

Vacuum and charging unit

Medusa

Charge

Vacuum

Monitoring and Gas Extraction System

Medusa is an environment monitoring system that allows to constantly keep safe the vacuum and charging machine within the working area, storage area and, if present, the refrigerant suction and transferring area.

Medusa can be configured according to the customer specific installation:

- Built in agreement to the European Machinery Directive, CE marked, CE Safety standards for potential dangerous areas
- Basic version suggested with three ambient sensors
- Microprocessor controller
- User interface with alarm lights
- Provided with integrated Acoustic Alarm
- Provided with UPS (Uninterruptible Power Supply) to constantly supply the sensors, related lights and sound alarms

Medusa supplies and controls the EOLO fan rate

ventilation by means of a proper Power Electric cabinet. The Power rate can be configured according to the customer layout. Medusa standard version is provided with catalytic sensors that optionally include a sensitivity calibration device to check their performances according to the European Machine Directive.

Components included in the Medusa System

- Main control box
- EOLO multi speed Atex fan
- Fire alarm box
- Gas alarm indicators column (up to three)
- Fan/door alarm indicators column (up to three)
- Spring + microswitch for charging room door
- Pneumatic valve, manual valve and safety valves group + 0,7 l accumulator
- Pneumatic valve, manual valve and safety valves group + refrigerant filter
- 30/40 bar safety valve

Medusa



Eolo fan



Gas Sensor IR/CAT



Main using applications

Medusa signals operators and initiates additional ventilation when the concentration of Isobutane/Propane reaches 15% of the Lower Flammability. The system cuts the power supply to the vacuum and charging unit, putting it in a safe state, when the concentration exceeds 30% of the Lower Flammability. At the same time it activates the Alarm to signal the operators to leave the working area and activate all systems of the fire prevention.



Medusa PL4 / PL4+, Technical Characteristics		Medusa SR/SR+ Per Supply room	Medusa MS8/ MS8+
Environment sensors	From 1 to 4 (PL4) From 5 to 8 (PL4+)	From 1 to 4 From 5 to 8	From 1 to 8 From 9 to 16
Type of environment sensors	Catalytic / Infrared		
Differential pressure switches	1 or 2		
Available Outputs to	<ul style="list-style-type: none"> cut the supply to the charger, to tank changer system, to the vacuum pump in the repair area, to the refrigerant delivery line from the transfer pump audible and light alarms opening delivery valve for “anti-fire agent” 		
Available Inputs to	<ul style="list-style-type: none"> state (ON/OFF) of charger state (Open/Closed) of working area door state (Activated/Not activated) of fire alarm push button 		
Available Eolo Rates	<ul style="list-style-type: none"> 3100 m³/hr /Eolo Jr 3100 m³/hr /Eolo 4000 m³/hr /Eolo L 4500 m³/hr /Eolo XL 		
Control Unit	PL4/PL4+ /MS8/MS8+ SR/SR+ Per Supply Room		
Working temperature	5 °C .. 45 °C		
Power Supply	400 V – 50 Hz – 3ph + N + GND		
Rated electric current	~ 7 A controlling 2 ventilation units ~ 14 A controlling 4 ventilation units		
Dimensions (L x W x H)	800 x 600 x 250 mm		
Weight	~45 kg		

Optional features and devices
Calibration kit for HC sensors
IR environmental sensors
BOX_VALV_ETNA
BOX_VALV_SR
Additional light and Acoustic Alarm

