



# TOP-CLASS KVS

**THERM-connect:**  
WOLF Circuit Compound Systems



Spirit of Air

# THERM-CONNECT

## TOP-CLASS KVS

THERM-CONNECT systems by WOLF enable an efficient transfer of heat or cold without mixing the air flows. Especially for projects in hygiene zones or limited space (for example reconstructions), THERM-CONNECT is the ideal choice. Thus, you will meet all relevant legal standards and guidelines (ErP 2018, DIN EN 116, VDI 6022 etc.), providing a sustainable system.

### THERM-CONNECT is being used throughout the year.

Heat transfer in winter and cold transfer in summer – WOLF hydraulic modules make it possible. The air inlet and outlet registers separated from each other are connected hydraulically by a water-glycol mixture, which is transported by an energetically optimized high-pressure centrifugal pump.



The high-performance registers working with high counterflow exposure and a reactivation of the single heat transfer steps provide maximum efficiency. Depending on type and requirements, our hydraulic modules can be installed flexibly as separate housing cube or in the ventilation unit.

**THERM-CONNECT** combines high-grade components, efficient control system and intelligent protective mechanisms (frost protection, overpressure protection), guaranteeing a performance that meets your needs, highest safety and efficiency as well as compliance with all relevant standards and guidelines.



## YOUR ADVANTAGES

- ▶ Efficient heat and cold recovery
- ▶ Energy-optimized control system according to existing air flow
- ▶ Continuous efficiency optimization by inherent control programming
- ▶ Expansion tank for constant pressure conditions
- ▶ Safety valve and minimum pressure guard
- ▶ Remote monitoring and GLT-control by BACnet, Modbus etc. (optional)
- ▶ Integrated frost protection (optional)
- ▶ Compact and optimized complete unit
- ▶ Configuration of heat exchangers and hydraulic module based on customer needs
- ▶ Complete housing cube with collecting tray
- ▶ Project-specific adjustment of housing cube possible
- ▶ Additional heat / cold feeding (optional)
- ▶ Adiabatic return air humidification for increased cold recovery (optional)
- ▶ System insulation with Armaflex (optional)
- ▶ Piping in high-grade steel (optional)
- ▶ Redundant double pump (optional)
- ▶ Weatherproof housing for outdoor installation (optional)

Denomination	THERM-CONNECT - basic	THERM-CONNECT - defrost	THERM-CONNECT - magna
Pump	✓	✓	✓
Frequency converter	✗	✓	✓
Control ball valve	✓	✓	✓
Insulation of components (optional)	✓	✓	✓
Integrable into ventilation unit	✓	✓	✓
Easy control (0 - 10 V)	✓ (Control valve)	✓	✓
Frost protection	✓ (1/2" sleeve)	✓	✓
Integrated regulation controls	✓	✓	✓
Collecting tray with drain	✓	✓	✓
Temperature sensors on water side	✗	✓	✓
BACnet, Modbus etc.	✗	✓	✓
Flow sensor	✗	TacoSetter	Electronic sensor
Temperature sensors on air side	✗	✗	✓
Additional feeding (heat/cold)	✗	✗	✓
Redundant double pump	✗	✗	✓



Modbus, BACnet, etc.



Integrated regulation controls



High pressure centrifugal pump



High-grade insulation

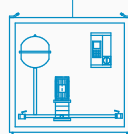
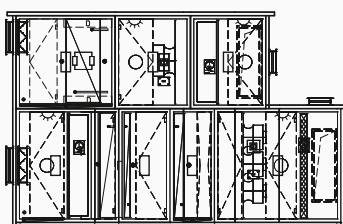


