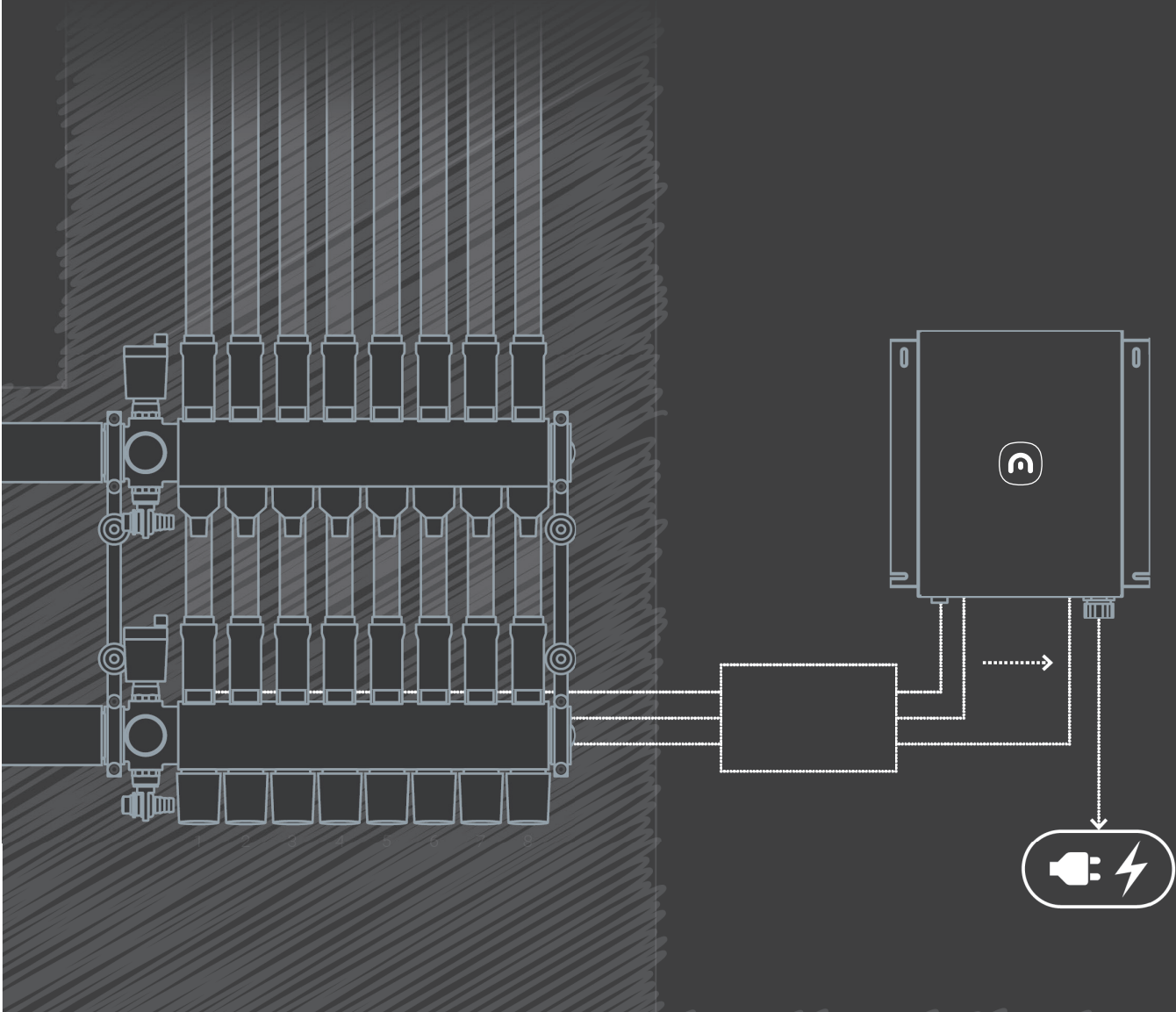




messana[®]
hydronic technologies

Climate Control



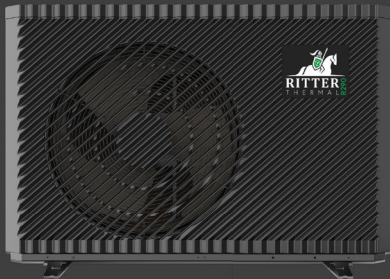
**WATERWARE**

waterware.co.nz

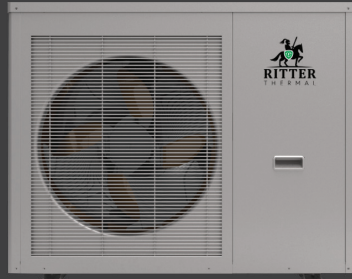
Messana's Climate Control Platform

Designed for air and radiant based heating & cooling systems with integrated heat recovery ventilation and hot water production

With 20 years of experience in hydronic radiant cooling and heating, Messana has developed a unique control technology that modulates the system to deliver perfect comfort and optimal air quality.



