fluids: water; glycol water; steam; superheated steam; direct expansion (refrigerants R22, R407c, R404A, R410a, R134a); electrical (with a double safety thermostat installed on board).
- The heat exchange coils, in standard operation, use the water as a carrier fluid and are package-type with copper pipes and aluminium fins and can be removed on guides. The collectors are in copper with terminals in brass or stainless steel.

Available options

Coils with the materials of the pipes and fins made of:
- pre-painted copper/aluminium,
- copper/copper,
- copper/tinned copper,
- metal/aluminium,
- entirely made of stainless steel.

- Drop separators: polypropylene, galvanised steel, aluminium and stainless steel droplet separators can be selected according to your needs.
- Condensation drain pans: in galvanised steel with an inclined base to guarantee excellent drainage through the drain. They are also available in Peraluman or AISI 304 stainless steel with a diamond-shaped base.

FANS

- The wide range of fans used allows an optimal selection to always be made to meet the flow rate and head pressure aeraulic performances required, maximum efficiency and the minimum noise level possible. Double inlet fans are used coupled with electric motors via belt and pulley transmission (adjustable and non) with forward blades (for low pressures), with backward blades (for medium-high pressures), with backward wing profile blades (for medium-high pressures and high efficiency). The motors are installed as standard on fixed belt tensioning slides with the fan on a sturdy structure with interposed high efficiency anti-vibration mounts.
- Free impeller PLENUM FANS are also available with inverter controlled directly coupled electric motors.

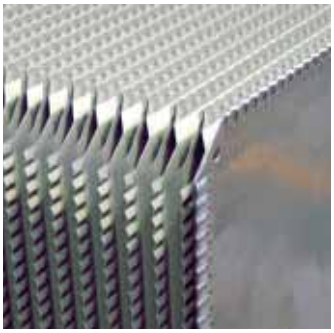
Special implementations:

- Fans with easily washable screws;
- Epoxy paint finish for aggressive atmospheres;
- Constructions made entirely of stainless steel;
- Motors compliant with the ATEX Standard;
- Explosion-proof motors equipped with spark-proof nozzle.

Custom ADV

CTA ADV 240÷22920

Construction details



SILENCERS
Consisting of highly soundproofing rock-wool partitions covered in glass fibre to protect against flaking.
Various lengths are available to meet all noise reduction requirements.
Available options
Implementation with Melinex coatings and micro-stretched mesh, suitable for specific installations such as pharmaceutical companies, research laboratories, the microelectronics industry and hospitals.

HUMIDIFIERS
Adiabatic humidifiers
- Evaporating pack implemented with disposable water or with pump recirculated water. The evaporating pack in cellulose paper is available in 100 (for efficiencies up to 70%) and 200 mm (for efficiencies up to 90%) thicknesses.
- Nozzles implemented with disposable water (for efficiencies up to 60%) or with pump recirculated water (for efficiencies up to 80%).

Special implementations
- High pressure atomising humidifiers: system with high efficiency and hygienically safe;
- Atomised water humidifiers: system that used compressed air and water from the mains (or demineralised) and produces water finely atomised.

Isothermal humidifiers
Steam humidifiers are intended for the following supplies:
- Only if the humidification section is set-up, including: the condensation drain pan along the entire section and a drop separator downstream.
- With just a dispensing pipe that is to be coupled with a regulation valve by the installer for centralised steam to be produced.
- With a dispensing pipe and autonomous steam producer with immersed electrodes.

Special implementations
- Autonomous steam producers with electric heaters.
- Gas-powered autonomous steam producers.
- Channel steam dispenser with nozzles supplied complete with a regulation valve and the relative electrical servo-command.
  Suitable for supply steam pressure from 0.2 to 4 bar.

HEAT RECOVERY UNITS
All heat recovery units used are designed and selected to maximise the sensitive and/or latent efficiency and minimise the pressure drops on the air side so as not to burden the electric power absorbed by the fans.

Plate recovery units, crossed-flows with or without side bypass for free-cooling in the following types:
- Straight expulsion and flow;
- Overlapping expulsion and flow;
- Side by side expulsion and flow.

Available options
- Acrylic protection: the aluminium is protected against corrosion by a polyurethane-based layer of non-toxic paint, in environments with an aggressive atmosphere.
- Extra sealing: to guarantee enhanced sealing between the two air flows.

Rotary recovery units with an enthalpic wheel in the following types:
- Straight expulsion and flow;
- Overlapping expulsion and flow.

Available options
Hygroscopic treatment
The aluminium matrix can be chemically treated with an alkaline solution of potassium carbonate in order to make the rotor hygroscopic.
High efficiency hygroscopic treatment
The rotor can be produced in special hygroscopic aluminium that guarantees even better performance.

Twin coil and single-directional regenerative recovery units
The finned recovery coils can be customised by selecting the number of rows according to the required recovery efficiency, and the materials used according to the type of application required.

Single and twin stage indirect adiabatic recovery units
For further details regarding the heat recovery unit consult the Energy Saving section in this document.

Special implementations
- **Heat pipes recovery**
- **Integrated thermodynamic recovery**

HANDLING, PACKAGING AND SHIPPING

- The CTA ADV are available in the packaged version as well as in sections, according to the requirements and type of unit selected, in order to easily resolve handling, transport and positioning the air handling units on site.
- The extreme modularity of this range also allows the sections to be easily passed through narrow spaces such as doors or lifts, resulting in the ideal solution for retrofitting existing systems.
- The single modules are designed to facilitate assembling the machine on site.
- The CTA ADV are packaged with a heat-shrinkable plastic film that protects the machine from dust or other dirt. It is also possible to request the air handling units to be supplied on Europallets (generally, when shipped via container) with standard wooden pallets as well as fumigated pallets.

CTA VERSION CKD

- In order to meet particular transport or on site requirements, Rhoss can supply the air handling units completely disassembled.

- The CTA ADV are compliant with the essential safety requirements set out in Machinery Directive 2006/42/EC. The machine also complies with the following directives: - 2006/95/EC, which annuls and replaces Directive 73/23/EEC as amended by 93/68/EEC. - 2004/108/CE (Electromagnetic Compatibility) as amended by 93/68/EEC.
- The ADV units comply with the Standards UNI EN 292, UNI EN 294, IEC EN 60204-1, UNI EN 563, UNI EN 1050, UNI 10893, UNI EN ISO 3744, ISO 3864 and ISO 5801 relative to the aeraulic tests of the fans, EN 1886 relative to the mechanical performance of the ventilation in the building, EN 13053 relative to the classification and efficiency of the ventilation units in the buildings, EN 13779 relative to the efficiency requirements of the ventilation systems in non-residential buildings, EN 779 and 1822 relative to the ventilation air filters, EN 1216 relative to the efficiency of the exchange coils, EN 60204 relative to the safety of the electrical equipment of the machines and EN ISO 7730 relative to the thermal comfort of the rooms.

Custom ADV

CTA ADV 240÷22920

Adjustment

- **Plug&Play Unit**
- **360° service**
- **Performance reliability**

When the regulation and power components of an air handling unit are normally installed on site the following occur simultaneously:
- increased in installation costs (due to the on site restrictions, inconvenient work conditions and variable atmospheric conditions);
- decreased reliability and efficiency of the machine.

ADVR: the strength of a winning proposal

The CTA ADVR range eliminates all these issues:

- **No access related problems to install the components in the best position for the unit to work.**
- **Simplified installation and minimised time related factors.**
- **Rhoss becomes the only partner, responsible also for CE certification of the machine.**
- **Performance optimisation of the machine.**
- **A clear and competitive economic offer.**

All-round support

Rhoss offers all the support the customer may require putting all the skills, experience and professionalism at the customer's disposal.

Making the offer and defining the order: for the best choice

Our technical sales team can accurately define the most suitable regulation system for your requirements and help in the selection of customised solutions. The verification of the system and application specifications becomes the fundamental step to offer the right solution whilst not forgetting the economic and energy aspects that may affect the final selection.

Production phase: certainty of the result

- The CTA ADVR range is produced in compliance with all the directives set by ISO 9001:2008. This is a guarantee of selection and careful and constant monitoring of quality levels of the suppliers, processes and productive methods and tests of the units.
- The machines are produced in highly industrialised lines by trained and expert personnel.
- All the components are factory tested, programmed, wired and installed.
- Only a highly specialised company can guarantee this.

Delivery and installation phase: problem-free

The first start-up of the machine will be carried out by a Rhoss assistance centre that will:

- restore the electrical wiring between the sections of the machine;
- activate and check the overall functionality;
- set the pulley, inverter calibration and humidifiers, check electrical absorption and perform hydraulic tests;
- adjust the regulation parameters;
- train the personnel;
- issue the start-up report.

System operation phase: peace of mind

As with all Rhoss units, the customer ha a vast selection of additional services at his disposal, such as:

- Possibility of extending the warranty from 12 months to 36 months: enhanced management tranquillity.
- Scheduled maintenance contracts including annual inspection visits, special interventions or faults seen to within 48 hours.
- Each contract can be customised with extra services such as emergency intervention within 4 hours.

Custom ADV

CTA ADV 240÷22920

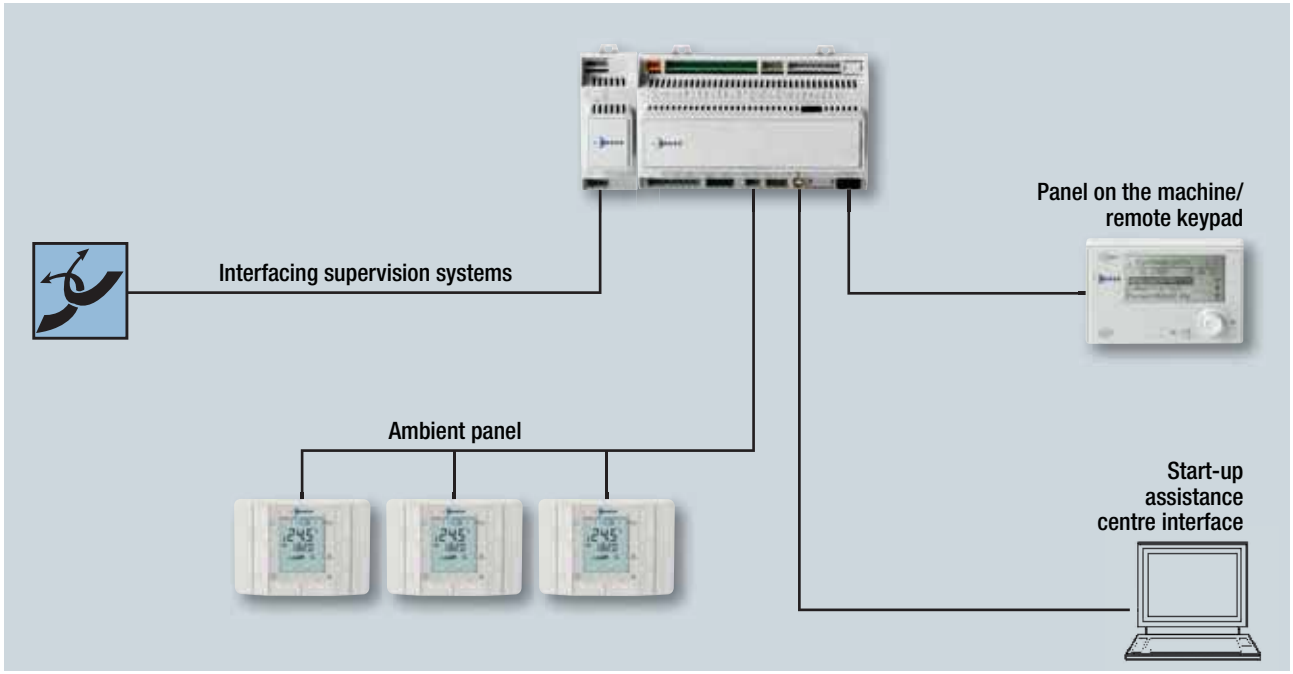
Adjustment

Main technical features

- **ELECTRICAL PANEL** installed on the machine and compliant with Directive IEC-EN 60204-1, complete with the programmed microprocessor regulator, transformers, drives for power control of the various utilities, safety devices and signal lights.
- **CONTROL PANEL** with LCD display and keypad, messaging and custom settings for the specific application.
- **HYDRAULIC ASSEMBLIES** for each coil, including 2 and 3 way, high quality, shut-off motorised valves and 2-way balancing valves on the bypass.
- **ACTUATORS FOR AIR DAMPERS**.
- Temperature, humidity and air quality SENSORS selected according to the specific requirements of the system.
- Dirty filter or no air flow signal **PRESSURE SWITCHES.**
- **AIR ANTIFREEZE THERMOSTAT**.
- Modulating or On/Off adiabatic or isothermic **CONTROL OF THE HUMIDIFIERS**, as required.
- **AUTOMATIC AIR FREE-COOLING, RECIRCULATION/MIXING CONTROL**.
- Plate, rotary, twin, single-directional regenerative, direct and indirect adiabatic single and twin stage **HEAT RECOVERY UNIT MANAGEMENT.**
- **MANAGEMENT OF FANS** with monopolar-bipolar motors o via an inverter. Management of fans with a double motor or twin fan units, one in stand by for the other.
- The **INVERTERS** can be configured for panel, potentiometer, constant pressure or flow rate control. They have been specifically selected to obtain low harmonic distortion in compliance with the European Directive IEC/EN 61000-3-12.
- Water and air **OZONE SANITIZATION CYCLE MANAGEMENT**.

Available functions and options

- Remote re-calibration potentiometers to control the ambient temperature, the opening of the dampers and fan inverter control.
- Unit management according to a freely set weekly program.
- Remote keyboard.
- Ambient panel for simplified use.
- General alarm.
- Remote On/Off.
- Remote summer/winter control in the presence of mixed coils.
- Possibility of customising the alarm functions.

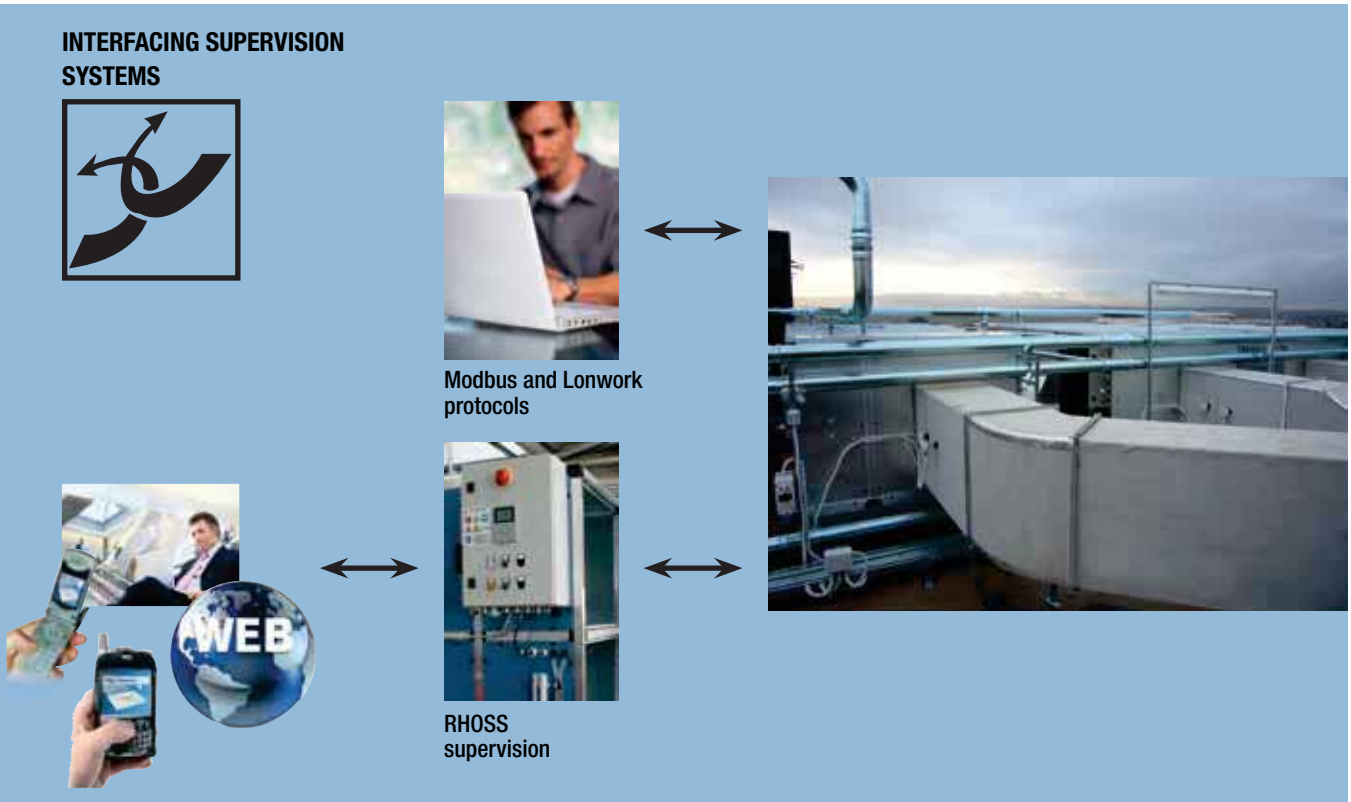


Interface

- The CTA ADVR Rhoss can be interfaced with Modbus and Lonwork protocols via special additional modules.
- RHOSS SUPERVISION: it is also possible to monitor all out CTA via web through the Rhoss Supervisor.