High-performance filter

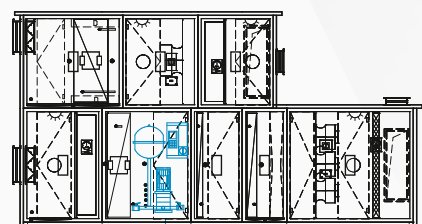


Collecting tray with drain

## OUTSIDE



## INTEGRATED





## THE BASIC VERSION



High efficiency centrifugal pump



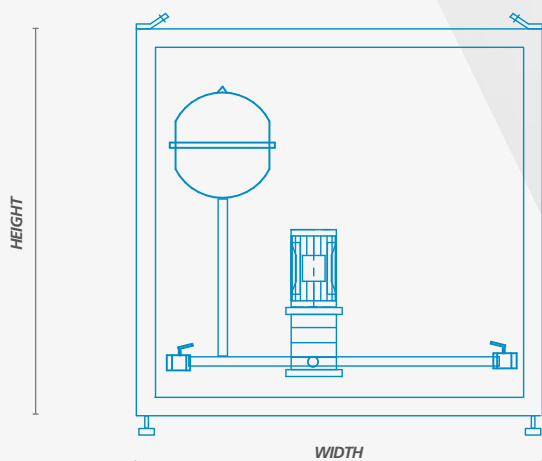
Power control via three-way valve



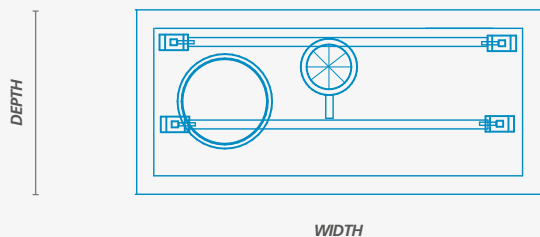
Integrated safety group

Nominal width [DN]	Flow max [m³/h]	Pipe dimension [mm]	Height [mm]	Width [mm]	Depth [mm]	External pipe length (total max) [m]	Pressure losses register (total max) [kPa]	Weight [kg]	Base pump [kW]
20	1	Ø 22x1,5	1000	1200	500	50	300	100	0,6
25	2	Ø 28x1,5	1000	1200	500	50	300	100	1,1
32	3	Ø 35x1,5	1000	1200	500	50	300	100	1,5
40	5	Ø 42x1,5	1000	1200	500	50	300	150	2,2
50	8	Ø 54x1,5	1100	1400	600	50	300	200	4,0
65	12	Ø 64x2,0	1100	1400	600	100	300	200	5,5
76	16	Ø 76x2,0	1100	1400	600	100	300	250	7,5
80	22	Ø 89x2,0	1200	2000	1000	150	400	300	11,0
100	35	Ø 108x2,0	1200	2000	1000	150	400	300	15,0

## SIDE VIEW



## TOP VIEW



- ▶ Pre-assembled unit for quick and easy installation on site
- ▶ Highly efficient, multi-step high-pressure centrifugal pump with inline connections; All pumps are equipped with a user-friendly mechanical seal in cartridge construction and a seal suitable for glycol for easy maintenance; At least IE3-standard motors ( $\geq 0,75$  kW) with motor protection as cold conductor
- ▶ Up to DN50: three-way valve with external thread, PN16, housing made of red brass, electromotive actuator; From DN50: three-way valve with flange connection, PN16, valve housing made of spheroidal cast iron, electromotive actuator for capacity regulation
- ▶ Up to DN50 3-way-valve with male thread, PN16, red brass housing, electromotor actuator; larger than DN50 with flange connection, PN16, spheroidal graphite iron housing, electromotor actuator for capacity control
- ▶ Membrane expansion tank with 10 bar maximal pressure and cap valve, approved up to 50 % frost protection
- ▶ Glycol collecting tray with 1/2" connection into a supplied by others collecting tank
- ▶ Larger than DN100: customized design



## basic - OPTIONS

- ▶ Diffusion-tight insulation of the unit



19 mm thick insulation



Diffusion-tight insulation

## basic - ADVANTAGES

- ▶ Compact complete unit
- ▶ High efficiency centriugal pump
- ▶ Integrated efficiency control
- ▶ Safety group with manometer, Expansion vessel and pressure relief valve

# THERM-CONNECT *defrost*

## WITH INTEGRATED FROST PROTECTION



*Integrated control*



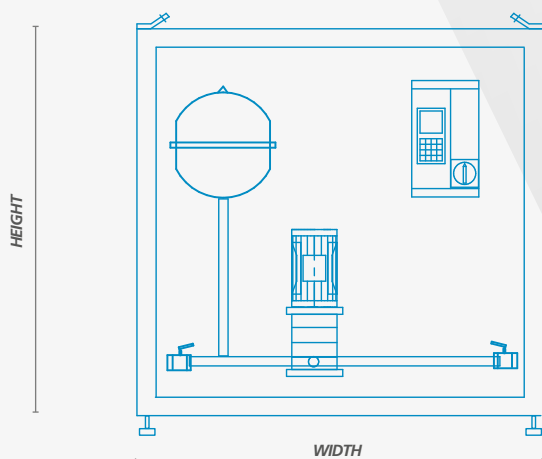
*Minimum pressure switch-off*



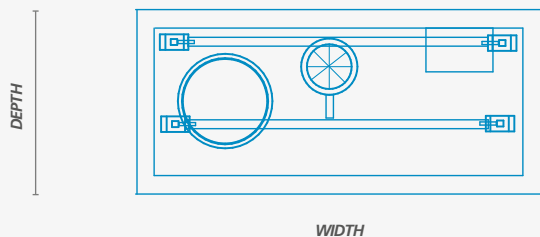
*Flow measurement*

Nominal width [DN]	Flow max [m³/h]	Pipe dimension [mm]	Height [mm]	Width [mm]	Depth [mm]	External pipe length (total max) [m]	Pressure losses register (total max) [kPa]	Weight [kg]	Base pump [kW]
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## SIDE VIEW