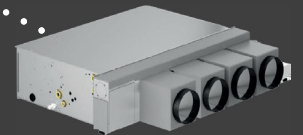
Heat Source
Ritter R290 Heatpump



Heat Source
Ritter R32 Heatpump



Active Ceiling
Heating and cooling



Fan Coil Units
Ducted Hydronic

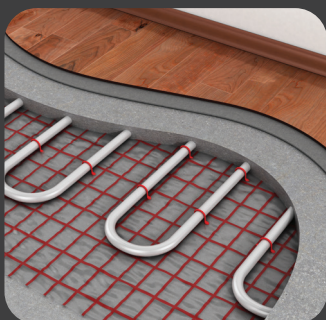


Air Treatment Units
Dehumidification
HRV
IAQ
Heating & cooling support



Hot water production
Protank Hot water Cylinder

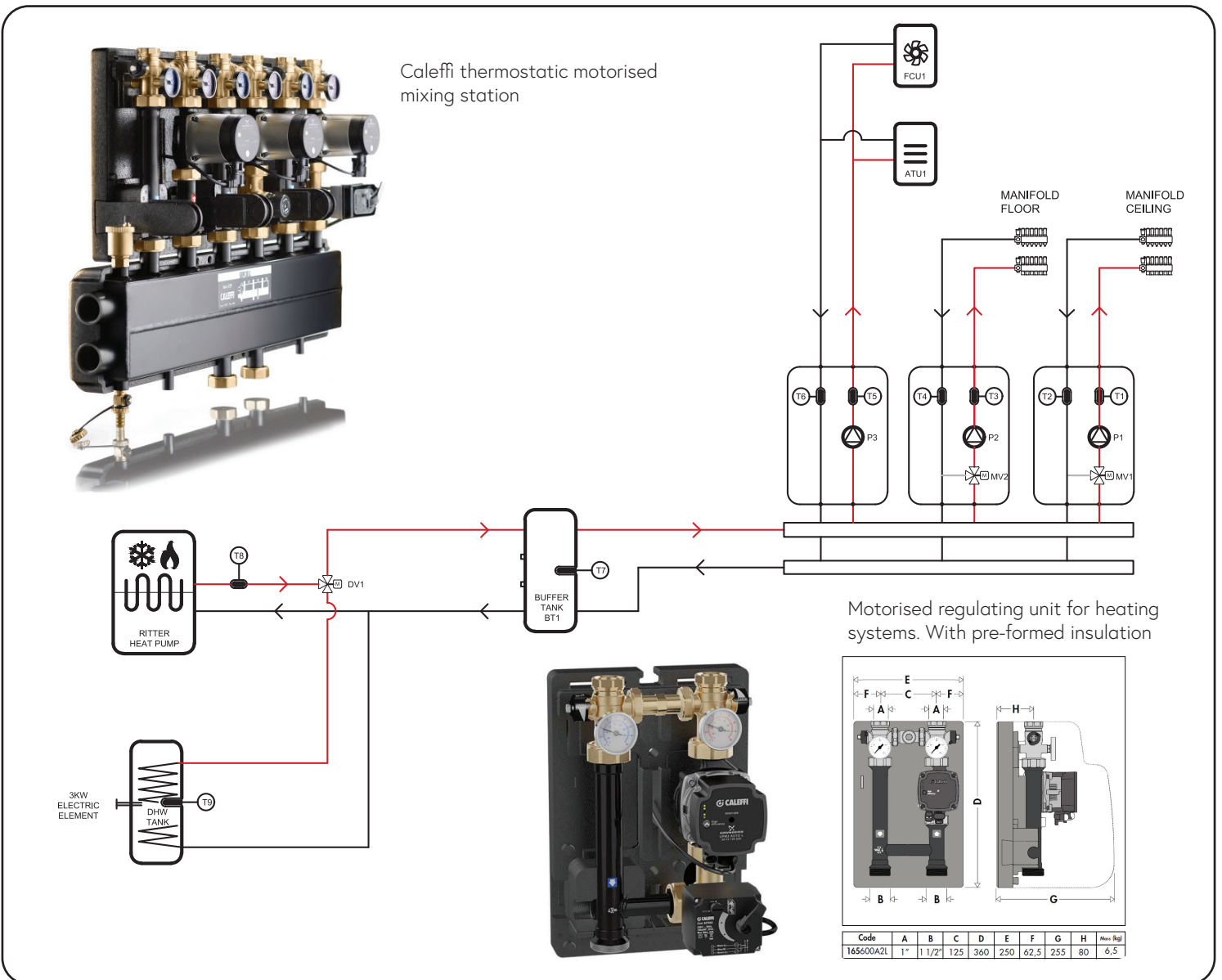
Underfloor
Heating and cooling

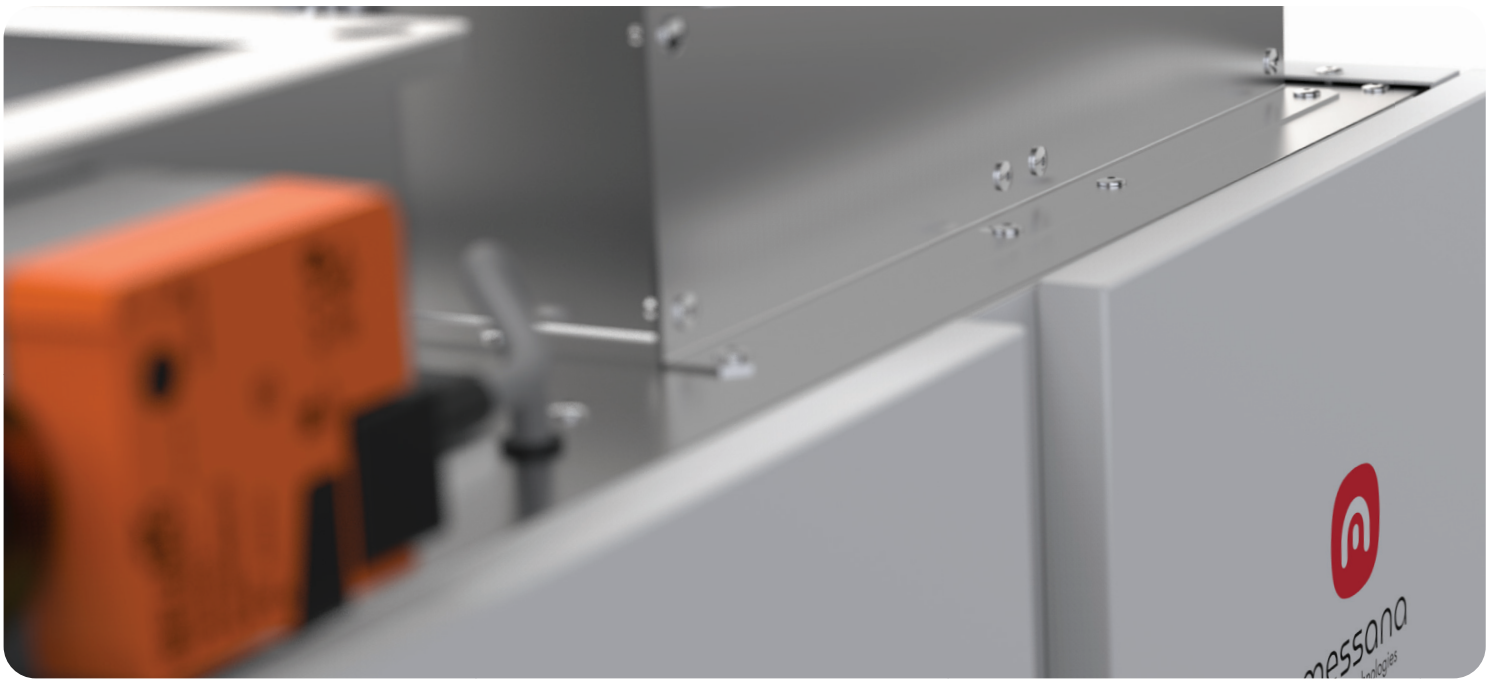




Simplified Hydronic Design

The Caleffi pump and mixing station is configured to deliver unmixed water to the air-based technologies and mixed water to the radiant based technologies. The control system calculates the water temperature to each temperature zone with water above and below the dew point to perfectly manage the needs of the building. Fully insulated with combining manifold provides the cleanest looking solution with unrivalled functionality.





Air Treatment Units (ATU)

Breathing healthy and clean air is also an important part of your Thermal Wellbeing™. This is why Messana has developed a complete range of AIR TREATMENT UNITS (ATU) specifically designed for radiant cooling to ensure increased Indoor Air Quality and the comfort of the occupants.

The **ACTIVE AIR** range dehumidifiers with high-efficiency heat recovery system are used in radiant cooling buildings together with an air renewal system. The **ACTIVE AIR** dehumidifiers dehumidify, cool, heat and change the air. They recover heat from expelled air.