* FT software department develops customized software on request

Company Profile

Vacuum and Charging units

HC Refrigerants handling systems

Special Units

Vacuum and Charging Injectors

Refrigerant transfer pump

Pressure test units leak detectors

Preliminary evacuation

Electrical and functional test

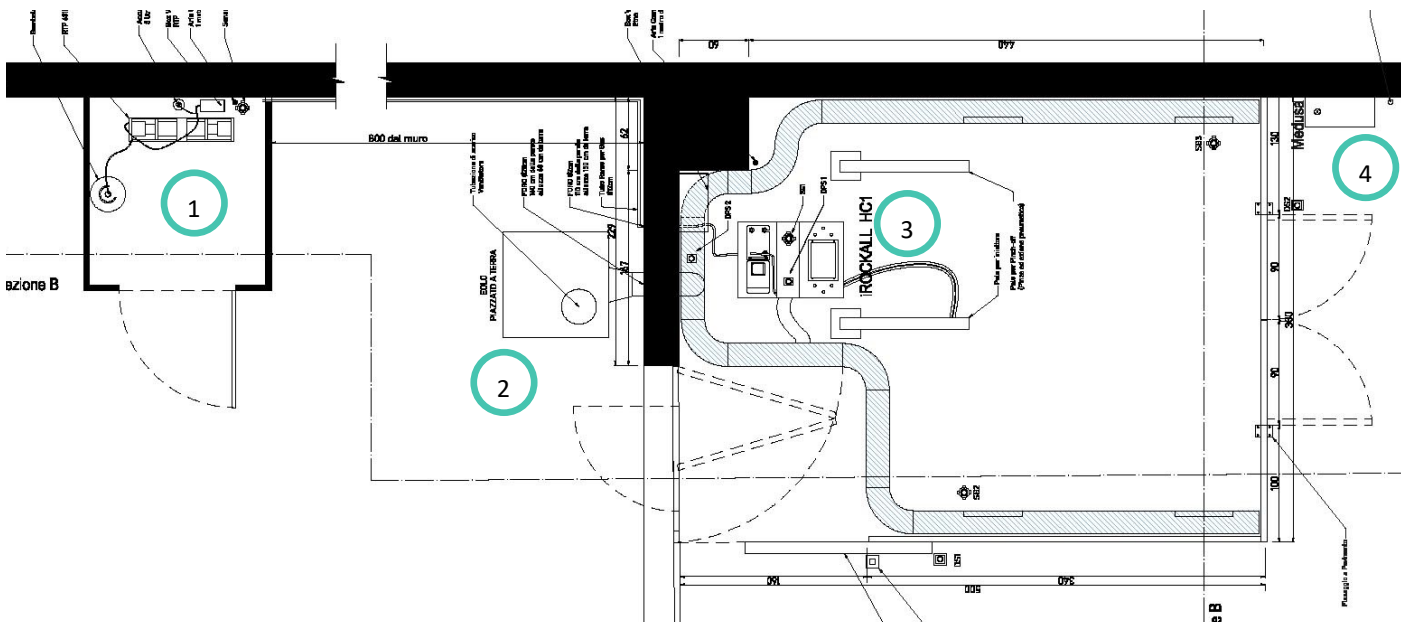
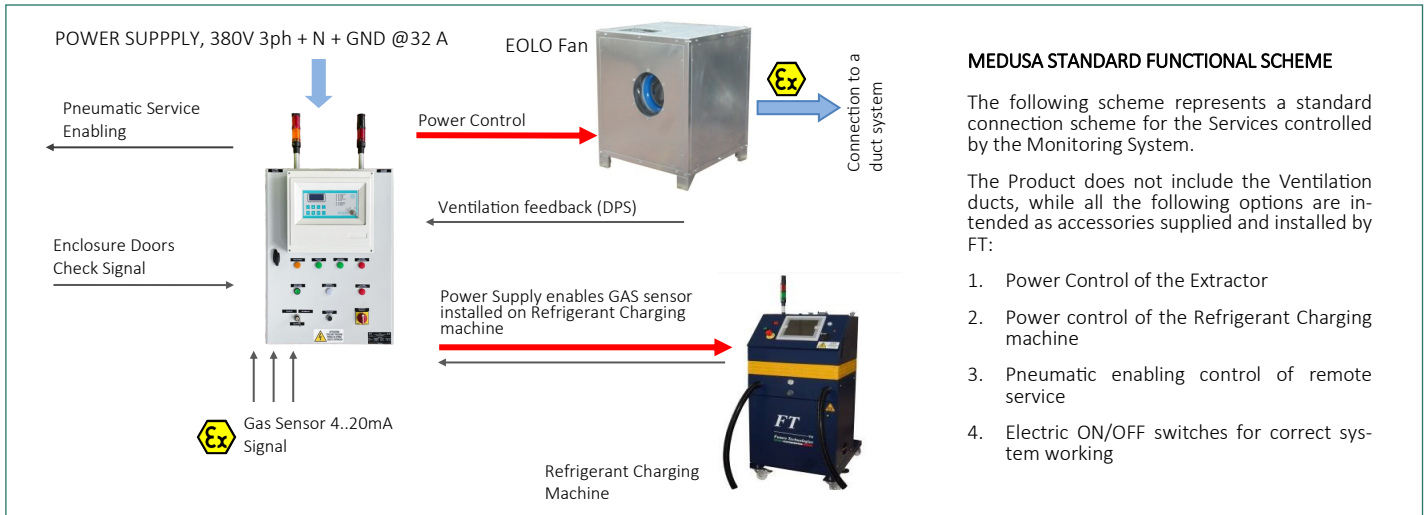
Ultrasonic tube sealers