Main functions:

- collection of the "historical" data, updated as often as desired;
- sending e-mails, SMS messages, faxes and voice calls if alarms are triggered or a desired threshold of a given parameter is exceeded;
- possibility for authorised operators to act remotely to resolve the problem without having to intervene on site.



Custom ADV

CTA ADV 240÷22920

Hospitals

The Rhoss suggestion for the hospital sector

The ADV health care range is designed according to the requirements of the European Standards EN 1886 and EN 13053 and certified by EUROVENT. All the components are selected and designed to obtain minimal energy consumption (with particular attention to pressure drops) and maximise the overall energy efficiency of the system.

STRUCTURE

- The entire machine can be inspected through large access doors. Each section that is subject to frequent maintenance can be supplied with lighting and a large double-walled porthole to facilitate a visual inspection.
- The internal structure is completely free of sharp edges or protrusions and the profiles used are completely rounded. Thereby, air friction on the surfaces is reduced together with the accumulation of dirt or washing liquid inside the unit.
- The materials available for the panelling and framework guarantee levels of chemical resistance and bacterial cleanliness required for the monitoring of contamination.
- The condensation drain pans are included along the entire length of the machine for all the components involved in the flow to be cleaned.

FILTERS

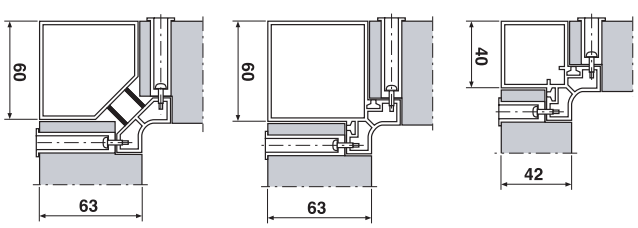
We can provide all degrees of filtration required by the specific application to guarantee adequate air quality in supply and return.
The Rhoss control constantly monitors the cleanliness of the filters, allowing preventive and/or special maintenance to be performed, thereby preventing unexpected idle times.

HUMIDIFIERS

- Steam humidification with autonomous producer with immersed electrodes/ electric heaters/gas.
- Dispensing mains steam nozzles suitable for hospital environments.
- High pressure adiabatic humidifiers are available for certain applications that allow an accurate control to be performed on the ambient humidity without compromising the cleanliness of the air.
- Adequate distances between the components are calculated for all the humidification sections in order to guarantee correct absorption of the steam itself.

INTERFACE AND SUPERVISION

- Guaranteed interface with the most common standard communication protocols such as Modbus and LON.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.



FAN AND PUMP CONTROL

External inverter controlled Plenum Fans or EC Brushless-type with control integrated directly in the electronics of the fan.

- Integrated management of any redundant fans for totally guaranteed comfort and performance, even in the event of a fault.
- Ventilating sections designed to guarantee the maximum aerodynamic efficiency possible.
- Constant PRESSURE control together with VAV systems with speed optimisation of the fans according to the reading of the position of the dampers, thereby optimising the energy efficiency of the system.
- Control with a constant supply FLOW, according to the dirt of the filters.
- Modulation of the return fans to control the pressurisation of the environments.
- Automatic reserve fan or pump activation management if a fault is detected in the active devices.
- Automatic rotation if the unit with reserve fan/pump reaches 100%.

"INTELLIGENT" FUNCTIONS

- Serial management of intelligent devices.
- Optimal use of the intelligent devices installed on the CTA ADV/R, such as inverters, autonomous humidifiers and EC Brushless fans.
- Collection of all the information transmitted to the supervision system makes the Rhoss ADV/R regulation a fundamental element to obtain maximum energy efficiency.
- A CTA ADV/R Rhoss can implement local interconnection with other Rhoss units such as chillers, hydronic terminals or subordinate reheating sections.

FUNCTIONS DEDICATED TO MAXIMUM ENERGY SAVINGS

Wide selection of heat recovery systems according to the applications and project restrictions:

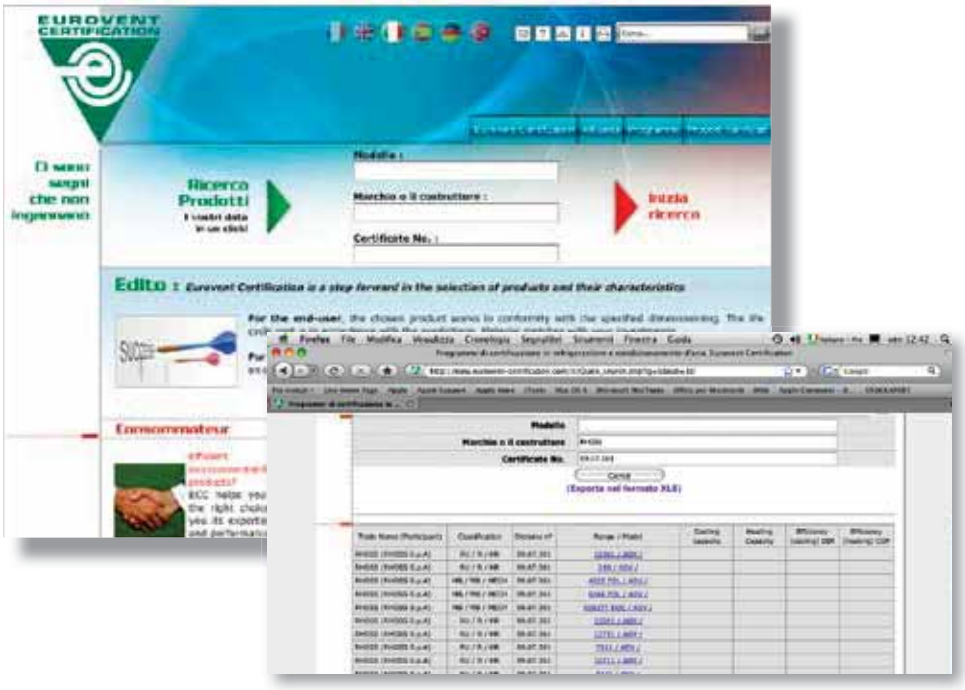
- Crossed flows and simple twin recovery units or with integrated indirect adiabatic cooling.
- Integrated free-cooling control (sensitive or enthalpy) and any recirculation dampers.
- Management of the heat transfer fluids according to the time schedule.
- Regulation at a constant water flow with 2-way valves.
- Supply temperature compensation in relation to the outdoor temperature.
- Innovative smooth management of the dehumidification and humidification without the use of the Saturation Probe.

Custom ADV

CTA ADV 240÷22920

Eurovent Certification

- **5 energy classes to make the right choice**



In 2010, Eurovent, finally introduced energy classification criteria also for air handling units.
The new energy classification will help the designers, the installer and the end users to select the most suitable product for their application.

Parameters considered

- Maximum speed of the air through the filtering section.
- Heat recovery efficiency;
- Pressure drops of the heat recovery.
- Absorbed power factor.

Definitions of three types of machines

1. From A➥ to E➥ for units with 100% recirculation or with an outdoor air T >9°C.
2. From A to E for units with an outdoor air T ≤ 9°C and with partial or total outdoor air renewal.
3. From A↑ to E ↑ for stand alone extractors.

CLASS	Maximum speed	Absorbed power factor	Heat recovery (air outlet ≤ 9°C)	
	[m/s]	$f_{class\text{-}Pref}$	ϕ [%]	ΔP [Pa]
A➥/A/A↑	≤ 1,8	≤ 0,90	≥ 75%	≤ 280
B➥/B/B↑	≤ 2,0	≤ 0,95	≥ 67%	≤ 230
C➥/C/C↑	≤ 2,2	≤ 1,00	≥ 57%	≤ 170
D➥/D/D↑	≤ 2,5	≤ 1,06	≥ 47%	≤ 125
E➥/E/E↑	≤ 2,8	≤ 1,12	≥ 37%	≤ 100
< E➥/E/E↑	Not required			

Immediately identifiable energy efficiency

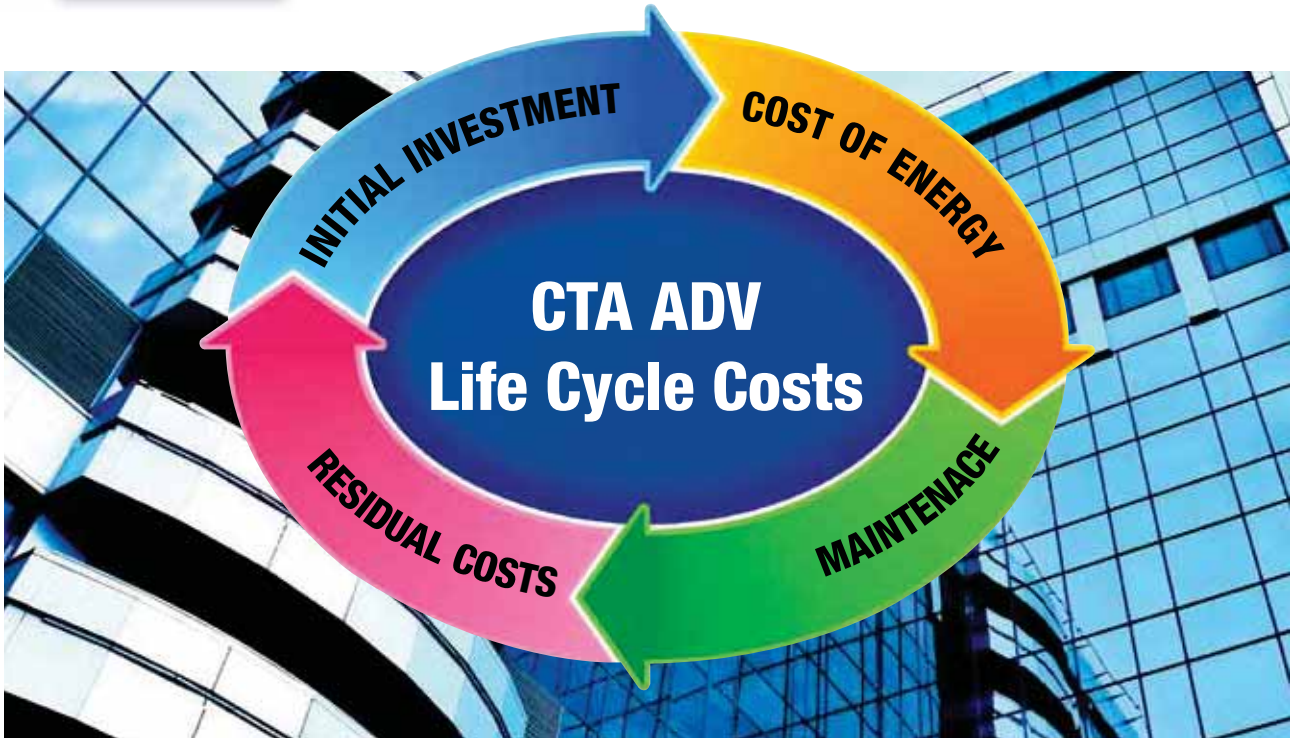
The 5 energy classes from A (highest energy efficiency) to E (lowest energy efficiency) offer the best answer for the level of energy efficiency required, thereby making it a simple and immediate concept.

Recognisable by all

Based on a global standard (EN 13053), the Eurovent energy classification for air handling units considers parameters such as air speed, absorbed electric power of the fan motor and the heat recovery efficiency.

A clear vision requires precision

Precision is an essential pre-requisite for the energy certification of air handling units. Eurovent certification is currently the only European certification program that can guarantee this precision via programmed measurements and tests of the certified machines.



Considerations on the Life Cycle Costs for air handling units

The LCC considerations are a very powerful tool to assess the energy consumption and total management costs of the air handling units.
If used together with the energy classification, the customer can remain assured to obtain that which is expected.

We shall no longer mix pears with apples

Eurovent certification provides a detailed model in order to have a clear picture of the costs involved in the air handling system and to also make sure that the data declared by the manufacturers who participate in the certification program can be compared and are correct and accurate.

The calculation considers the following parameters:
- Air flow rate;
- Supply temperature in winter and summer;
- Thermodynamic functions in the CTA (heating, cooling, humidification, dehumidification);
- Climatic data of the place of installation;
- Heat recovery efficiency;
- Power consumption of the fans;
- Operating time of the installation;
- Investment costs;
- Energy costs;
- Maintenance costs.

LCC analysis and energy classification: an unbeatable combination

The data of the Eurovent certified air handling units can be directly compared and offer a neutral basis to calculate the LCC: combining them with the Eurovent energy classification, the designer, installer and end users obtain clear and precise data to be sure of the choice.

Custom ADV

CTA ADV 240÷22920

Eurovent Certification

- **Guaranteed performance**
- **Certainty of the results**

Eurovent certification is synonymous with absolute guarantee, according to standard parameters and protocols of the actual performance of the air handling units.
The air handling units of the ADV range have successfully passed the mechanical and performance tests, thereby confirming the excellence of our product and the seriousness of our business proposal.

Mechanical features

Verified according to EN1886: Ventilation in the Building - air handling units - Mechanical characteristics
More specifically, the following mechanical characteristics are guaranteed:

• Mechanical strength of the structure
Deflection: the maximum deflection of the sides of the unit subjected to positive or negative pressure, expressed as the difference in the distance between a reference plane outside the unit itself is not subjected to pressure and the external surface of the unit in question, subjected or not to the test pressure. This value is an indication of the robustness of the unit.

Classification criteria:

EN 1886:1998	EN 1886:2006	Maximum relative deflection mmxm-1	Resistance to the max pressure generated by the fan
1B	D3	>10	NO
1A	D2	10	SI
2A	D1	4	SI

• Air leakage through the casing with a depression of 400 Pa
Air leakage of the casing subjected to a negative pressure test of 400 Pa compared to the total casing surface.

Classification criteria:

EN 1886:1998	EN 1886:2006	Leakage at -400Pa in l/sXm2
3 A	-	3,96
A	L3	1,32
B	L2	0,44
-	L1	0,15

• Air leakage through the casing with an over-pressure of 700 Pa
Air leakage of the casing subjected to a positive pressure test of 700 Pa compared to the total casing surface.

Classification criteria:

EN 1886:1998	EN 1886:2006	Leakage at 700Pa in l/sXm2
3 A	-	5,7
A	L3	1,9
B	L2	0,63
-	L1	0,22

• Leaks due to bypassed filter sections
Air leakage around the frame of the filters subjected to a negative pressure test of 400 Pa and a positive pressure test of 400 Pa.

Classification criteria:

EN 1886:1998	EN 1886:2006	Leakage % at -400Pa
6	< F6	G1-F5
4	F6	F6
2	F7	F7
1	F8	F8
0,5	F9	F9

• Casing heat transmission
The overall heat exchange coefficient is equal to the amount of heat transmitted by the unit surface due to the difference between the internal and external temperature of the unit itself.

Classification criteria:

Class	Thermal transmittance K in W/m²K
T5	No requirement
T4	1,4<U<=2
T3	1<U<=1,4
T2	0,5<U<=1
T1	U<=0,5

• Thermal bridge factor of the casing.
Differential ratio between the minimum temperature at any point on the outer surface of the unit and the average temperature of the internal air and the difference of the average air temperature.

Classification criteria:

Class	Kb
TB5	No requirement
TB4	0,3< Kb <=0,45
TB3	0,45< Kb <=0,6
TB2	0,6< Kb <=0,75

• Casing acoustic isolation

Classification criteria:

Frequency in Hz	125	250	500	1000	2000	4000	8000
Reduction value	dB	dB	dB	dB	dB	dB	dB

Sound pressure readings are taken around the casing of the CTA by placing a source of sound inside and repeating the readings after having removed the panels. Thereby obtaining the noise reduction of the casing.

EN 13053: a European Standard to evaluate the energy efficiency of the air handling units.