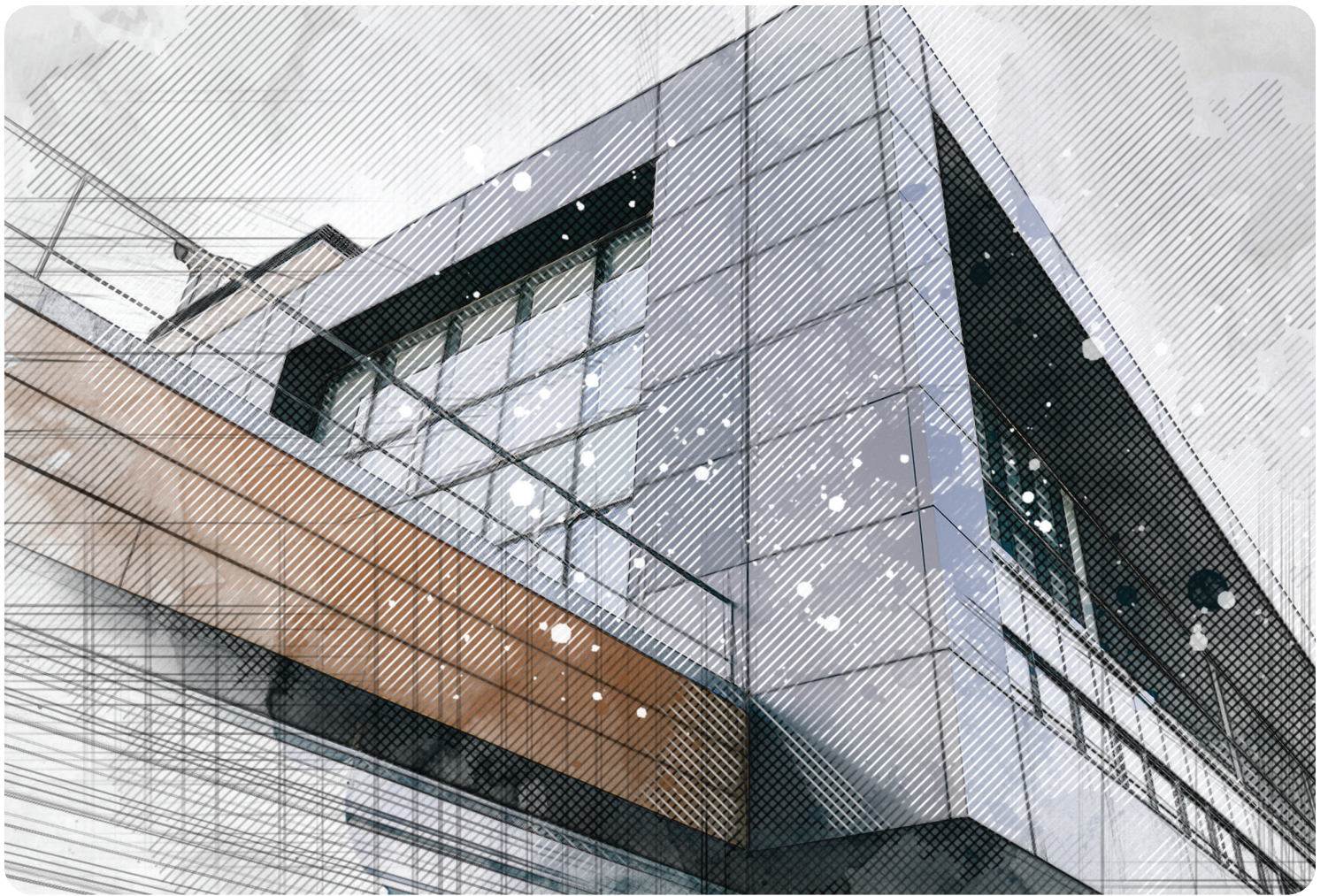
High pressure and minimum electric consumptions are guaranteed by the adjustable electronic fans with permanent magnet brushless motor and cutting-edge incorporated inverter.

The top-quality refrigeration, hydraulic, aerualic and electrical components make **ACTIVE AIR** units state of the art dehumidifiers in terms of efficiency, reliability and silence. More than 90% yield is guaranteed by the high-efficiency counter-current heat recovery system.

The ATU is driven from the control systems zone's sensors automatically modulating the fresh air with recirculated, activating the built-in water coil and modulates the fan speed all based on actual needs. Each zone reports air temperature, humidity and VOC, the control system moves the ATU into different modes to deliver the optimal mix of air quality, temperature, and humidity. Controls communicate directly with the ATU using MODBUS protocol allowing complete flexibility, system status is remotely monitored and optimized via the dashboard interface.