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Vacuum and charging unit

Medusa

Standard Functional Scheme for Medusa



1. Supply Room Refrigerant transfer pump (RTP)



2. Eolo (Fan Unit) Multi Speed ATEX Fan



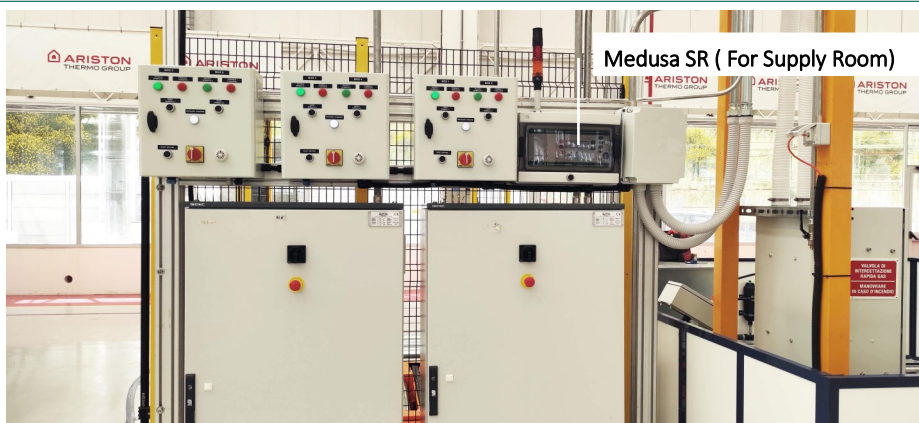
3. iRockall HC- uno



4. Medusa (monitoring and Gas Extraction System)



Sensors and Valves



IR Sensor

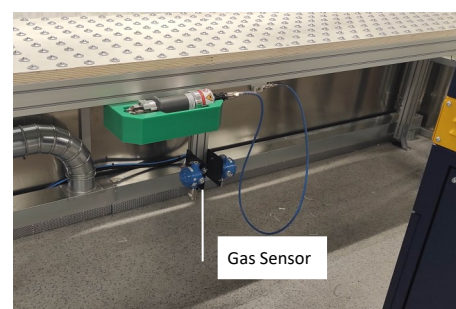
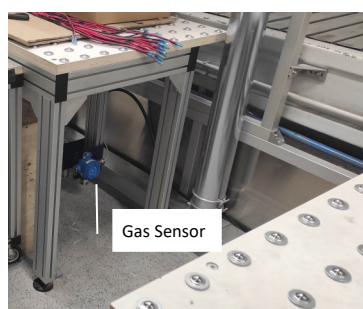
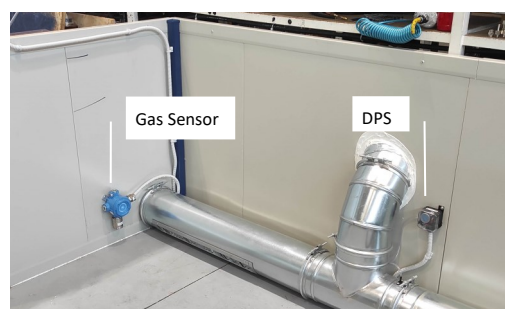
CAT Sensor