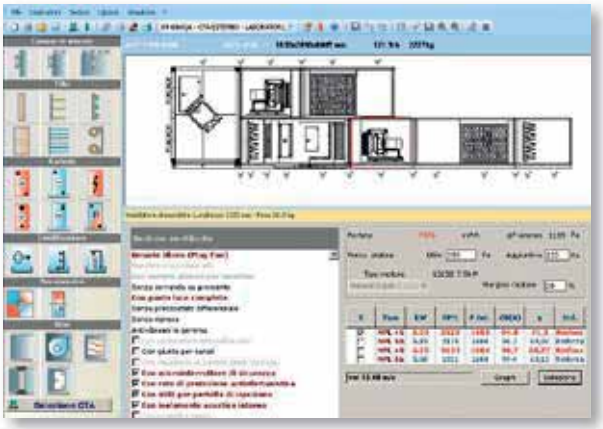
Performance characteristics measured according to EN13053: Ventilation in the Building - air handling units - performance characteristics per units, components and sections.
More specifically, the following performance characteristics of the air handling unit are measured and certified (by independent laboratories):

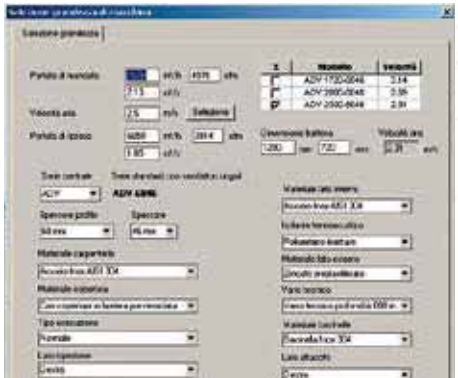
- Air flow rate
- Static pressure available
- Absorbed power
- Hot water coil heating power
- Cold water coil cooling power
- Coil hydraulic side pressure drops
- Heat recovery efficiency
- Sound power level measured in octave band in the inlet and outlet duct
- Sound power level measured in octave band detected in the ambient

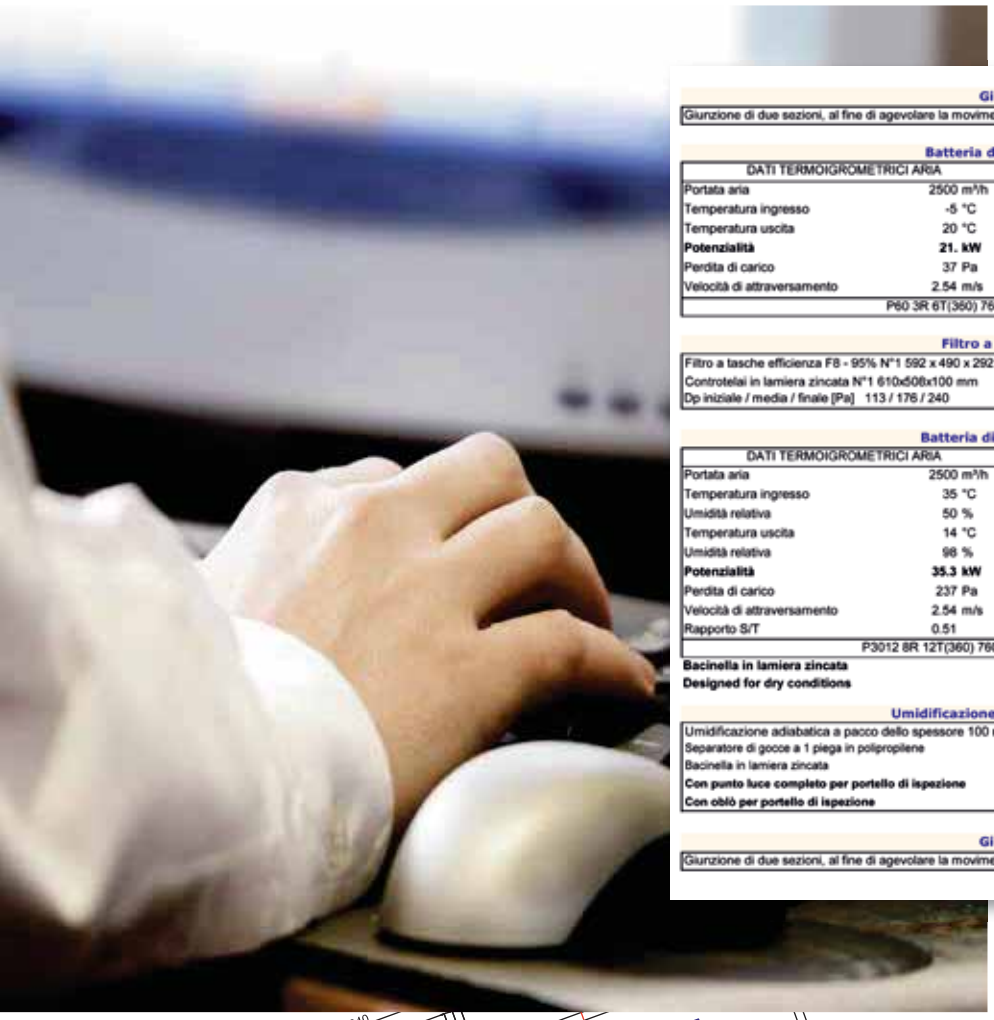
CTA ADV
SELECTION SOFTWARE

- **SIMPLE to install and use**
- **FLEXIBLE when selecting RHOSS units in work conditions**
- **EFFECTIVE and COMPLETE in useful results for the designer**

- The innovative selection software of the CTA ADV range allows fast and correct sizing of the units.
  The programme easily guides the user through the selection of the configuration, the components and accessories of the air handling units. The selection of each section can be customised by choosing from multiple accessories available.
- The software also has an automatic verification system of the input data that does not allow data, sections or accessories to be entered if incompatible with the calculation.
- The software provides professionals with a technical datasheet that includes a detailed description, a detailed drawing and an economic summary that is always updated.
- Each offer is archived in a database in order to apply any change and economic update at any time.
- The configuration obtained allows the order to be passed on directly to production, thereby decreasing the supply times of the units significantly.
- Moreover, it is also possible to receive a detailed Autocad drawing of the unit from our Technical Sales Department while the offer is being provided, which facilitates the designer when verifying the dimensional restrictions of the system and allows the drawing to be entered during the initial phases of the project.







Giunzione

Giunzione di due sezioni, al fine di agevolare la movimentazione ed il trasporto.

Batteria di riscaldamento

DATI TERMOIGROMETRICI ARIA		FLUIDO	
Portata aria	2500 m³/h	Acqua	
Temperatura ingresso	-5 °C	Temperatura ingresso	45 °C
Temperatura uscita	20 °C	Temperatura uscita	40 °C
Potenzialità	**21. kW**	Portata	3643 L/h
Perdita di carico	37 Pa	Perdita di carico	18.3 kPa
Velocità di attraversamento	2.54 m/s	Volume interno	4.2 L
P60 3R 6T(360) 760A p.a.2.5 3C 1" Cu/Al SX			

Filtro a tasche rigide

Filtro a tasche efficienza F8 - 95% N°1 592 x 490 x 292 mm
Controtelai in lamiera zincata N°1 610x508x100 mm
Dp iniziale / media / finale [Pa] 113 / 176 / 240

Batteria di raffreddamento

DATI TERMOIGROMETRICI ARIA		FLUIDO	
Portata aria	2500 m³/h	Acqua	
Temperatura ingresso	35 °C	Temperatura ingresso	7 °C
Umidità relativa	50 %	Temperatura uscita	12 °C
Temperatura uscita	14 °C	Portata	6071 L/h
Umidità relativa	98 %	Perdita di carico	20.5 kPa
Potenzialità	**35.3 kW**	Volume interno	11.2 L
Perdita di carico	237 Pa	Condensa	24.0 L/h
Velocità di attraversamento	2.54 m/s		
Rapporto S/T	0.51		
P3012 8R 12T(360) 760A p.a.2.5 12C 1 1/4" Cu/Al SX			

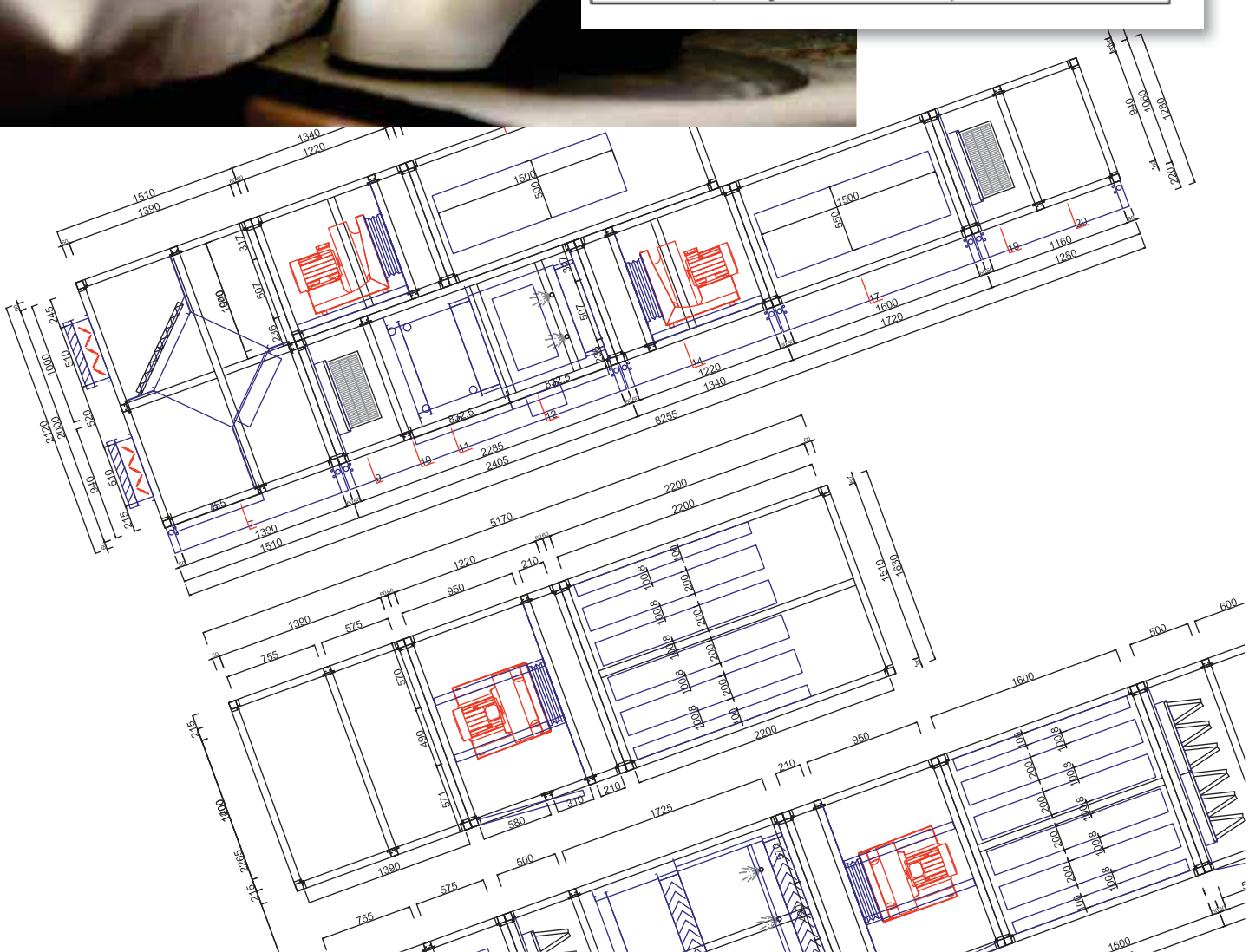
Bacinella in lamiera zincata
Designed for dry conditions

Umidificazione a pacco evaporante

Umidificazione adiabatica a pacco dello spessore 100 mm a perdere
Separatore di gocce a 1 piega in polipropilene
Bacinella in lamiera zincata
Con punto luce completo per portello di ispezione
Con oblò per portello di ispezione

Giunzione

Giunzione di due sezioni, al fine di agevolare la movimentazione ed il trasporto.

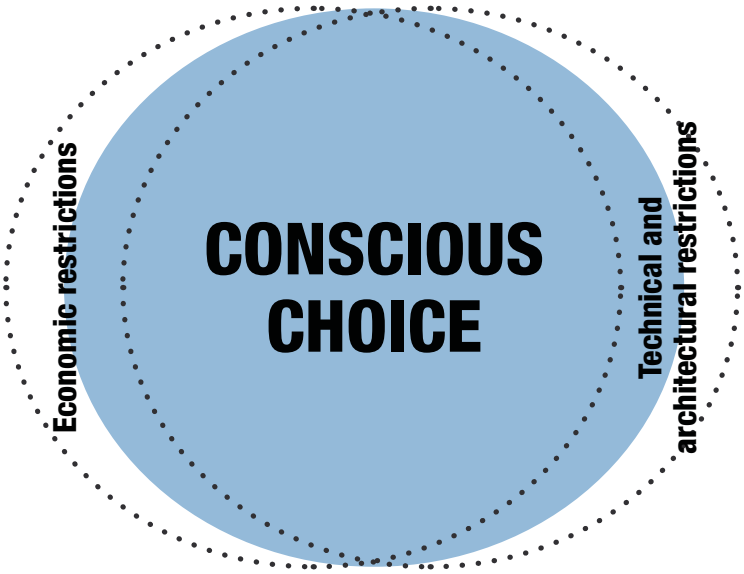


Custom ADV

CTA ADV 240÷22920

Energy Saving

Software for the energy assessment and the comparison of the heat recovery units



1. Exclusive energy analysis tools

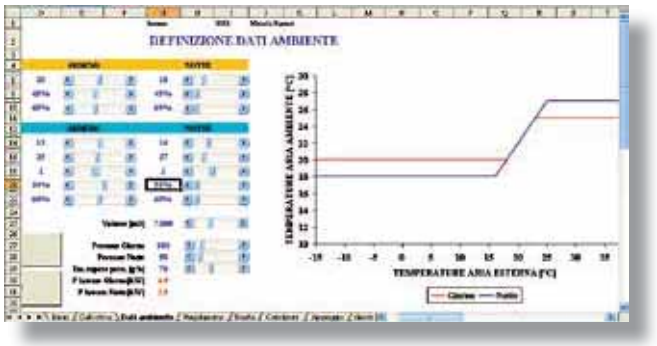
An air handling unit must not only be selected according to its initial price but also considering the costs generated by its use.

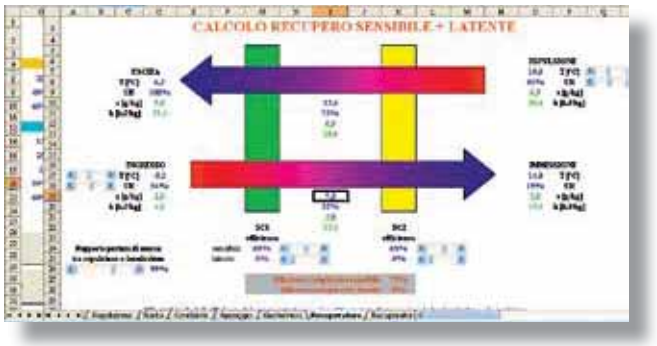
To help you choose the type of heat recovery that is the most economic and energy convenient for your specific application, Rhoss provides exclusive software that allows the following calculations, either as a regular calculation or bin-method monthly:

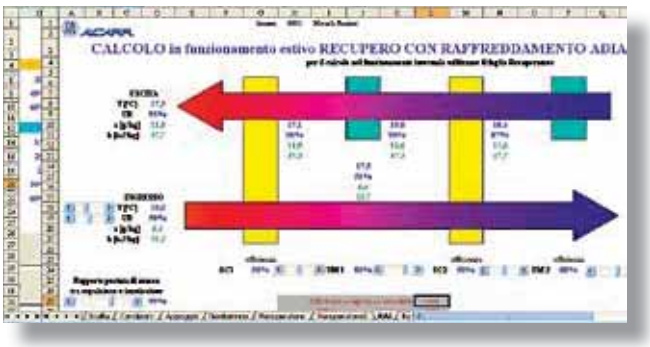
- **the overall efficiencies of the heat recovery units used;**
- **the annual energy savings of the system;**
- **the annual energy consumption of the various recovery systems compared, immediately verifying the relative amortisation times.**

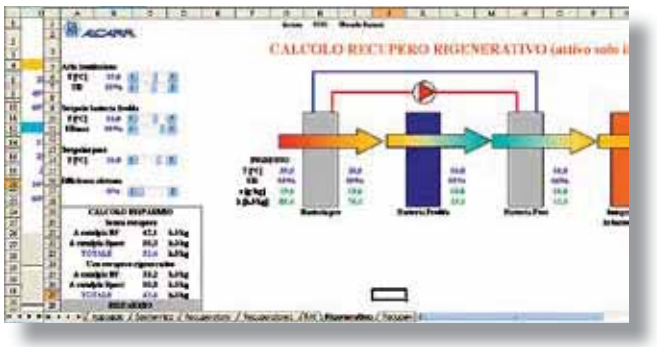
All this considering:
- the thermal load of the system in question;
- the temperature and humidity conditions of the environment that is to be air conditioned;
- the temperature and humidity conditions of the external environment;

Thanks to this tool, Rhoss can provide support to select the best type of recovery unit.