		ACTIVE AIR 020	ACTIVE AIR 035	ACTIVE AIR 050
Dehumidifying capacity	L/Day	24,5	36	58
Nominal air flow	m ³ /h	260	380	520
Fresh air flow	m ³ /h	0-130	0-190	0-260
Recovery system efficiency	%	> 90%		
Cooling Power	W	1920	2700	3650
Sound level	dB(A)	38	39	43
Power supply	V/ph/Hz	230 / 1~ +N / 50		
Dimensions (base x depth x height)	mm	600 x 380 x 980	650 x 430 x 1050	700 x 515 x 1430
Empty weight	kg	50	55	75
type of installation		Wall mounting	Wall mounting	Base mounting



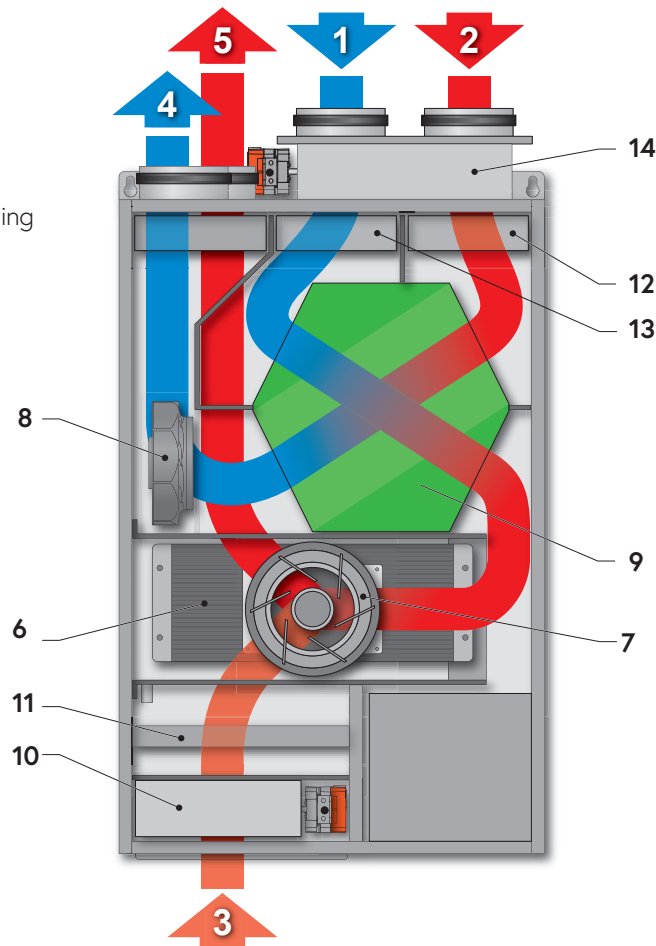
How it works

The Messina *ACTIVE AIR* range identifies an especially silent chilled water hydronic dehumidifier without compressor. The outlet air is always cooler than the inlet air. The "W" version supplies conditioned air in summer and heating in winter.

Summer functions

- Renewal
- Renewal + dehumidification
- Renewal + dehumidification + cooling
- Cooling
- Dehumidification
- Dehumidification + Cooling

1. Fresh air intake
2. Exhaust air intake
3. Room air intake (for recirculation)
4. Exhaust air discharge
5. Room air supply
6. Heat exchange coil
7. Blower fan
8. Exhaust fan



Winter functions

- Renewal
- Renewal + heating
- Heating

9. Heat recovery system
10. Recirculation damper
11. Supply air filter
12. Recovery system air filter
13. Outdoor air filter
14. Outdoor air damper



mBox5 & mBox10 Programmable system controllers

The new mBox5 and mBox10 can manage complex hydronic systems in small to medium-sized homes/buildings with up to 5 or 10 zones. Our mBox controllers can manage various hydronic systems like radiant ceiling panels, radiant floors, fan coils, and even hybrid systems that utilize numerous hydronic components.

To simplify system setup, and give the installer complete freedom and flexibility to program the controller, the new mBox5 and mBox10 now come with a new interactive configuration wizard. The configuration wizard is completely integrated with the Messina App to allow the contractor to configure the controller in just a few steps. Even for complex hydronic systems, the controller is easily programmed by entering the system information and parameters and navigating a set of predefined configuration pages.

Once the configuration is completed, a wiring table is generated. The table lists every connection to the mBox to make installation quick and easy. Once the system is set up and running, the configuration tool can be used to make changes as needed.

It is integrated with the Messina climate control platform developed with more than 20 years of experience in radiant cooling and heating technology. It connects with via Ethernet and it interfaces with the Messina web and mobile App.

mBox 5 & 10 is powered with a dedicated Emerson programmable I/O module based on a high performance 32-bit ARM9 (200 MHz) microprocessor.

The system connects up to 5 mSense room sensors (mBox5) or up to ten mSense (mBox10) in daisy-chain via serial bus (RS485 master zone bus). These sensors monitor zone air & radiant temperature, humidity & VOC, these inputs drive algorithms which output control instructions via MODBUS to the heat pump & ATU, 0-10v signal to the mixing valves and fan coil fans, & 230v to the pumps, 3 way valve (DHW production) and zone actuators.