DPS

Door Sensor

BOX_VALV_SR

BOX_VALV_ETNA



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Vacuum and Charging units

H/C Refrigerants handling systems

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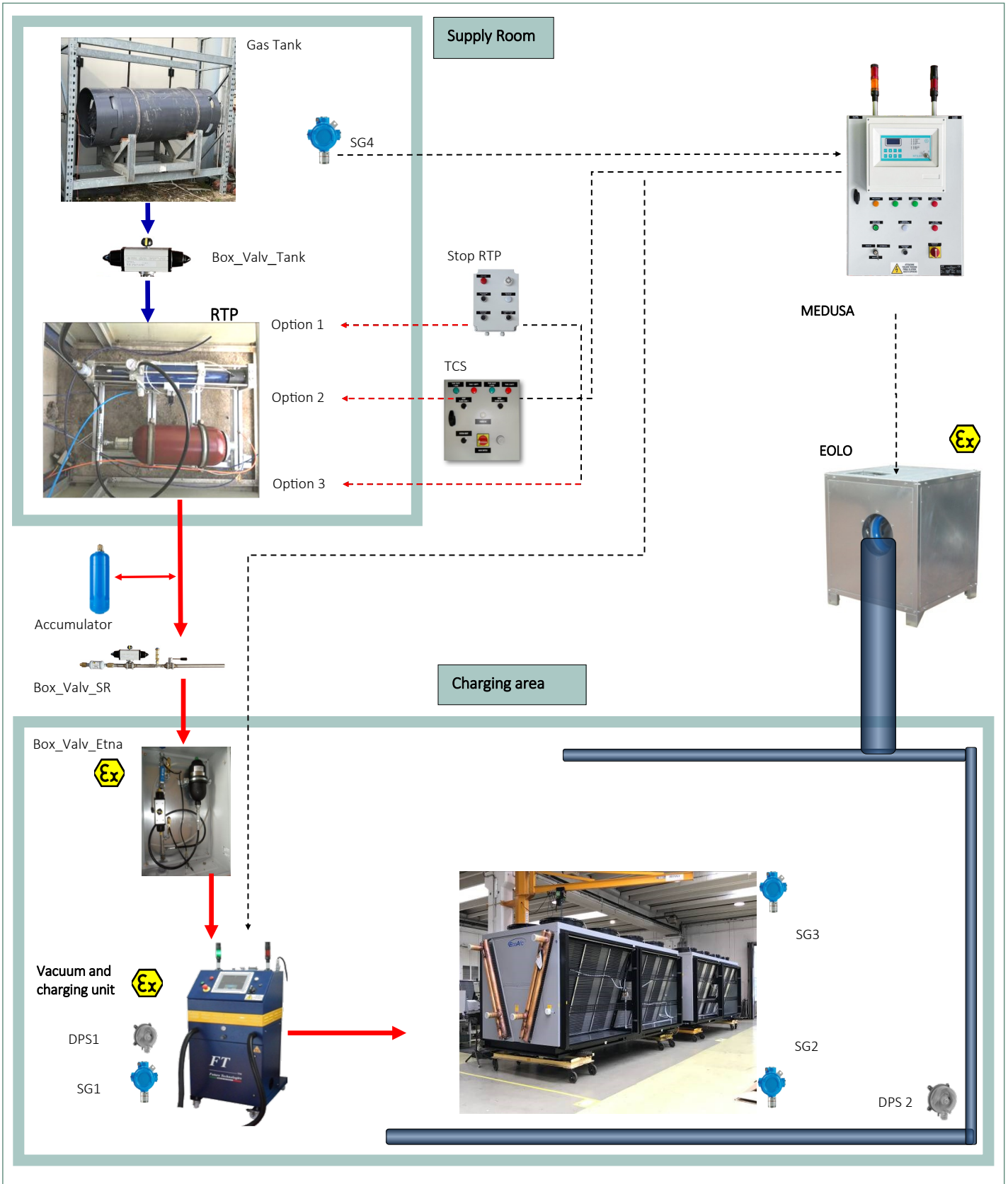
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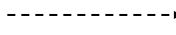
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Medusa Monitoring and Gas Extraction System