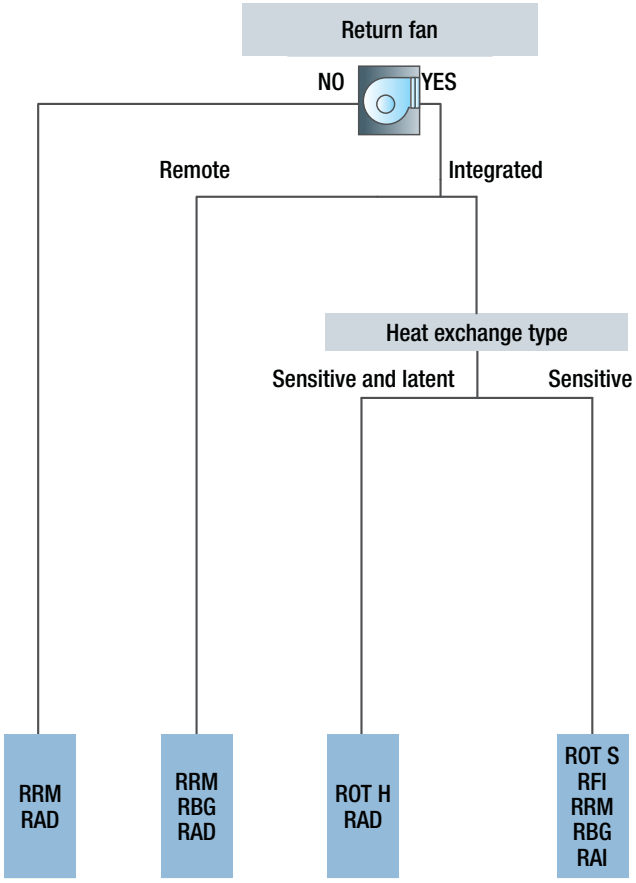


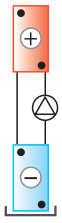


Selecting the layout and type of heat recovery to be used

2. Selecting the layout and type of heat recovery to be used

- Besides being based on a purely energy and economic level, the type of heat recovery selected is also based on project and application restrictions.
- Below is a quick reference for the selection of heat recovery systems that Rhoss provides and that will certainly meet your application requirements.





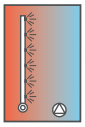
RRM Recovery Regenerative Mono-directional

RBG Recovery Twin Coils

ROT H Rotary recovery with hygroscopic wheel

ROT S Rotary recovery with sensitive wheel

RFI Crossed Flow Recovery



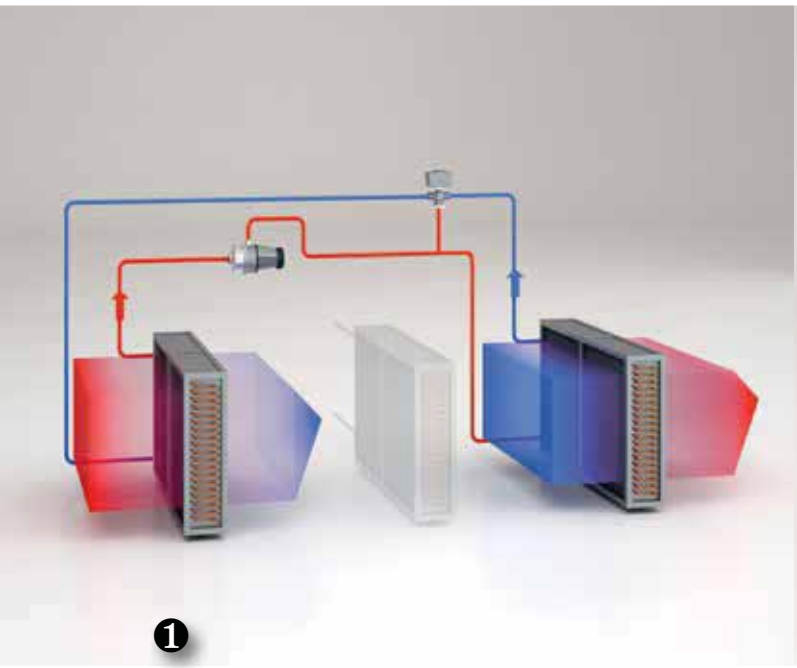
RAD Direct Adiabatic Recovery

RAI Indirect Adiabatic Recovery

Custom ADV

CTA ADV 240÷22920

Energy Saving



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❷

❶ TWIN RECOVERY

Principle of operation

- Recovery with twin coils consists of hydraulically connecting a finned coil in a closed circuit placed on the supply flow and on the exhaust flow.
- Thereby, allowing for free pre-heating of the external air when in winter mode, bringing the inlet air to the hot coil to a higher enthalpic level and free pre-cooling when in summer mode, bringing the inlet air to the cooling coil to a lower enthalpic level. This allows the winter heating coil and the summer cooling coil to be undersized.
- **Average efficiencies: 45-55%.**

Main features

- **Easy installation.**
- **Possibility of installing the system even when the air supply and return are far apart.**
- **Low cost of investment.**
- **Low energy consumption (circulation pump).**
- **Average maintenance costs.**
- **No risk of cross contamination in the air flows. Excellent solution for applications in hospitals/operating theatres, cleanrooms, etc.**
- **Low/medium air side pressure drops.**

Available options

- Customisations of the exchange coils according to the efficiencies required (efficiency and/or pressure drops).
- Customisation of the materials according to the applications: copper/pre-painted aluminium; copper/copper; copper/tin-plated copper; stainless steel coils.
- The twin recovery unit in the ADVR range is supplied complete with the hydraulic circuits and automatic regulation of the system that always guarantees maximum energy savings possible.

MONODIRECTIONAL REGENERATIVE RECOVERY

Principle of operation

- The one-way renewable recovery consists in hydraulically connecting a finned coil in a closed circuit placed downstream of the summer cooling coil and upstream of the coil itself. The two recovery coils are connected by a hydraulic circuit with a pump and regulation valve. This is used to adjust the power of the coil downstream of the cold one in order to modulate the reheating request. In this way we can save cooling and summer reheating energy until completely excluding the need for external heat input.
- **Average efficiencies: 45-55%.**

Main features

- **Easy installation.**
- **Possibility of installing the system even when there is no return fan.**
- **Low cost of investment.**
- **Low energy consumption (circulation pump).**
- **Average maintenance costs.**
- **No risk of cross contamination in the air flows. Excellent solution for applications in hospitals/operating theatres, cleanrooms, etc.**
- **Low/medium air side pressure drops.**

Available options

- Customisations of the exchange coils according to the efficiencies required (efficiency and/or pressure drops).
- Customisation of the materials according to the applications: copper/pre-painted aluminium; copper/copper; copper/tin-plated copper; stainless steel coils.
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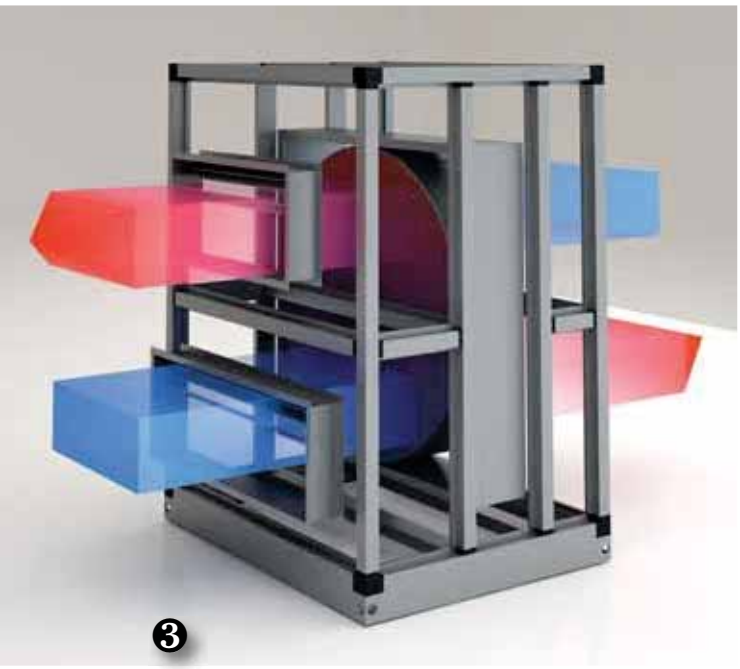


❷ CROSS FLOW STATIC RECOVERY

Principle of operation

- The plate recovery units are static-type and therefore, do not have moving parts. This guarantees excellent reliability and operating safety.
- Upon entry into the recovery unit, the two air flows, renewal and expulsion, are divided into passages between two plates that alternatively bring hot and cold air.
- These passages are sealed with appropriate solutions for each application, in order to hinder any contamination between the two air flows. The exchange occurs through the plates that form the passage walls.
- In order to enhance the efficiency, Rhoss uses particular heat exchangers. The surface of the plates have shapes with particular patented baffle plates that allow a maximum **efficiency of 75%**.

Fundamental features

- **Low operating and installation costs.**
- **High flow separation guarantees.**
- **No moving parts.**
- **Easily adapted to each use.**
- **Products with materials adequate for the characteristics in different environments.**
- **Low air side pressure drops.**
- **Medium/high efficiencies.**
- **Easily cleaned and minimum maintenance required.**
- **Effective action to dampen the noise.**
- **Value for money even for small air flows.**

Available options

- Extra sealing.
  An additional seal can be applied to the heat exchanger in order to guarantee enhanced sealing between the two air flows. This option is recommended especially in particular applications such as hospitals, cleanrooms, etc.

❸ ROTARY RECOVERY

Principle of operation

- The air-air rotary heat recovery units used by Rhoss consist of a cylindrical rotor containing thousands of channels and distinguished by a very high surface development and are driven by an electric motor equipped with a speed regulator, as necessary.
- The heat exchange in the rotary heat recovery units occurs by means of heat storage in the rotor. In fact, as the cylinder rotates slowly, the expulsion air passes through half of the casing and releases heat to the matrix of the rotor that stores it.
- The renewal air that passes through the other half absorbs the stored heat. As rotation continues, the parts that absorb and release heat invert continuously.
- The rotation speed of the rotor can be constant or made to vary by a speed regulator.
- The exchange surface, very high in comparison to the volume, allows for very high performance with respect to other types of recovery units, reaching even **efficiencies up to 85%.**

Fundamental features

- **The high efficiency and the possibility of recovering the humidity besides the heat (hygroscopic wheel) allows the capacity installed in a system to be reduced significantly.**
- **Possibility of transferring the latent heat.**
- **Possible reduction of humidification devices.**
- **Average pressure drops.**
- **Medium-high cost of investment.**
- **Medium-high maintenance costs.**
- **High risk of cross contamination: there is no separation of the air flows. Not recommended for application in hospitals or at high risk of contamination flows.**

Available options

- Hygroscopic treatment.
  The standard aluminium matrix, which constitutes the rotor, can be chemically treated with an alkaline solution of potassium carbonate in order create an oxidised surface that makes the rotor hygroscopic. The oxidisation makes the surface porous at microscopic level, thereby allowing the humidity to be transferred between the two air flows.
- High efficiency hygroscopic treatment.
  The rotor can be supplied in special hygroscopic aluminium that guarantees high performance.
- Speed regulator.
  The speed regulator allows recovery partialisation and just like the motor is installed on the inspection side of the rotary recovery unit.

Heat recovery unit
FLUXBLOCK

Air flow rate: 2000÷22000 m³/h

- **Maximised energy saving without admixture of the flows**
- **EC high efficiency fan use**
- **Very silent**
- **Full Control Option**
- **Can be integrated into traditional-type existing systems**

	Features according to EN1886:2006
Mechanical resistance	D1
Leakage	L2
Filter bypass	F9
Transmittance	T3
Thermal bridges	TB3

Cross flow heat recovery.

Principle of operation

What makes the air treatment system unique is the possibility to reach optimal temperature and humidity conditions for total comfort and minimise energy expenditure without any compromise: comfort is total. Humidity and air temperature, air quality, and silence are all interconnected parameters and must always be controlled and guaranteed.
Thanks to crossed flow heat recovery, which guarantees the separation of the delivery and return flows without any admixture of the two, you can achieve efficiencies up to 65% resulting in a significant reduction in the heating and cooling loads.
The state of the art EC Brushless fans allow you to minimise and monitor electric consumption.
Air quality is always guaranteed by high efficiency filters.

Construction features

- Anticorodal aluminium profile load-bearing structure.
- Continuous base under the anticorodal aluminium machine.
- Sandwich panels made with double sheet metal with internal sheet metal made of galvanised stainless steel with anti-scratch and corrosion-resistant painting.
- Interposed 46 mm polyurethane foam or cell oriented rock wool insulation.
- Dampers with opposed wing profile aluminium fins.
- Delivery and return filters in class F6 of rigid bag-type (En 779:2011).
- Crossed flow recovery unit installed vertically and sized so to maximise summer and winter efficiency and reduce air side pressure drops. The recovery unit integrates the bypass dampers for automatic management of the free-cooling/free-heating.
- Recovery wheel activation motor with belt and pulley transmission equipped with variable revs regulator.
- Centrifugal fans with EC Brushless directly coupled motor. Ultra-efficiency motors with electronic switch equipped with permanent magnets, whose rev number is adjusted by the integrated controller.
- Large inspection doors in execution like the panel and equipped with safety closures with handles.
- Version for indoor and outdoor installation.
- Monobloc version or with separate sections.

ACCESSORIES

- Additional cold water coil.
- Additional hot water coil.
- Steam humidifier or with evaporating section.
- Silencers.
- Pre-filters G4.

Control and adjustment functions

- Heat recovery management in Maximum Economy mode with automatic management of the free-cooling in temperature or enthalpy and integrated management of the antifreeze.
- Supply temperature compensation in relation to the outdoor temperature.
- Fan operation with a constant supply flow, according to the dirt of the filters.
- Fan operation with a variable flow:
  - 0-10V signal control (CO2 probe or potentiometer) for single-zone applications;
  - constant pressure control for multi-zone application.
- Management of the heat transfer fluids according to time schedule with 3- or 2-way valves depending on the system.
- Weekly time band control.
- BMS interface with Modbus or Lon protocol.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.

	FLUXBLOCK MODEL			570	920	1280	2080	2920	3600	4300	5250	6060
	Nominal air flow (SFP v<=2 at 200Pa)		m³/h	2.000	3.500	5.000	7.000	10.000	12.500	15.500	18.500	22.000
	Air flow speed	MAX	m³/h	3.500	4.800	5.700	8.200	11.000	15.000	17.500	21.000	22.500
		MIN	m³/h	500	1.000	1.000	2.000	2.000	4.000	4.000	5.000	5.000
	Delivery/return available static pressure		Pa	150/200	150/200	150/200	150/200	150/200	150/200	150/200	150/200	150/200
❶	Hot water additional coil heating capacity		kW	14	21	30	42	60	75	94	112	
❷	Cold water additional coil cooling capacity		kW	25	35	57	73	100	125	158	190	
❸	Winter recovery eff. at nominal flow rate		%	76	76	75	75	74	74	74	75	
❸	Summer recovery eff. at nominal flow rate		%	71	71	70	70	69	69	69	70	
	SIZES			**570**	**920**	**1280**	**2080**	**2920**	**3600**	**4300**	**5250**	**6060**
❹	Width		mm	2.400	2.600	2.800	3.200	3.500	3.600	3.900	4.200	4.400
❹	Height		mm	1.250	1.500	1.650	1.800	1.950	2.000	2.100	2.300	2.300
❹	Depth		mm	950	1.100	1.300	1.450	1.650	1.750	1.900	2.100	2.200

Data at the following conditions:

❶ Water T in out 50/40°C; Air T coil outlet 32°C.

❷ Water T in out 7/12°C; Air T coil outlet 13.5°C.