Control logic features DHW production in priority with single appliance systems or load sharing in hybrid systems, adaptive-comfort temperature compensation in winter and dew point management in summer. DHW, air based technology, radiant ceiling & radiant floor all have independent set points for the hydronic systems. Up to four temperature zones from one heat source allows for optimized efficiency and comfort within the system.

For buildings with more than 10 zones, our original mBox controller can be used with additional mZone zoning modules to manage as many zones as the system needs





6 Reasons to choose mBox5 or mBox10

Below, in a nutshell, are the best 6 reasons to consider Messana climate control for your next project.

1. Messana / Emerson programmable I/O module

Years of experience in combining DHW, air & radiant based systems have been drawn upon to create the mBox series, nobody else approaches these systems with an integrated approach. The algorithms at the heart of the controls dynamically modulate the power delivered from each type of system in perfect harmony.

2. A new approach for new environments

New H1 building regulations will change the key drivers of comfort to be air management and cooling performance with less focus on heating requirements. The mBox controls allows new radiant based cooling systems in conjunction with heat recovery ventilation, dehumidification, and air support to deliver optimal comfort with maximum efficiency. Radiant heating systems ensure winter comfort for floor and ceiling systems with additional power from the air based systems when required for rapid heating requests.

3. Multi-function systems are capital efficient:

The mBox5 system allows one plant to take inputs from 5 zones and deliver heating, cooling, and air management removing the need to have multiple systems to perform these functions. mBox10 adds 5 more zones taking it to 10 inputs and includes hot water production control, with optional direct electric boost if required.

4. MODBUS appliance control:

Communicating to the heat pump and ATU directly via MODBUS allows the mBox maximum flexibility in control and reporting. In the heat pump set points are moved electronically rather than with just static mixing, this allows the controls to always select the most efficient water temperature for the system dynamically changing in response to the actual needs of the system. The ATU is activated in various modes in response to system needs, ventilation & dehumidification requests are all driven from actual zone performance. Status of the heat pump and ATU are reported live back to the controls allowing offsite monitoring and optimization.

5. 0-10v mixing and fan control:

Modulating control from the mBox's algorithms allows the system to dynamically respond to the needs of the building. The system works with a unique staged concept with radiant based systems used as the primary technology for heating and cooling loads. The ATU ventilation system supports the radiant based system with either HRV only, or HRV plus dehumidification, or HRV plus air support. The final boost stage is from the air system with either ductless or ducted fan coils.

Staging of these technologies in this way delivers optimal comfort and minimizes the running costs of the system.

6. 230v output for 3 way valves, pumps and actuators.

The final components are driven from the controls directly with 230v outputs, integrating all the system components in to one comprehensive platform closes the loop on the synergy of taking multiple dispirit technologies and delivering them as a seamless package.



mSense

A new generation of room comfort sensors

In the past, typical room thermostats only provided air temperature as the sole index of thermal conditions in your home. An HVAC control system based uniquely on air temperature does not account for other key comfort elements, such as mean radiant temperature, air temperature and velocity, humidity and air quality.

This is why at Messana we have invented mSense, a new generation of room sensors to enhance comfort and energy efficiency. mSense measures the three fundamental indoor environmental parameters that influence the wellbeing and thermal conditions of occupants: operative temperature, relative humidity (dew-point) and air quality.



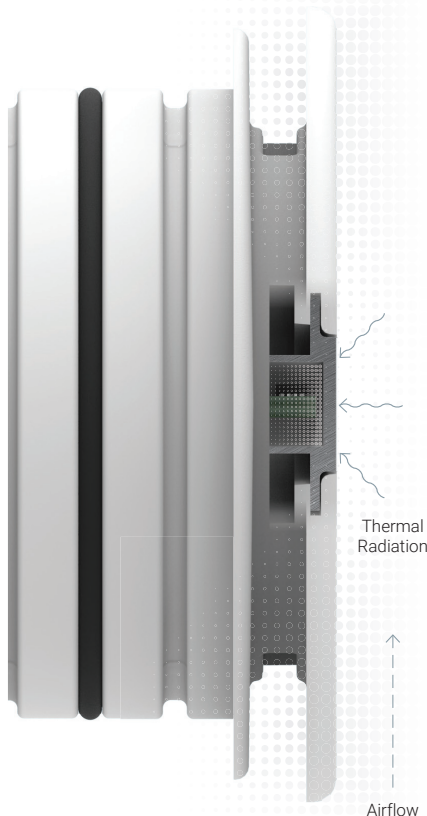
Operative Temperature

Operative temperature is the combined effects of the mean radiant temperature and air temperature. When it comes to thermal comfort, the operative temperature expresses what humans thermally experience in a space. It is a sort of measure of the body's response to the convective and radiant energy exchange.