Description	Typology	Function
Gas Tank	Hydraulic	The specifications are made in accordance with the design requirements. For charging of large chillers the capacity reaches 800 kg. In cases of outdoor installation, subject to low winter temperatures, FT recommends the use of thermal covers in order to facilitate the suction of the refrigerant.
BOX_VALV_SR	Hydraulic + Pneumatic	Box Valve Supply Room: Pneumatically operated valve, controlled by the monitoring system for the hydraulic connection between the gas tank and the refrigerant vacuum line. A manual valve is included
BOX_VALV_TANK	Pneumatic	Controls the flow rate of the refrigerant to the RTP
BOX_VALV_ETNA	Hydraulic + Pneumatic	Pneumatic valve for the hydraulic connection between the refrigerant arrival line (usually in the charging area) and the vacuum and charge unit. Pneumatic valve is controlled by the Medusa environmental monitoring system. The valve box is connected directly to the cabinet of vacuum and charge unit through a sheathed FR5 3/8" tube. This tube ensures that the air in the valve box is drawn in through the vacuum and charging unit cabinet which is connected to the air ducts.
RTP	Hydraulic + Pneumatic	Pneumatically operated Refrigerant Transfer Pump: The suction is automatically activated until the in-line pressure balance is reached. The activation is caused by the compressed air regulated by the Medusa environmental monitoring system.
Accumulator	Hydraulic	Hydro-pneumatic Accumulator: An accumulation/damping system for the pressure peaks of the refrigerant is used to level out the pressure and the flow rate inside the vacuum and charging unit. The connector includes a safety valve in the case of failure, where the accumulator is no anymore able to level up the pressure.
MEDUSA	Electronic Power	Ambiental monitoring system and ventilation control system
EOLO	Aeraulic	Forced extraction system is connected to the ventilation circuit and can be customized according to the client's request. It is available with different flow rates based on the processed air, from 3000 to 7000m ³ /hr
 GAS Sensor	Electronic Infrared / catalytic	Gas sensor 4..20 mA. The gas sensors are generally positioned in the following locations: Supply Room / Charging area / Potentially critical points along the ventilation circuit / Inside the cabinet of the vacuum and charge unit / Any possible gas accumulation points in the case of leakage. The signal is sent to the Medusa environmental monitoring system.
Vacuum and charging unit	Digital Pneumatic Hydraulic	Station to perform the vacuum and charging of the refrigerant
	Aeraulic	Ventilation ducts that can be built according to the client's layout
 DPS	Pneumatic Electric ON/OFF	Differential Pressure Switch: DPS will be used to detect the air depression inside the ventilation ducts and the cabin of the vacuum and charge unit. The signal is sent to the Medusa environmental monitoring system.
	Hydraulic	Refrigerant line, Tank pressure
	Hydraulic	Refrigerant line, charging pressure $P = P_{TV} + P_{\text{compressed air RTP}} * 4,27$
	Pneumatic	Pneumatic control signal according to the operating states of Medusa
	Electric	Electric control signal according to the operating states of Medusa
Stop RTP	Pneumatic Electric	Automatic RTP Stopping System
TCS	Pneumatic Electric	Automatic Tank Charging System

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HFC Refrigerants handling systems

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Vacuum and Charging Inflectors

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