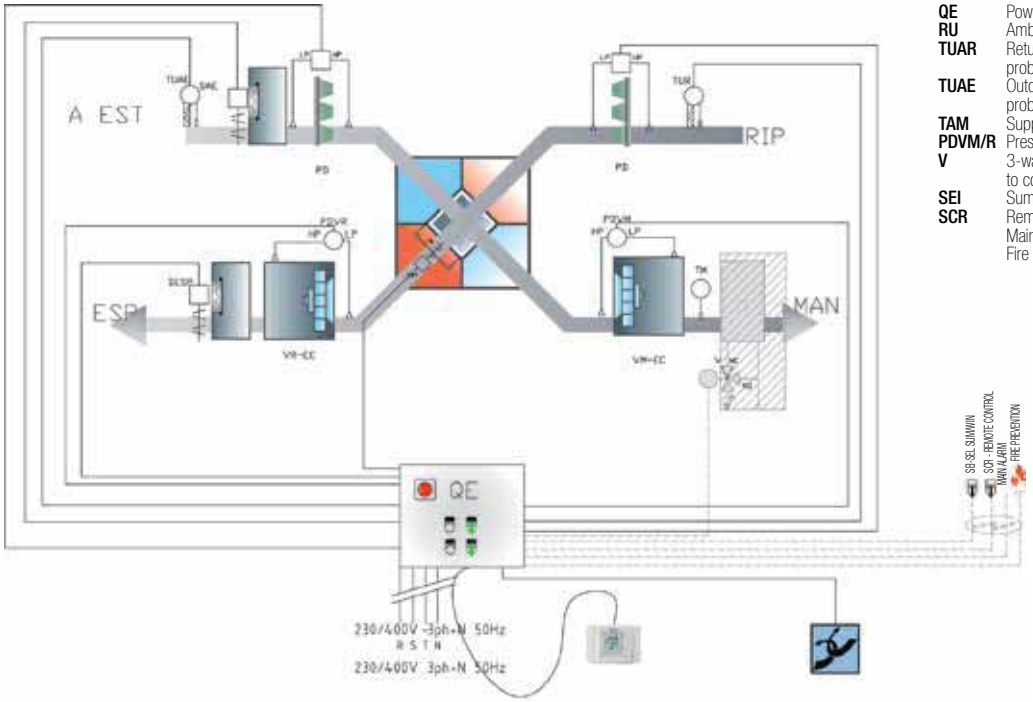
❸ With equal delivery and return air flow rate.

❹ Dimensions (without additional elements) in the horizontal air flow configuration.

Winter conditions: outdoor air –5°C R.H. 80%; return air 20°C R.H. 50%

Summer conditions: outdoor air 32°C R.H. 50%; return air 26°C R.H. 50%

Full Control Option



Key

VM EC	Brushless EC supply fan
VR EC	Brushless EC return fan
RROT	Heat recovery motor at a variable rpm
PD	Dirty filter differential pressure switch
SESP	Expulsion damper actuator
SAE	Outdoor air inlet damper actuator
QE	Power and regulation electrical panel
RU	Ambient panel
TUAR	Return air humidity/temperature combined probe
TUAE	Outdoor air humidity/temperature combined probe
TAM	Supply air limit probe
PDVM/R V	Pressure sensor to measure the flow rate 3-way adjustment valves with a clogging rod to control hot and cold liquids
SEI	Summer/winter selector
SCR	Remote control selector switch
	Main alarm
	Fire prevention alarm contact

Heat recovery unit
ROTOBLOCK

Air flow rate: 2500÷22000 m³/h

- **Maximised energy savings**
- **EC high efficiency fan use**
- **Very silent**
- **Full Control Option**
- **Can be integrated into traditional-type existing systems**

Rotary heat recovery.

Principle of operation

What makes the air treatment system unique is the possibility to reach optimal temperature and humidity conditions for total comfort and minimise energy expenditure without any compromise: comfort is total. Humidity and air temperature, air quality, and silence are all interconnected parameters and must always be controlled and guaranteed.
The rotary heat recovery unit allows you to obtain efficiency up to 80%, thus reducing cooling, dehumidification and humidification loads considerably. The state of the art EC Brushless fans allow you to minimise and monitor electric consumptions.
Air quality is always guaranteed by high efficiency filters.

Construction features

- Anticorodal aluminium profile load-bearing structure.
- Continuous base under the anticorodal aluminium machine.
- Sandwich panels made with double sheet metal with internal sheet metal made of galvanised stainless steel with anti-scratch and corrosion-resistant painting.
- Interposed 46 mm polyurethane foam or cell oriented rock wool insulation.
- Dampers with opposed wing profile aluminium fins.
- Supply and return filters in class F6 of rigid bag-type (En 779:2011).
- Rotary recovery unit installed vertically and sized to obtain maximum efficiency.
  Available in aluminium version (for temperature exchange only) or Sorbtion version (with high efficiency hygroscopic treatment of the wheel, which allows heat exchange in temperature and humidity mode).
- Recovery wheel activation motor with belt and pulley transmission equipped with variable revs regulator.
- Centrifugal fans with EC Brushless directly coupled motor. Ultra-efficiency motors with electronic switch equipped with permanent magnets, whose rev number is adjusted by the integrated controller.
- Large inspection doors in execution like the panel and equipped with safety closures with handles.
- Version for indoor and outdoor installation.
- Monobloc version or with separate sections.

ACCESSORIES

- Additional cold water coil.
- Additional hot water coil.
- Steam humidifier or with evaporating section.
- Silencers.
- Pre-filters G4.

Control and adjustment functions

- Heat recovery management in Maximum Economy mode with rotation rev. number variation, automatic management of the free-cooling in temperature or enthalpy mode and integrated management of the antifreeze.
- Supply temperature compensation in relation to the outdoor temperature.
- Fan operation with a constant supply flow, according to the dirt of the filters.
- Fan operation with a variable flow:
  - 0-10V signal control (CO2 probe or potentiometer) for single-zone applications;
  - constant pressure control for multi-zone application.
- Management of the heat transfer fluids according to time schedule with 3- or 2-way valves depending on the system.
- Weekly time band control.
- BMS interface with Modbus or Lon protocol.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.

	ROTOBLOCK MODEL			710	1070	1530	2080	2500	2920	3270	4300	5250	6060
	Nominal air flow (SFP v<=2 at 200Pa)		m³/h	2.500	4.000	5.500	7.000	9.000	11.500	15.000	18.000	20.000	22.000
	Air flow speed	MAX	m³/h	3.600	5.000	6.000	8.000	9.500	10.500	12.500	15.500	18.000	21.500
		MIN	m³/h	750	800	1.200	2.000	2.500	2.500	3.000	4.000	4.000	5.000
	Delivery/return fan available static pressure		Pa	150/200	150/200	150/200	150/200	150/200	150/200	150/200	150/200	150/200	150/200
❶	Hot water additional coil heating capacity		kW	16	25	33	43	55	64	76	94	110	130
❷	Cold water additional coil cooling capacity		kW	27	50	68	86	110	130	154	190	220	265
❸	Temperature recovery eff. with min/nom/max air flow rates		%	81/73/67	82/70/66	81/70/66	81/70/67	81/70/67	81/70/67	81/70/67	82/70/66	82/70/66	82/70/67
❸	Humidity recovery eff. with min/nom/max air flow rates		%	76/65/59	77/62/57	76/60/58	76/62/59	76/60/59	76/60/58	76/60/58	77/60/57	77/62/57	77/60/58
	SIZES			**710**	**1070**	**1530**	**2080**	**2500**	**2920**	**3270**	**4300**	**5250**	**6060**
❹	Width		mm	1.750	2.000	2.200	2.400	2.400	2.500	2.700	2.800	2.900	3.100
❹	Height		mm	1.200	1.500	1.600	1.700	1.800	1.900	2.200	2.300	2.400	2.500
❹	Depth		mm	1.050	1.200	1.400	1.500	1.600	1.700	1.800	2.000	2.200	2.400

Data at the following conditions:

❶ Water T in out 50/40°C; Air T coil outlet 32°C.

❷ Water T in out 7/12°C; Air T coil outlet 13.5°C.

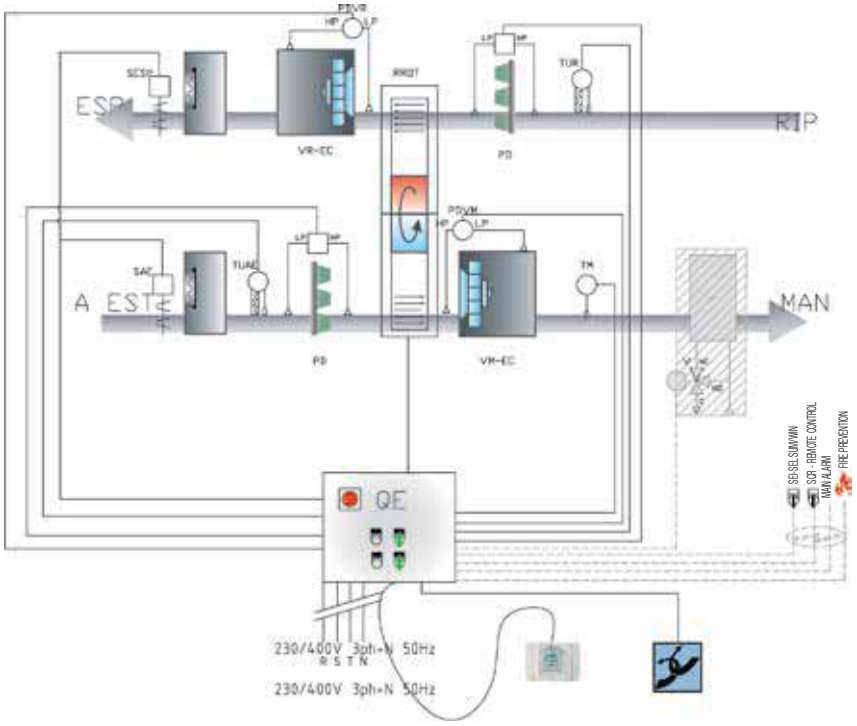
❸ With equal delivery and return air flow rate.

❹ Dimensions (without additional elements) in the horizontal air flow configuration.

Winter conditions: outdoor air –5°C R.H. 80%; return air 20°C R.H. 50%

Summer conditions: outdoor air 32°C R.H. 50%; return air 26°C R.H. 50%

Full Control Option



Key

VM EC	Brushless EC supply fan
VR EC	Brushless EC return fan
RROT	Heat recovery motor at a variable rpm
PD	Dirty filter differential pressure switch
SESP	Expulsion damper actuator
SAE	Outdoor air inlet damper actuator
QE	Power and regulation electrical panel
RU	Ambient panel
TUAR	Return air humidity/temperature combined probe
TUAE	Outdoor air humidity/temperature combined probe
TAM	Supply air limit probe
PDVM/R	Pressure sensor to measure the flow rate
V	3-way adjustment valves with a clogging rod to control hot and cold liquids
SEI	Summer/winter selector
SCR	Remote control selector switch
	Main alarm
	Fire prevention alarm contact

Control and adjustment functions

- Heat recovery management in Maximum Economy mode with rotation rev. number variation, automatic management of the free-cooling in temperature or enthalpy mode and integrated management of the antifreeze.
- Supply temperature compensation in relation to the outdoor temperature.
- Fan operation with a constant supply flow, according to the dirt of the filters.
- Fan operation with a variable flow:
  - 0-10V signal control (CO_2 probe or potentiometer) for single-zone applications;
  - constant pressure control for multi-zone application.
- Management of the heat transfer fluids according to time schedule with 3- or 2-way valves depending on the system.
- Weekly time band control.
- BMS interface with Modbus or Lon protocol.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.

Heat recovery unit
RIGENERA

Air flow rate: 6000÷38000 m³/h

- **Summer modulating and free reheating without needing hot fluids**
- **Maximised recovery unit according to winter function up to 70%**
- **Full Control Option**

	Features according to EN1886:2006
Mechanical resistance	D1
Leakage	L2
Filter bypass	F9
Transmittance	T3
Thermal bridges	TB3

Regenerative heat recovery.

Principle of operation

Total comfort has become a must even in the summer, both for new and renovated systems.
Work environments, shopping centres, systems with public access cannot do without this type of treatment.
To control humidity correctly (essential parameter for summer comfort), set the air at a temperature between 14 and 12 °C in order to cope with the latent load. This however implies the need to reheat the air in order to obtain a supply temperature between 18 and 23 °C depending on the type of system.
This way, a hot source is required also in the summer (boilers, electric coils). This is not always possible and unfavourable in terms of energy.
The RIGENERA range solves this problem by providing the reheating heat free of charge, thereby taking advantage of the temperature difference available to the flow of expulsion.
This guarantees summer comfort also in existing systems supplied by heat pumps in traditional 2-pipe systems.

Immediate benefits:

- **Summer energy saving (intended as total power saved) which goes from 15% for primary air systems to 35% for full air systems.**
- **Modulating and free control of the summer reheating for accurate control of the air intake temperature, using the regeneration of the supply and expulsion flows without requiring hot springs.**
- **Doubled winter efficiency thanks to the cross flow recover unit (as per standard), which guarantees efficiency up to 70%.**
- **The Full Control option allows you to obtain maximum energy saving compatible with the desired heat and hygrometric comfort: no waste at all.**
- **The RIGENERA units can be equipped with the H.A.W.T sanitation system on the air side for full microbiological control.**

Construction features

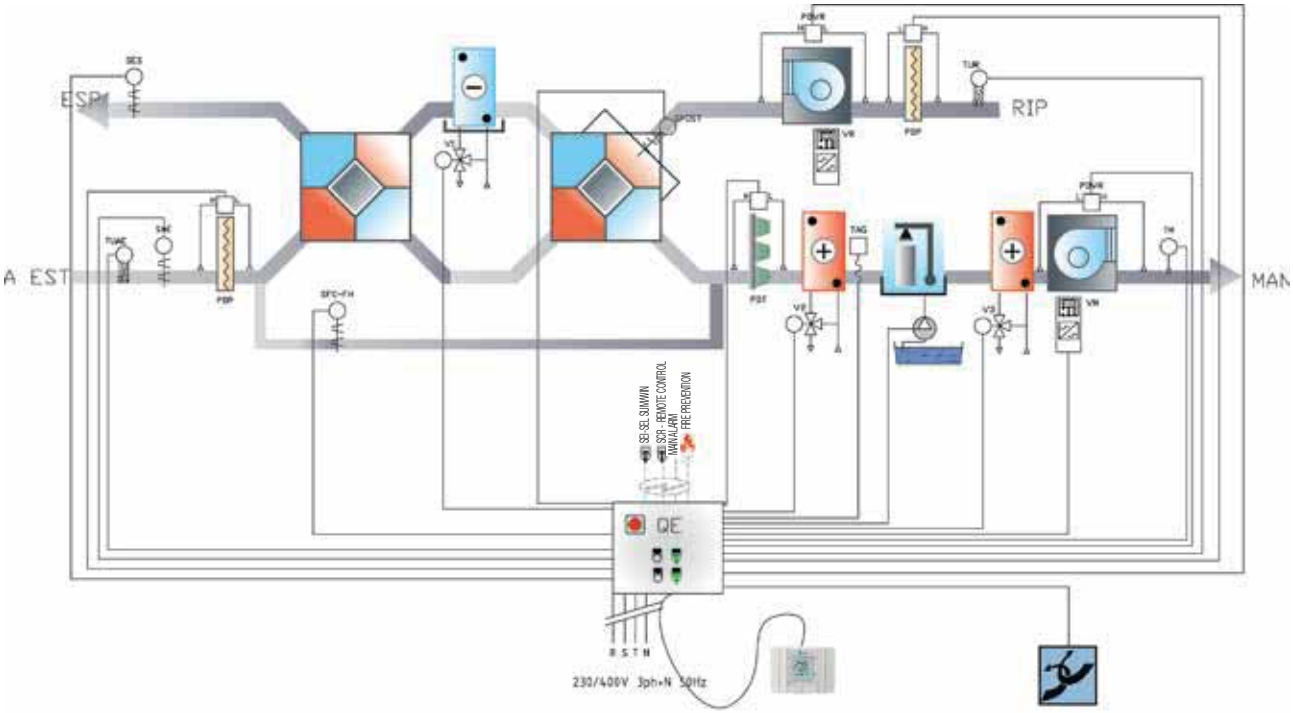
- Anticorodal aluminium profile load-bearing structure.
- Continuous base under the anticorodal aluminium machine.
- Sandwich panels made with double sheet metal with internal sheet metal made of galvanised stainless steel with anti-scratch and corrosion-resistant painting.
- Interposed 46 mm polyurethane foam or cell oriented rock wool insulation.
- Dampers with opposed wing profile aluminium fins.
- Supply and return filters in class F6 of rigid bag-type (En 779:2011).
- Double high efficiency cross flow heat recovery with a bypass modulating damper to control the summer reheating.
- Total bypass section of the recovery section for the management of total winter free-cooling control and integration of the regeneration heating if it is not sufficient to reach the set temperature setting.
- Traditional centrifugal fans with high efficiency belt and pulley or equipped with EC Brushless directly coupled motor, according to the system requirements.
- Version for indoor and outdoor installation.

Additional sections

The RIGENERA recovery unit section can be combined with the air treatment sections to complete the required system functions:

- Additional cold water coil.
- Additional hot water coil.
- Steam humidifier or with evaporating section.
- Silencers.
- Pre-filters G4.