Dew-point temperature

The dew-point temperature is an important measurement of the content of moisture in the air. An accurate reading is fundamental to properly control hydronic radiant cooling systems. It dictates the water supply temperature preventing any potential condensation on the radiant surface.



Air Quality

Volatile Organic Compounds are toxic chemicals that can be dangerous even at low concentrations and can have health effects. Most notably, Formaldehyde has been proven as carcinogenic. mSense measures the Total VOCs level and allows the control system to activate the air renewal process.



Serial Connection

mSense is based on a standard two-wire RS485 serial connection and is compatible with Modbus and BACnet communication protocols. The physical strength of the RS485 provides robust and reliable connectivity in the most challenging environments.

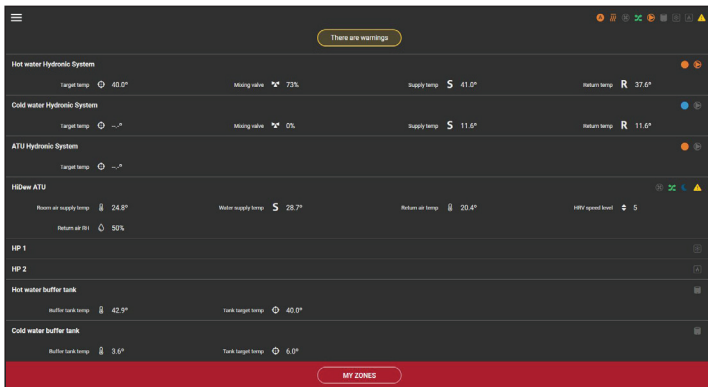
Messana App

Gives you full control of your radiant cooling and heating system from anywhere in the world. The easy to use, at your fingertips interface manages even the most sophisticated systems. It fits seamlessly into your life to provide the perfect ThermalWellbeing™ precisely when and where you want it.



Main page (dashboard area)

If you scroll down the forecast view there is a customizable dashboard that provides at-a-glance view of the status each component of the system. The dashboard area can be personalized under Main menu → Settings → User preferences.



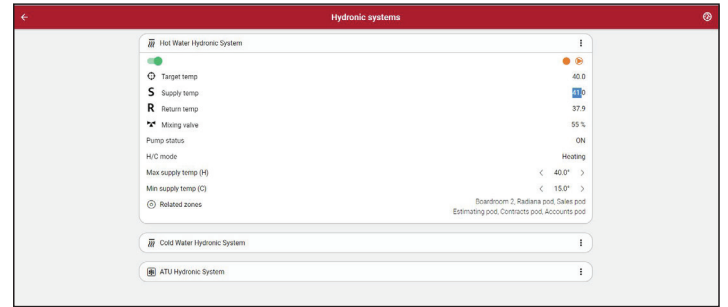
Main page menu

The Main menu is accessible only from the Main page (dashboard). From this menu there is the access to all functionalities and the setup of the Messana control system.



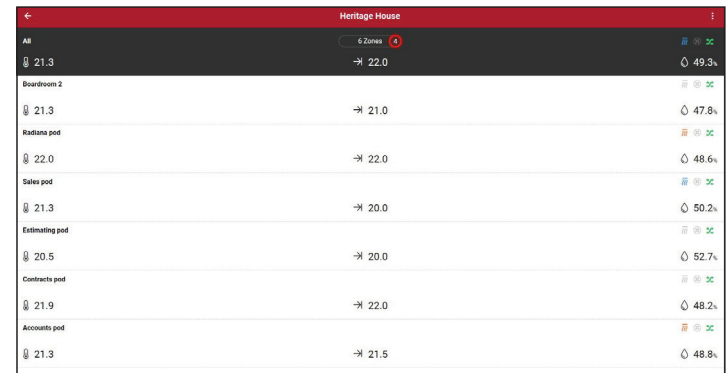
Zone setting

Here you can set the zone desired temperature (setpoint), turn the zone On/Off and check its status. The zone can also be set up under a weekly schedule



Zones

This page summarizes all of your zones. Each zone displays temperature, setpoint, relative humidity and the zone status bar. The status bars gives you an overall idea of the current conditions of the zone.



Graphs

Create historical graphs to track the progress of the system. Graph can be created over a three month range of historical data stored in the central unit.

Different predefined templates are available. Advanced users can create new custom templates and can also select what data and parameters store in the central unit (up to three months). mConnect clients will also have access to older data.





Powered by



The Ritter Thermal R290 Heat Pump can provide heating/cooling and domestic hot water. Floor heating loops is used for space heating while fancoil unit can be used for heating and cooling.