Full Control Option



Key

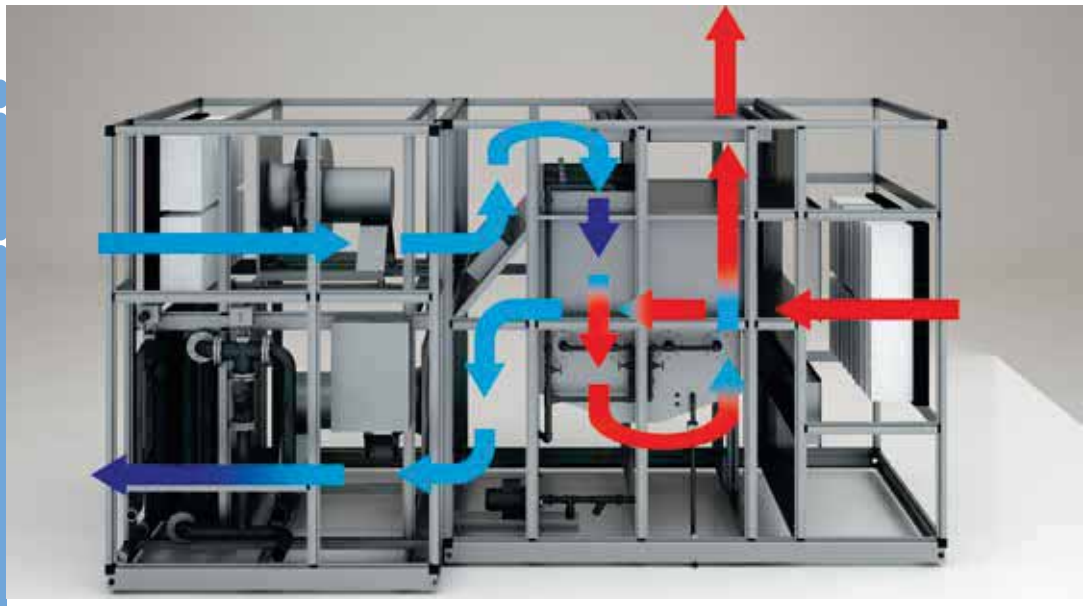
VM/R	Supply/return fan controlled by an inverter with a constant flow rate
PDP	Dirty flat filter indication differential pressure switch
PDT	Dirty bag filter indication differential pressure switch
SESP	Expulsion damper actuator
SAE	Outdoor air inlet damper actuator
SFC-FH	Free-cooling/free-heating management damper
SPOST	Damper for summer reheating modulation
QE	Power and regulation electrical panel
RU	Ambient panel
TUAR	Return air humidity/temperature combined probe
TUAE	Outdoor air humidity/temperature combined probe
TAM	Supply air limit probe
TAG	Antifreeze probe
PDVM/R	Pressure sensor to measure the flow rate
V	3-way regulation valves (2-way upon request) with plug stem for the management of hot and cold fluids
SEI	Summer/winter selector
SCR	Remote control selector switch
	Main alarm
	Fire prevention alarm contact

Control and adjustment functions

- Heat recovery management in Maximum Economy mode with automatic management of the free-cooling in temperature or enthalpy and integrated management of the antifreeze.
- Automatic control of the summer reheating via modulation of the SPOST and SFC-FH dampers (as a supplement of the first).
- Supply temperature compensation in relation to the outdoor temperature.
- Fan operation with a constant supply flow, according to the dirt of the filters.
- Management of the heat transfer fluids according to time schedule with 3- or 2-way valves depending on the system.
- Weekly time band control.
- Signals and alarms management (also on request).
- Integrated system management of ozone sanitisation on air and humidification water for biological control.
- BMS interface with Modbus or Lon protocol.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.

Heat recovery unit
ADIABATIC

Air flow rate: 3500÷20000 m³/h



- **Aeraulic and hydraulic self-adapting unit**
- **Heat recovery system with efficiency up to 75%**

Heat recovery with indirect adiabatic cooling.

Principle of operation

To improve performance of the sensitive heat exchangers during summer operation, combine them to an indirect adiabatic cooling system (IAC).
Rhoss has developed a state of the art recovery system that integrates indirect adiabatic cooling with high efficiency static heat recovery. Through this system, the exhaust air can be cooled in a sensitive way in one or more stages of humidification by obtaining a lower delivery air temperature than the ambient temperature without using any cold coil, thereby continuing to recover heat also if the outdoor air temperature is below the ambient temperature.
This cooling method is extremely cheap and sustainable. It also allows you to reduce the size of the cooling unit or even to remove it.

Summer operation and intermediate warm season

During the hot season, the system activates the indirect adiabatic humidifier automatically, which cools the expulsion air down before entering in the heat recovery unit.
This way, the temperature difference between expulsion air and outdoor air is maximised together with the system efficiency. If intervention is required, the regulator activates the cooling coil and possibly that of the reheating to obtain the exact temperature and humidity conditions required.

Winter operation and intermediate cold seasons

In winter the system maintains all the energy benefits arising from free-cooling and/or recovery of sensitive heat, thereby guaranteeing maximum energy savings in any environmental condition.
According to an enthalpic comparison between outdoor air and ambient air, and according to the percentage of fresh air required, the system regulation selects the most economic operating mode between total free-cooling, partial free-cooling, and partial and total heat recovery.
During the machine start up stage, the unit works in full recirculation mode in order to set the required room temperature as fast as possible.

Parameters that influence the use of the system

The parameters that most affect the process are ambient temperature and humidity and heat recovery efficiency.
Outdoor air is also important, because the lower it is, the more the ambient can be maintained at lower relative humidity, thereby increasing system efficiency. It is important for energy saving assessments to be made considering the real values of the system operation.

Energy saving data referred to kW supplied by the recovery unit compared to the total cooling capacity required (ambient conditions 26°C, 50% RH).

CTA ADVR	Temperature	Relative humidity	Energy savings %
Outdoor project conditions **MI**	32°C	48%	33%
Outdoor project conditions **RM**	33°C	45%	35%
Outdoor project conditions **NA**	32°C	45%	36%

	ADIABATICA MODEL		920	2080	2920	4300	6060
	Nominal air flow rate	m³/h	3.500	7.000	10.000	15.000	20.000
	Delivery available static pressure	Pa	200	200	200	200	200
	Available return static pressure	Pa	150	150	150	150	150
❶	Summer operation						
	Recovery cooling capacity	kW	12,3	24,5	35,4	52,6	70,6
❷	Cold water additional coil cooling cap.	kW	27,1	54,2	77,5	116,2	155,0
	Summer energy saving	%	31%	31%	31%	31%	31%
❸	Post-heating coil heating cap.	kW	7	14	20	30	40
❹	Winter operation						
	Recovery heating capacity	kW	21,5	43,0	61,0	91,6	122,0
❺	Hot water coil heating capacity	kW	20,4	41,0	58,0	87,4	116,0
	Winter energy saving	%	51%	51%	51%	51%	51%
	Total consumed power of delivery and return fans	kW	2,3	4,5	6,2	9,7	12,5
	SIZES		**920**	**2080**	**2920**	**4300**	**6060**
	Length	mm	4.075	4.450	4.825	5.200	5.385
	Height	mm	1.870	2.000	2.100	2.700	2.900
❻	Depth	mm	1.350	1.600	2.000	2.500	2.880

Data at the following conditions:

❶ T/ RH outdoor air 32°C/50%; T/ RH return air 26°C/50%.

❷ Water T in out =7/12°C; delivery air T = 13°C.

❸ Water T in out =40/35°C; delivery air T = 19°C.

❹ T/ RH outdoor air -5°C/80%; T/ RH return air 22°C/50%.

❺ Water T in out =40/35°C; delivery air T = 32°C.

❻ Maximum depth (including technical compartment for regulation housing).

Construction features

- Anticorodal aluminium profile load-bearing structure.
- Continuous base under the anticorodal aluminium machine.
- Sandwich panels made with double sheet metal with internal sheet metal made of galvanised stainless steel with anti-scratch and corrosion-resistant painting. Interposed 46 mm polyurethane foam or cell oriented rock wool insulation.
- Dampers with opposed wing profile aluminium fins.
- Supply and return filters in class F7 of rigid bag-type (En 779:2011) equipped with G3/G4 pre-filters.
- High efficiency double crossed flow heat recovery unit with high efficiency adiabatic cooling integration system on the air expulsion side.
- Total bypass section of the recovery section for total or partial winter free-cooling management.
- Traditional centrifugal fans (plenum fan type) with EC Brushless directly coupled motor.
- Version for indoor and outdoor installation.

Additional sections

The RIGENERA recovery unit section can be combined with the air treatment sections to complete the required system functions:

- Additional cold water coil.
- Additional hot water coil.
- Steam humidifier or with evaporating section.
- Silencers.
- Pre-filters G4.

Web code: **CTAD**

Heat recovery unit
ADIABATIC

Air flow rate: 3500÷20000 m³/h

- **Full Safety O³ Option for constant microbiological control of air and humidification water**
- **Full Control option for complete and intuitive energy saving management**

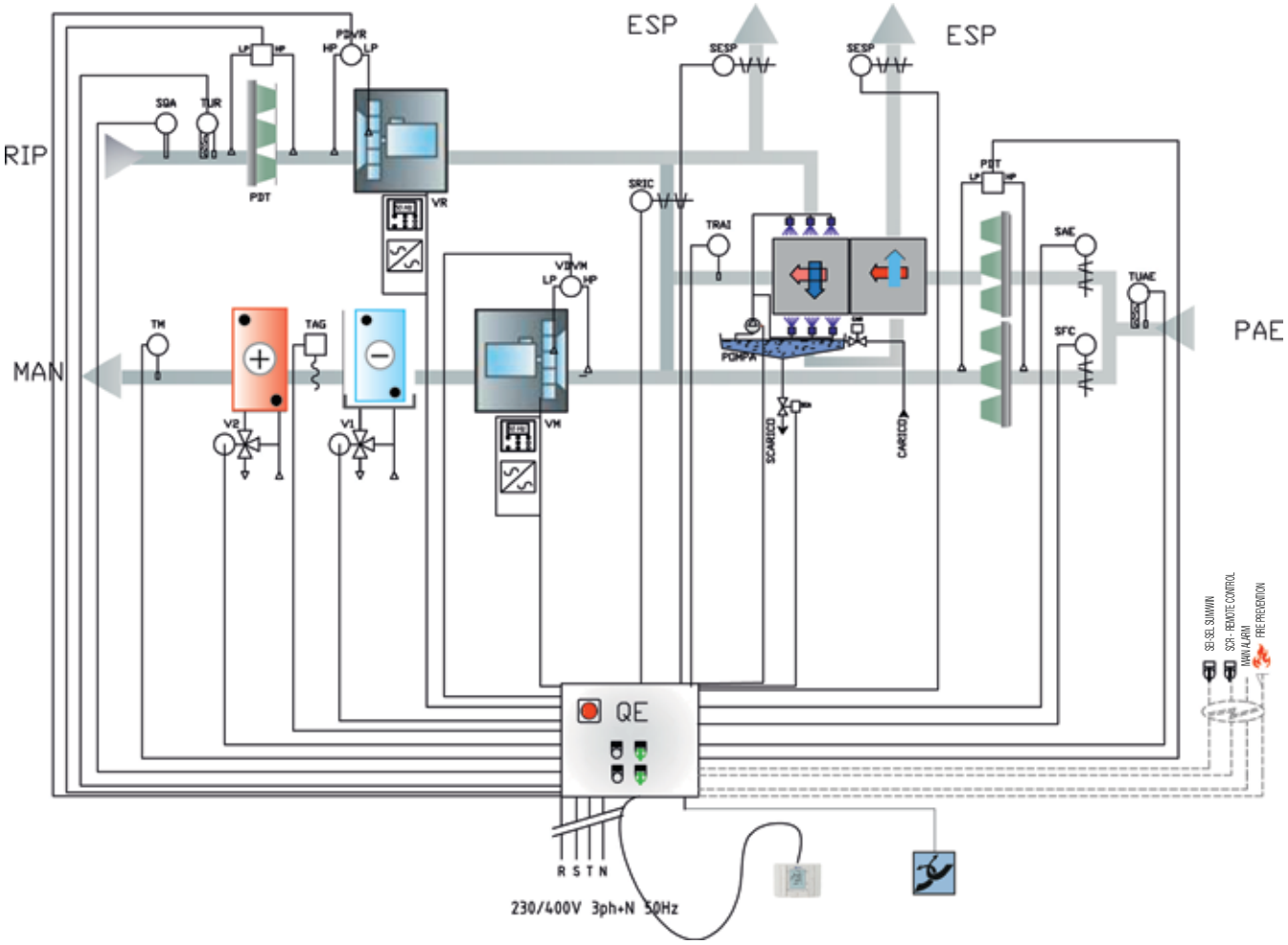
Full Safety O³ Option
The IAC recovery system is provided with an ozone self-cleaning device to keep efficiency unaltered, prevent mould, algae and bacteria from forming and guarantee the microbiological control of the entire system.

Full Control Option
The Full Control option allows you to obtain maximum energy saving compatible with the desired heat and hygrometric comfort: no waste at all.

Control and adjustment functions
Besides the traditional regulation functions for full air system treatments, the ADIABATICA range is complete with the following specific functions:

- heat recovery management with indirect adiabatic cooling integrated in Maximum Economy mood with: enthalpic free-cooling automatic management, indirect adiabatic cooling activation for enthalpic comparison and recirculation dampers and outdoor air management via air quality probe.
- Increased management during system start up phase for quick and inexpensive implementation.
- Delivery temperature compensation in relation to the outdoor temperature.
- Fan operation with a constant delivery flow, according to the dirt of the filters.
- Management of the heat transfer fluids according to time schedule with 3- or 2-way valves depending on the system.
- Weekly time band control.
- Signals and alarms management (also on request).
- Integrated system management of ozone sanitisation on air and humidification water for biological control.
- BMS interface with Modbus or Lon protocol.
- Supervision via Web-Ethernet port on TCP/IP technology.
- GSM modem kit for remote monitoring via SMS with alarm control.

Full Control Option



Key

VM/R	Supply/return fan controlled by an inverter with a constant flow rate
PDT	Dirty bag filter indication differential pressure switch
SESP	Expulsion damper actuator
SAE	Outdoor air inlet damper actuator
SFC	Free-cooling management damper
SRIC	Air recirculation damper
QE	Power and regulation electrical panel
RU	Ambient panel
TUAR	Return air humidity/temperature combined probe
TUAE	Outdoor air humidity/temperature combined probe
TAM	Supply air limit probe
TAG	Antifreeze probe
TRAI	Outlet temperature probe recovery series
PDVM/R	Pressure sensor to measure the flow rate
V	3-way regulation valves (2-way upon request) with plug stem for the management of hot and cold fluids
SEI	Summer/winter selector
SCR	Remote control selector switch
	Main alarm
	Fire prevention alarm contact

PROFESSIONAL

Pool dehumidifiers 2200÷27000 m^3/h

Web code Dry-Pool: **DP001**

Web code DAFC-DAHR: **DPM01**

Dry-Pool

DAESY-DRESY-DTESY-DEESY 108÷2140

Dehumidification capacity: 8÷140 l/h

INVERTER

- **R410A**
- **Integrated regulation**
- **Double panels**
- **Thermal cut profiles**
- **Version with brushless EC fans**

Air and/or water and centrifugal fan cooled POOL DEHUMIDIFIERS. Range with hermetic Scroll compressors and R410A refrigerant gas.

Construction features

- Frame and load-bearing structure: extruded profiles aluminium alloy with a cross section of 40 x 40 mm, thermal cut-type with concealed screws. Profile interlocking balloon gaskets.
  Aluminium base.
- Panelling: 25 mm double sheet metal (internally galvanised steel and externally pre-painted RAL 9002). Hot-injected polyurethane insulation (average density: 40 kg/m^3).
- Compressor: scroll type, rotary, hermetic complete with thermal protection and casing heater.
- Evaporating coil: in copper pipes and fins with a condensate drain tray.
- Condensing coil: in copper pipes and aluminium fins.
- Water side heat exchanger (DRESY-DTESY-DEESY): braze-welded plates in special stainless steel for chlorinated water or tube and shell in Cu/Ni for water treated with saline chlorination. The heat exchanger in the DEESY models is with braze-welded plates in stainless steel that is not suitable for chlorinated water. Water flow differential pressure switch.
- Fan: double intake centrifugal fan with external motor, adjustable belt and pulley transmission. Standard set up with vertical air supply.
  Available static pressure of 100 Pa.
- Filters: class G3 fitted inside the intake.
- Cooling circuit: separate from the aeraulic circuit and complete with a dryer filter, humidity indicator, high and low pressure gas gauges, load connections, high and low pressure side safety pressure switch, thermostatic expansion valve, liquid receiver (DRESY-DTESY-DEESY version), high pressure safety valve and R410A refrigerant load.
- Electrical panel: preset for 230V-1ph+N-50Hz power supply (mod. 108 single-phase) and 400V-3ph+N-50Hz (mod. 108-2140 three-phase). It is complete with main disconnection switch with door-lock device, circuit breaker switches, power contactors, auxiliary circuit protection fuses, microprocessor electronic control board.

Versions

- DAESY: dehumidifier with 100% pool air side heat exchange.
- DRESY: dehumidifier with 45% pool side recovery unit.
- DTESY: dehumidifier with 100% pool side recovery unit.
- DEESY: dehumidifier with 100% pool water side recovery unit and possibility of 100% heat exchange on an external dry-cooler.

Set up

- EXT - For outdoor installations.
- USCO-A - Intake opposite side horizontal air supply.
- USCO-B - Intake opposite side horizontal air supply.

Factory fitted accessories

- FM M6 - Compact high efficiency supply air pre-filters, Class M6 (EN 779:2012), filtering means made of fibreglass, which replaces the standard G3 (only available with VM EC accessory).
- BRA (*) - Additional hot water coil complete with a 3-way valve fully managed by the microprocessor and a 2-way balancing valve on the bypass.
- BA EXT - Technical compartment to house the BA accessory in machines installed outdoors.
- BA RAP (***) - Copper/pre-painted aluminium additional hot water coil.
- BA BRR (***) - Copper/copper additional hot water coil.
- RAP (***) - Copper/pre-painted aluminium condensation coil.
- BRR (***) - Copper/copper condensation coil.
- BE (**) - Additional electric coil controlled by the microprocessor with step insertion logic.
- VM100 - Supply fan with available static pressure of 100 Pa. The accessory is different depending on the selected machine equipment (D~ESY+BA; D~ESY+DAHR; D~ESY+BA+DAHR). The presence of the DAFC module and/or the BE accessory does not change the available static pressure.
- VM150 - Supply fan with available static pressure of 150 Pa. The accessory is different depending on the selected machine equipment (D~ESY; D~ESY+BA; D~ESY+DAHR; D~ESY+BA+DAHR). The presence of the DAFC module and/or the BE accessory does not change the available static pressure.

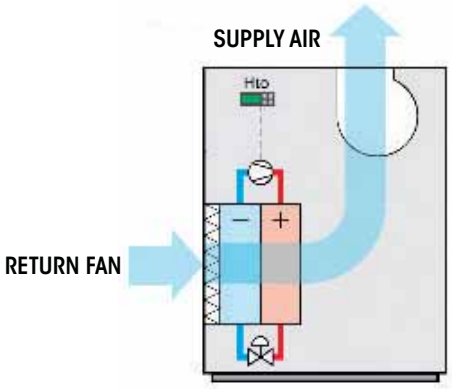
- VM200 - Supply fan with available static pressure of 200 Pa. The accessory is different depending on the selected machine equipment (D~ESY; D~ESY+BA; D~ESY+DAHR; D~ESY+BA+DAHR). The presence of the DAFC module and/or the BE accessory does not change the available static pressure.
- VM EC - Brushless EC type of supply fan with impeller made of composite corrosion resistant plastic with backward wing profile blades.
- Static and dynamic balancing of the entire assembly (motor-impeller), constructed in accordance with standard DIN ISO 1940. Degree of balancing G6.3.
- External electronic commutation rotor motor (EC) with integrated electronics and protection against overloads due to active temperature management.
- Programmable relay to signal faults. Motor protection and integrated heating motor operation.
- IP54 motor protection rating, thermal class 155.
- Greater energy efficiencies than the target values of the second tier (2015) of Commission Regulation (EU) 327/2011, regarding the application methods of the European Directive 2009/125/EC.
- In compliance with product EMC and EC regulations.
- Motor and fan are mounted on a robust and compact galvanised sheet steel structure with a galvanised steel suction nozzle and integrated pressure probe for measuring the air flow.
- The fan is fitted with constant flow control and a display of the working point. Maximum available static pressure (referred to the D~ESY + BA+ DAHR configuration)=500Pa.
- VMEPOX - Supply fan treatment with epoxy paint (not available for VM EC version).
- DSP Base (****) - Double set point (moisture) via digital input.
- DSP Ev (****) - Double set point (moisture) via digital input.

Separately supplied accessories

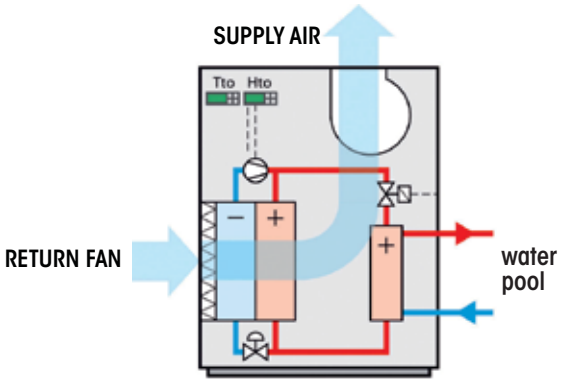
- KFM F8 - Additional module with compact high efficiency supply air filters, Class F8 (EN 779:2012), filtering means made of fibreglass (only available with VM EC accessory).
- KUSB Ev (****) - RS485/USB serial converter for state of the art control.
- KRS485 Ev (****) - Modbus RTU protocol RS485 serial interface for state of the art control.
- FTT10 Ev (****) - Lon serial interface (standard electric FTT10) for state of the art control.
- KBE - Serial interface for Bacnet IP protocol.
- KBM - RS485 interface for Bacnet ms/tp protocol.
- KTR Ev (****) - Remote keypad for state of the art. The remote keyboard is not available for machines with the base control.
- KRJ1220 - Connection cable for KTR (length 20m).
- KRJ1230 - Connection cable for KTR (length 30m).
- KRJ200 - Kit for remote control of the KTR for distances between 50 and 200 m.

(*) Not available with the BE accessory.
(**) Not available with the BA accessory.
(***) Accessory that requires longer delivery time - please check this when placing the order.
(****) Check the type of configuration combined with the selected configuration by referring to the diagram on page 14.
(~) Extended to all versions A, R, T, E.

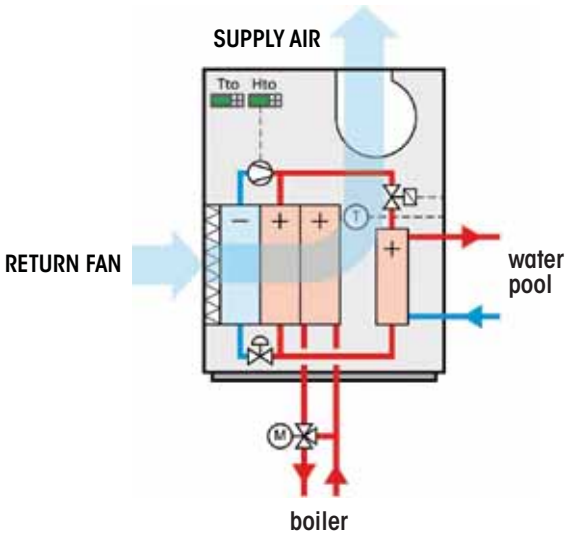
DAESY



DRESY/DTESY/DEESY



DRESY/DTESY/DEESY+BA



Dry-Pool

DAESY-DRESY-DTESY-DEESY 108÷2140

ADDITIONAL FRESH AIR HANDLING UNIT MODULES

DAFC: FREE-COOLING MODULE.

Construction features

- Fan: dual intake centrifuge with backward impeller blades that are statically and dynamically balanced, taper fitted onto the steel shaft and supported by moveable ball bearings. External motor with IE2 efficiency class, equipped with internal thermal protection, actuated by pulley transmission, which is made of cast iron and has a variable pitch. The motor is installed on a belt-tensioner slide fixed to the fan on a robust double profile galvanised steel structure with high efficiency rubber anti-vibration mountings positioned in between. Air return with horizontal flow. Available static pressure of 100 Pa.
- Structure and frame: thermal cut extruded aluminium alloy profiles with a 40x40mm section 25mm thick double plate panelling (galvanised internally and pre-painted externally) with interposed highly effective and soundproofing injected polyurethane insulation. Interlocking seals in the balloon type profile.
- Motorised dampers: in the aluminium wing profile. The 3 dampers (external air intake, recirculation, expulsion) are sized for 100% capacity and fitted with factory-mounted modulating actuators.

DAFC - Factory fitted accessories

- VR150: return fan with available static pressure of 150 Pa.
- VR200: return fan with available static pressure of 200 Pa.
- VR EC: Brushless EC type of RETURN fan with impeller made of composite corrosion resistant plastic with backward wing profile blades.
- Static and dynamic balancing of the entire assembly (motor-impeller), constructed in accordance with standard DIN ISO 1940. Degree of balancing G6.3.
- External electronic commutation rotor motor (EC) with integrated electronics and protection against overloads due to active temperature management.
- Programmable relay to signal faults. Motor protection and integrated heating motor operation.
- IP54 motor protection rating, thermal class 155.
- Greater energy efficiencies than the target values of the second tier (2015) of Commission Regulation (EU) 327/2011, regarding the application methods of the European Directive 2009/125/EC.
- In compliance with product EMC and EC regulations.
- Motor and fan are mounted on a robust and compact galvanised steel sheet structure with a galvanised steel suction nozzle and integrated pressure probe for measuring the air flow
- The fan is fitted with constant flow control and a display of the working point.
- Maximum available static pressure (referred to the DAHR configuration)=500 Pa
- VREPOX: return fan treatment with epoxy paint (not available for VR EC version).
- EXT: steel pre-painted roof covering for outdoor installation.

DAHR: HEAT RECOVERY MODULE.

Construction features

- Fan: dual intake centrifuge with backward impeller blades that are statically and dynamically balanced, taper fitted onto the steel shaft and supported by moveable ball bearings. External motor equipped with internal thermal protection, actuated by pulley transmission, which is made of cast iron and has a variable pitch. The motor is installed on a belt-tensioner slide fixed to the fan on a robust double profile galvanised steel structure with high efficiency rubber anti-vibration mountings positioned in between. Air return with horizontal flow. Available static pressure of 100 Pa.
- Structure and frame: thermal cut extruded aluminium alloy profiles with a 40x40mm section 25mm thick double plate panelling (galvanised internally and pre-painted externally) with interposed highly effective and soundproofing injected polyurethane insulation. Interlocking seals in the balloon type profile.
- Heat recovery: static horizontal crossed flow with pre-painted aluminium exchanger pack complete with a condensate drain pan and support frame. Nominal performance not less than 55%. 48 thick filter (mounted on the outdoor air inlet) of class G3 corrugated synthetic cell type (UNI EN 779) with 87% average weight arrestance.
- Motorised dampers: in the aluminium wing profile. The 4 dampers (external air intake, recirculation, expulsion, by-pass) are sized for 100% capacity and fitted with factory-mounted modulating actuators.

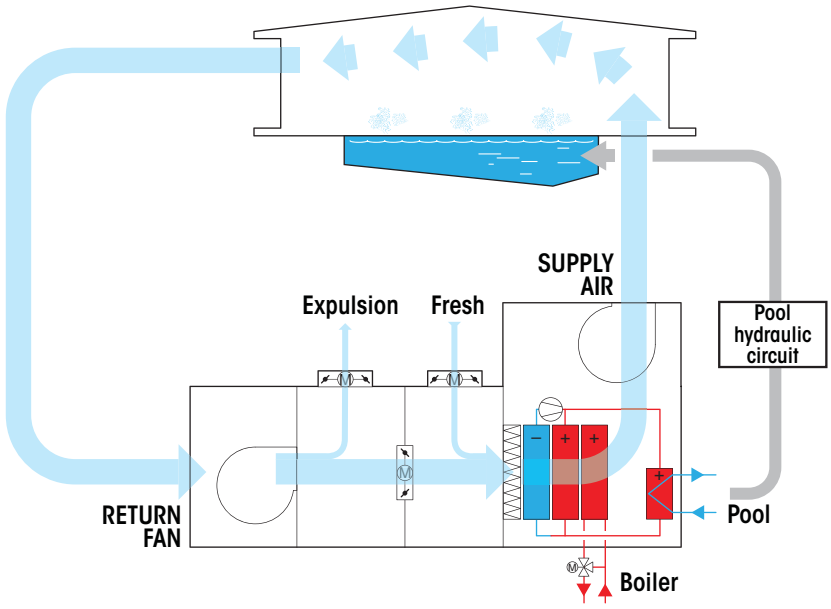
DAHR - Factory fitted accessories

- FAE M6: compact high efficiency outdoor air pre-filters, Class M6 (EN 779:2012), filtering means made of fibreglass, which replaces the standard G3 (only available with VM-R EC accessory).
- VR150: return fan with available static pressure of 150 Pa.
- VR200: return fan with available static pressure of 200 Pa.
- VR EC: Brushless EC type of RETURN fan with impeller made of composite corrosion resistant plastic with backward wing profile blades.
- Static and dynamic balancing of the entire assembly (motor-impeller), constructed in accordance with standard DIN ISO 1940. Degree of balancing G6.3.
- External electronic commutation rotor motor (EC) with integrated electronics and protection against overloads due to active temperature management.
- Programmable relay to signal faults. Motor protection and integrated heating motor operation.
- IP54 motor protection rating, thermal class 155.
- Greater energy efficiencies than the target values of the second tier (2015) of Commission Regulation (EU) 327/2011, regarding the application methods of the European Directive 2009/125/EC.
- In compliance with product EMC and EC regulations.
- Motor and fan are mounted on a robust and compact galvanised steel sheet structure with a galvanised steel suction nozzle and integrated pressure probe for measuring the air flow.
- The fan is fitted with constant flow control and a display of the working point.
- Maximum available static pressure (referred to the DAHR configuration)=500 Pa.
- VREPOX: return fan treatment with epoxy paint (not available for VR EC version).
- EXT: steel pre-painted roof covering for outdoor installation.
- KFR M6: additional module with compact high efficiency return air filters, Class M6 (EN 779:2012), filtering means made of fibreglass (only available with VM-R EC accessory).

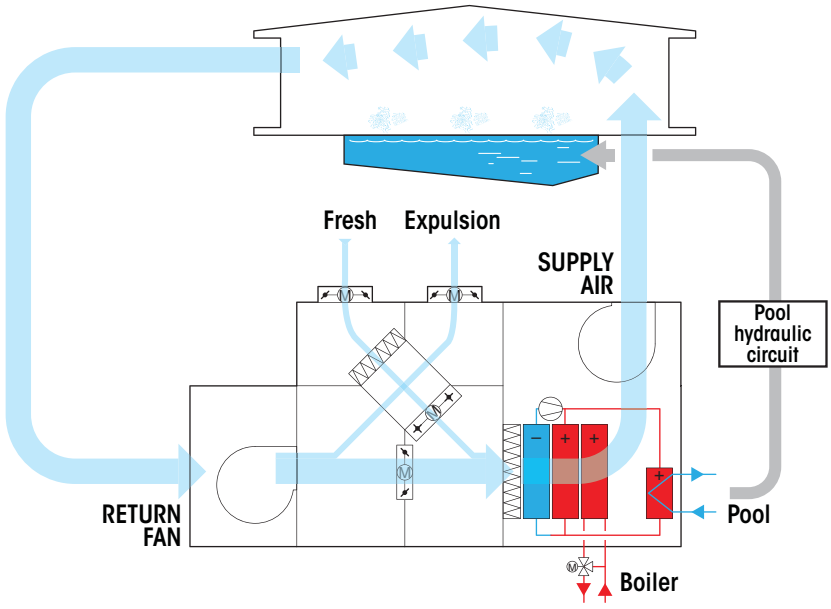
ATTENTION: the additional outdoor air handling modules must be ordered with the dehumidifier as they effect the electronic control. You cannot order the two modules separately.