Domestic hot water is supplied from the hot water cylinder connected to the heat pump.

Ritter Thermal R290 Heatpump		HPR6HT	HPR10HT	HPR17HT
Power Supply		230V~	230V~	230V~
Heating Condition -Ambient Temp. (DB/WB): 7/6°C, Water Temp. (In/Out): 30/35°C				
Heating Capacity Range	kW	3.10~8.90	5.40~14.95	8.00~22.00
Heating Power Input Range	kW	0.65~2.10	1.05~3.85	1.60~6.90
Heating Current Input Range	A	2.9~9.2	4.6~16.9	7.0~30.3
Cooling Condition -Ambient Temp. (DB/WB): 35/24°C, Water Temp. (In/Out): 12/7°C				
Cooling Capacity Range	kW	1.20~5.72	3.60~10.50	4.20~15.00
Cooling Power Input Range	kW	0.65~2.40	1.12~4.47	1.80~7.30
Heating Current Input Range	A	2.9~10.5	4.9~19.6	7.9~32.1
Hot Water Condition -Ambient Temp. (DB/WB): 20/15°C, Water Temp. (In/Out): 15/55°C				
Hot Water Capacity Range	kW	3.92~10.68	6.50~18.50	10.00~27.00
Hot Water Power Input Range	kW	0.78~2.47	1.27~4.65	1.90~7.10
Hot Water Current Input Range	A	3.4~10.8	5.6~20.4	8.3~31.2
Max. Power Input	kW	3.0	5.3	7.5
Max. Current Input	A	13.5	24.5	35.0
Water Flow	m3/h	1.0	1.7	2.9
Refrigerant/ Proper Input	kg	R290 /0.50kg	R290 / 0.85kg	R290 / 1.30kg
CO2 Equivalent	Ton	0.002	0.003	0.004
Sound Pressure (1m)	dB(A)	42	43	47
Sound Power LevelEN121021	dB(A)	57	57	62
Operating Ambient Temperature	oc	-25~43		
Max. Water Temperature	oc	75		
Water Pressure Drop (max)	kPa	20	20	65
Circulation Pump Water Head	m	7.5	7.5	12.5
ErP Level(35°C)		A+++		
Unit Dimension(L/W/H)	mm	1167 X 407 X 795	1287 X 458 X 928	1250 X 540 X 1330

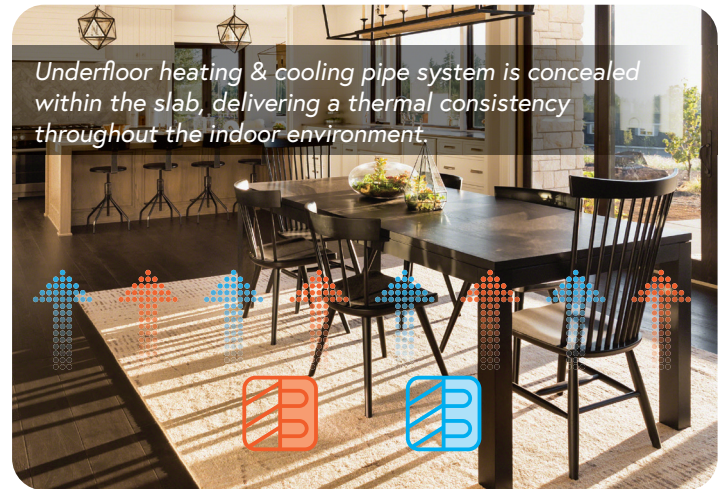


Radiant energy heating and cooling has many benefits, and it's the underlying reason why Waterware has developed expertise in this area with two technologies available for commercial and residential applications, Active Ceiling and Underfloor.

All of Waterware's radiant energy systems can be integrated with domestic hot water production, saving you up to 70% on your hot water bill. Waterware's in-house team of technical specialists will work with you to design a solution that meets your requirements, as well as full technical support during and after the project.

Radiant surfaces

The heating and cooling system is designed to work in conjunction with the radiant based system by adding or removing energy from the zones to keep the zones at the desired temperature. This is done by combining hydronic floor & ceiling heating and cooling with an active HRV system. The active HRV system can directly support the radiant based system by dehumidifying the air when required and delivering directly heated or cooled air along with the ventilation requirements.



Hot Water Production

When you're looking for a reliable hot water system, look no further. Our system can provide the hot water required for the sanitary needs of your house or building using the Heat pump as the primary source of energy supported by electric backup in times of need.

SMART domestic hot water control

Optimizes multi-stage heating systems (heat pump with boiler backup) as well as recirculating pumps through programmed scheduling, temperature and/or room based presence sensors to provide instantaneous hot water supply only when needed.



Proud members of



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