Examples of combinations between the dehumidifier and the additional module

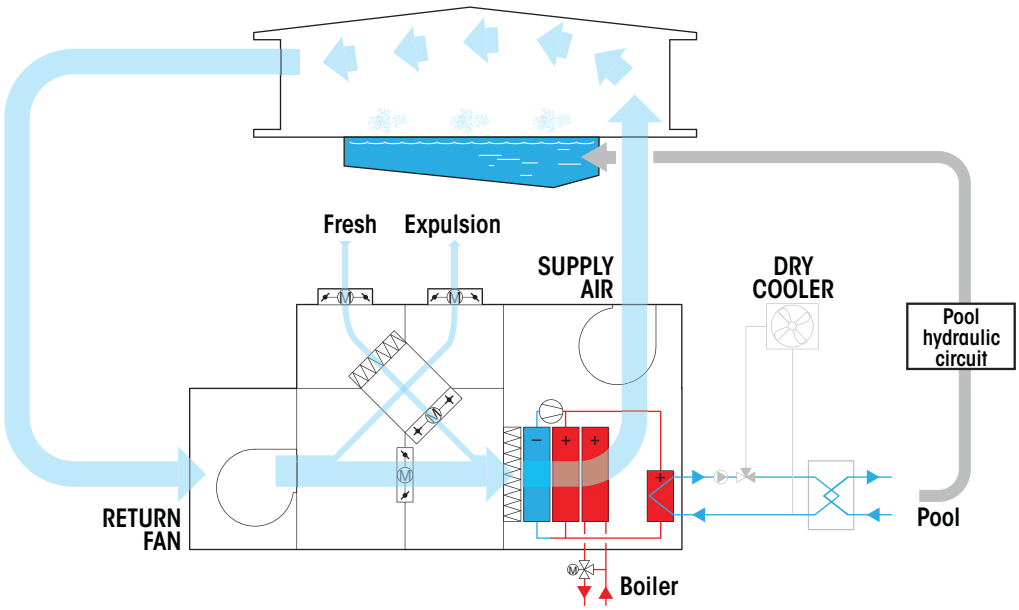
DRESY/DTESY + BA + DAFC



DRESY/DTESY + BA + DAHR



DEESY + BA + DAHR



Dry-Pool

DAESY-DRESY-DTESY-DEESY 108÷2140

	DAESY-DRESY-DTESY-DEESY MODEL		108	112	115	118	122	128	131	136
❷	Dehumidification capacity	l/h	7,7	11,3	13,1	16,5	19,5	25,2	28,0	33,0
❷	Heating capacity released to the air 100%	kW	12,6	18,8	23,0	30,1	33,9	43,7	49,6	57,6
❷	Total absorbed power	kW	3,2	4,9	5,4	7,0	7,4	10,0	11, 3	13,1
	Scroll/step compressor	no.	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	Fans/Motors	no.	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
❺	Available static pressure	Pa	100	100	100	100	100	100	100	100
❺	Max. available static pressure Version EC	Pa	500	500	500	500	500	500	500	500
	Nominal air flow rate	m³/h	2.200	3.000	3.500	4.500	4.700	6.200	7.200	8.200
	SIZES		**108**	**112**	**115**	**118**	**122**	**128**	**131**	**136**
	L - Width	mm	790	790	850	850	850	850	850	850
	H - Height	mm	1.380	1.380	1.580	1.580	1.890	1.890	1.890	1.890
	P - Depth	mm	1.300	1.300	1.600	1.600	1.600	1.600	1.600	2.100
	DRESY MODEL		**108**	**112**	**115**	**118**	**122**	**128**	**131**	**136**
❶	Dehumidification capacity	l/h	7,8	11,3	14,5	18,1	21,6	27,4	30,5	36, 2
❶	Heating capacity released to water 45%	kW	6,9	10,1	11, 4	13,8	15, 9	19,6	23,4	27,3
❶	Total absorbed power	kW	2,6	4,1	4,4	5,6	5,8	8,3	9,4	10,5
	DTESY MODEL		**108**	**112**	**115**	**118**	**122**	**128**	**131**	**136**
❸	Dehumidification capacity	l/h	8,5	12,3	14, 5	18,2	21, 3	27, 4	30, 1	36, 0
❸	Heating capacity released to water 100%	kW	14, 7	20,8	24,8	31,9	35,6	45, 4	51,5	60, 0
❸	Total absorbed power	kW	2,7	4,3	4,5	5,8	6,0	8,5	9,6	10, 8
	DEESY MODEL		**108**	**112**	**115**	**118**	**122**	**128**	**131**	**136**
❹	Dehumidification capacity	l/h	8,3	11,9	14,2	18,2	21,3	26,6	30,1	35,9
❹	Heating capacity released to water 100%	kW	14,7	19,7	23,7	30,7	35,6	45,4	50,2	58,6
❹	Total absorbed power	kW	2,8	4,5	4,8	5,9	6,4	8,9	10,0	11,3

	DAESY-DRESY-DTESY-DEESY MODEL		237	242	250	254	262	271	281	294	2111	2126	2140
❷	Dehumidification capacity	l/h	34,0	38,3	43,6	49,3	56,0	64,8	72,4	83,4	96,4	110,7	126,0
❷	Heating capacity released to the air 100%	kW	59,8	67,8	78,1	88,0	100,5	116,4	121,7	143,2	183,3	204,8	231,7
❷	Total absorbed power	kW	9,0	15,1	18,5	20,1	22,1	27,0	32,1	35,9	44,9	53,7	60,0
	Scroll/step compressor	no.	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
	Fans/Motors	no.	1/1	1/1	1/1	1/1	1/1	1/1	1/1	3/3	3/3	3/3	3/3
❺	Available static pressure	Pa	100	100	100	100	100	100	100	100	100	100	100
❺	Max. available static pressure Version EC	Pa	500	500	500	500	500	500	500	500	500	500	500
	Nominal air flow rate	m³/h	9.000	9.300	11.000	12.400	14.400	16.500	18.000	21.000	22.000	25.000	27.000
	SIZES		**237**	**242**	**250**	**254**	**262**	**271**	**281**	**294**	**2111**	**2126**	**2140**
	L - Width	mm	850	850	850	1.230	1.230	1.230	1.230	1.230	1.230	1.230	1.230
	H - Height	mm	1.890	1.890	1.890	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.300
	P - Depth	mm	2.270	2.270	2.270	2.870	2.870	2.870	2.870	3.370	3.870	3.870	3.870
	DRESY MODEL		**237**	**242**	**250**	**254**	**262**	**271**	**281**	**294**	**2111**	**2126**	**2140**
❶	Dehumidification capacity	l/h	37,3	42,0	48,7	53,9	61,2	71,0	80,7	93,7	111,1	127,1	144,6
❶	Heating capacity released to water 45%	kW	27,4	31,8	39,0	41,4	46,8	56,1	61,0	69,7	84,2	96,7	109,6
❶	Total absorbed power	kW	10,8	11,9	14,2	16,0	18,1	21,8	25,2	28,5	34,6	40,9	45,4
	DTESY MODEL		**237**	**242**	**250**	**254**	**262**	**271**	**281**	**294**	**2111**	**2126**	**2140**
❸	Dehumidification capacity	l/h	37,3	41,7	48,3	53,5	60,6	70,5	80,0	92,0	110,3	127,1	144,6
❸	Heating capacity released to water 100%	kW	61,5	69,5	81,0	89,6	103,0	119,3	127,6	149,2	185,1	208,6	234,0
❸	Total absorbed power	kW	11,1	12,2	14,6	16,5	18,6	22,4	25,9	29,4	35,5	41,3	46,5
	DEESY MODEL		**237**	**242**	**250**	**254**	**262**	**271**	**281**	**294**	**2111**	**2126**	**2140**
❹	Dehumidification capacity	l/h	37,3	41,0	48,1	52,4	60,2	70,3	78,8	91,6	109,8	124,8	142,4
❹	Heating capacity released to water 100%	kW	60,8	68,2	79,8	89,6	101,5	118,0	126,3	147,5	184,7	206,8	232,3
❹	Total absorbed power	kW	11,3	12,8	15,3	17,3	19,1	23,1	26,7	30,1	35,8	43,1	48,5

Data at the following conditions:

❶ Releasing heat to the air and water. Ambient air temperature: 27°C, 65% RH. In/out pool water temperature: 26/32°C.

❷ Releasing heat only to the air. Ambient temperature: 27°C, 65% RH.

❸ Releasing heat only to the water. Ambient air temperature: 27°C, 65% RH. Pool in/out water temperature 26/32°C.

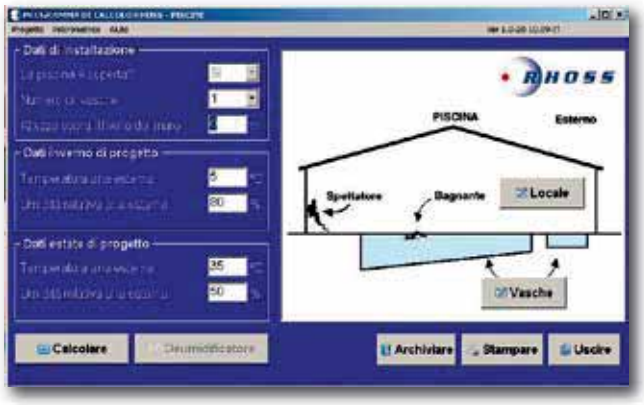
❹ Releasing heat only to the water of the Dry-Cooler. Ambient air temperature: 27°C, 65% RH. In/out water temperature 31/37°C.

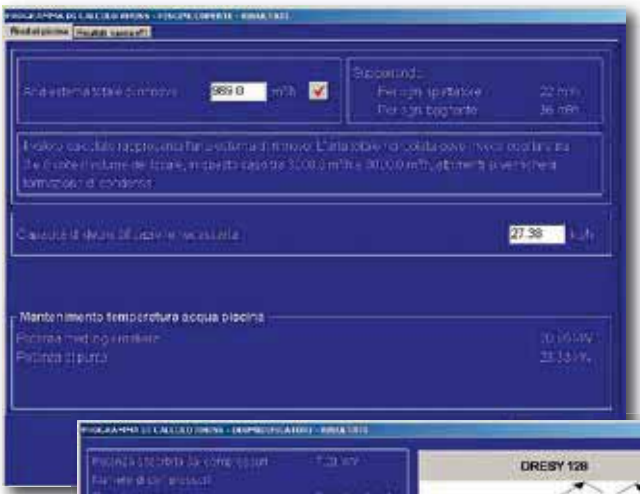
❺ Without the BA accessory and/or the DAHR additional module.

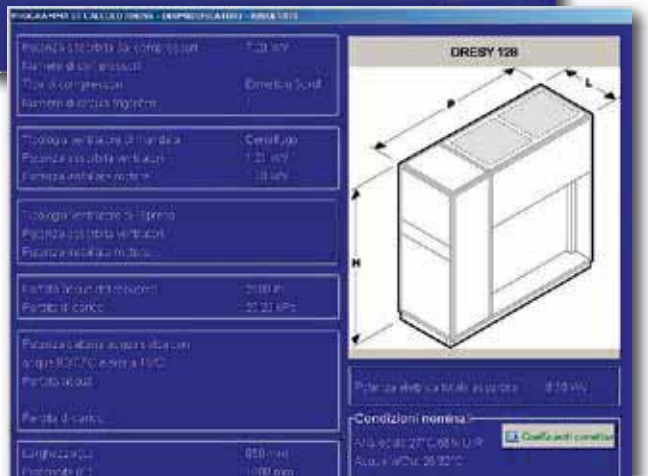
Dry-Pool
SELECTION SOFTWARE

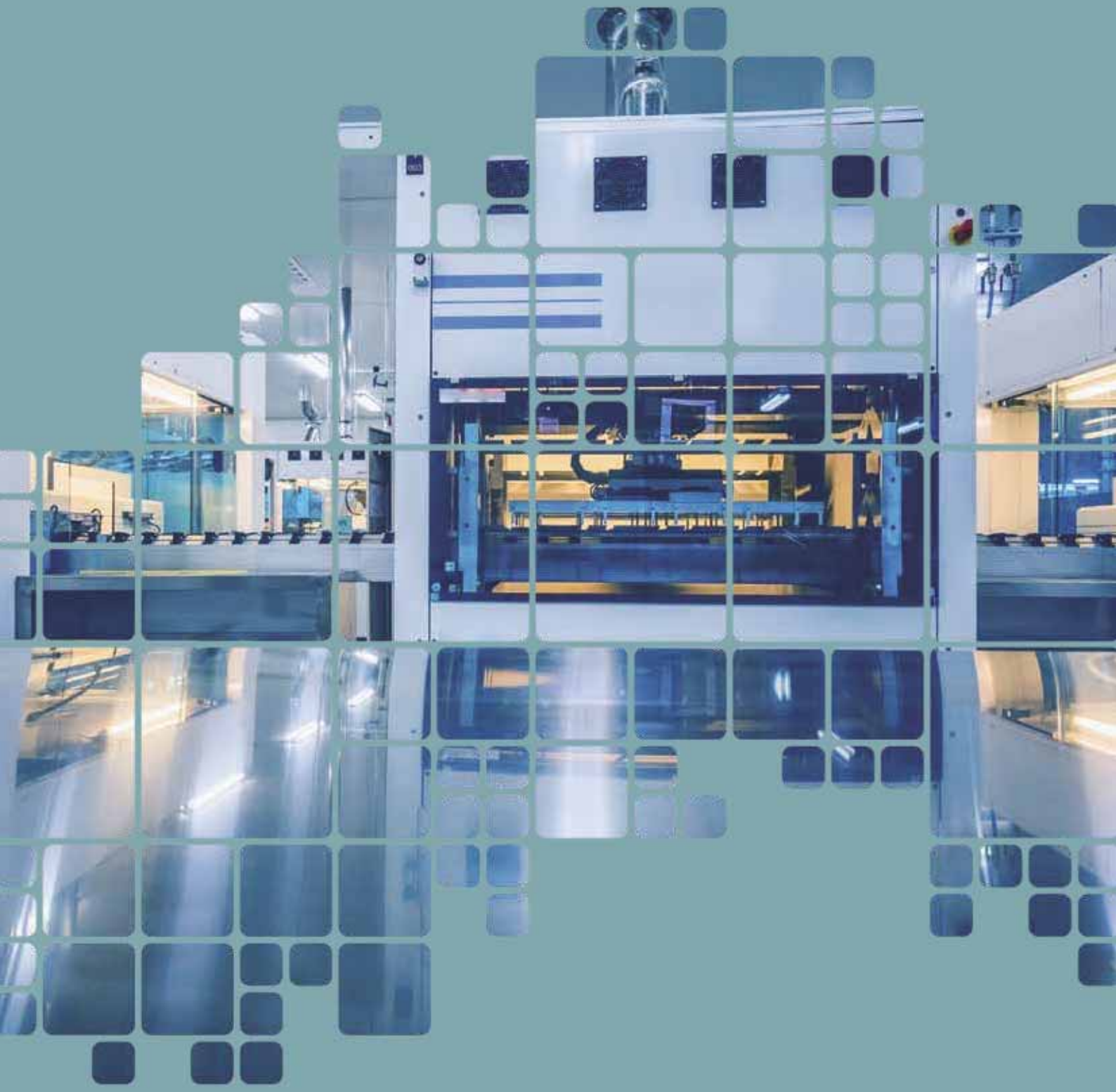
FROM THE SYSTEM TO THE DEHUMIDIFIER.

- The air conditioning of a closed pool has very different requirements from those of a typical system for residential or commercial utilities.
- To facilitate the sizing aspect of these systems, Rhoss has designed a selection programme with which the rate of evaporation, generated within these particular environments, can be calculated precisely.
- The calculation tool allows all the basic parameters required to determine the dehumidifier work load to be entered: temperature and relative humidity of the air in the room, surface area of the pool, water temperature and occupancy rate.
- Other elements such as the number of pools and their water volume, the cubic volume of the room, the number of spectators and the presence of special water games are also taken into consideration for a more accurate selection.
- The results of the calculation are necessary references to select the most suitable size of dehumidifier to guarantee comfort and safety for the entire system.
- The user is guided up to pages of the machine configuration where all the DRY-POOL versions (DAESY, DRESY, DTESY, DEESY) can be selected compete with all the options and accessories available in the full range.









INDUSTRY

INDUSTRY

RHOSS INDUSTRY: a team of professionals at the service of the industry.

RHOSS INDUSTRY can develop solutions, products and services for the industrial sectors in which the processing or transformation of a product require precise control of the temperature and humidity parameters with the maximum overall efficiency of the suggested systems. Dimensional aspects, the aspect of logistics, temporary renting services, working alongside RHOSS INDUSTRY technicians during installation and assembly of the products; verification and testing teams and scheduled maintenance packages.

- **Food industry**
- **Wine industry**
- **Meat processing**
- **Canning industry**
- **Confectionery industry**
- **Poultry industry**
- **Electronics industry**
- **Chemical industry**
- **Pharmaceutical industry**
- **Cleanrooms**
- **Metrological rooms**
- **Furniture and paints sector**
- **Shipping industry**

Hereunder are a few examples of the solutions that Rhoss can propose:

- **Support and assistance when re-assembling the machines on site**
- **Shipment of semi or completely disassembled machines**
- **System tab services via specialised and trained partners**
- **Ad hoc solution design and implementation for industrial applications, such as:**
  - **centralised ozone water treatment systems**
  - **ozone sanitisation systems implemented in industrial processes**
- **Development of air handling units for thermodynamic and chemical industry dehumidification processes**
- **Support in the energy assessments of heat recovery units for industrial applications and their implementation**

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