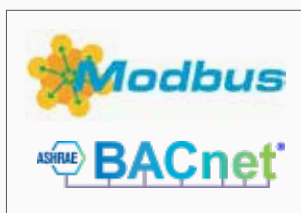
## TOP VIEW



- ▶ Pre-assembled and internally wired unit for quick and easy installation on site
- ▶ Highly efficient, multi-step high-pressure centrifugal pump with inline connections; All pumps are equipped with a user-friendly mechanical seal in cartridge construction and a seal suitable for glycol for easy maintenance; At least IE3-standard motors ( $\geq 0,75$  kW) with motor protection as cold conductor
- ▶ Up to DN50: three-way valve with external thread, PN16, housing made of red brass, electromotive actuator; From DN50: three-way valve with flange connection, PN16, valve housing made of spherical cast iron, electromotive actuator for capacity regulation
- ▶ Up to DN50: ball valve made of corrosion-proof red brass, PN10, ball valves before and after the hydraulic module for shut-off during maintenance
- ▶ Membrane expansion tank with 10 bar maximal pressure and cap valve, approved up to 50 % frost protection
- ▶ Glycol collecting tray with 1/2" connection into a supplied by others collecting tank
- ▶ Larger than DN100: customized design
- ▶ Frequency converter for stepless speed control of high-pressure centrifugal pumps; The converter is a complete unit with programming and operating unit with clear text unit and integrated repair switch
- ▶ Regulation integrated in frequency converter for easy control by 0-10V signal and release of GLT, integrated adjustment of frost protection by water side temperature sensor and control of the three-way valve
- ▶ Very compact construction for small place requirement in ventilation center

## defrost - OPTIONS

- ▶ BacNet interface
- ▶ ModBus interface
- ▶ Diffusion-tight Armaflex insulation of the unit



Communication interfaces



Diffusion-tight insulation



Integrated minimum pressure guard



Integrated control

## defrost - ADVANTAGES

- ▶ Compact complete unit with integrated control
- ▶ Easy control via BMS by the hardware, BacNet, Modbus
- ▶ Pressure monitoring for pump security and switch-off in case of leakage

## THE HIGH-PERFORMANCE KVS



Flow sensor



Analogue temperature gauges

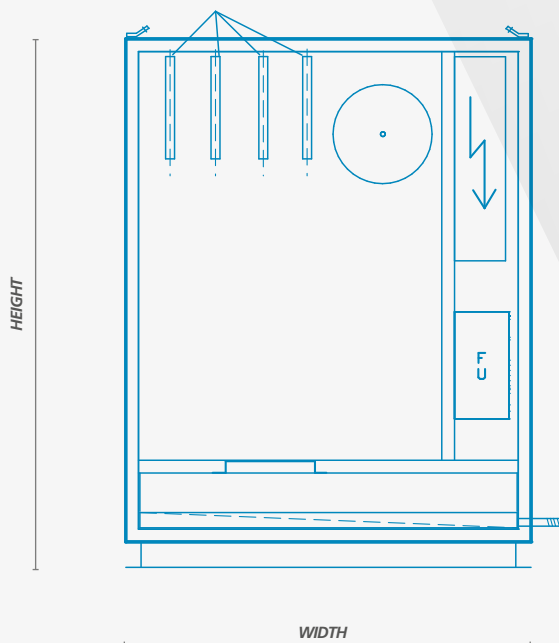


Water-side temperature probes

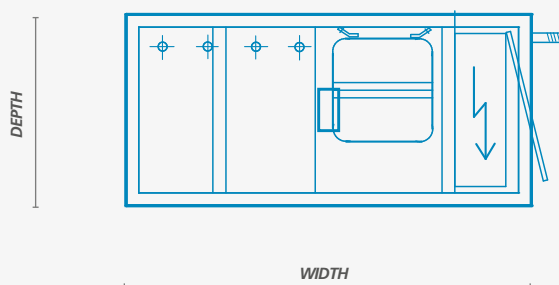
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125	50	Ø 134x1,33	2050	2550	1150	150	400	1200	18,5



## SIDE VIEW



## TOP VIEW



- ▶ Pre-assembled and internally wired unit for quick and easy installation on site
- ▶ Highly efficient, multi-step high-pressure centrifugal pump in vertical design with inline connections; All pumps are equipped with a user-friendly mechanical seal in cartridge construction and a seal suitable for glycol for easy maintenance; At least IE3-standard motors ( $\geq 0,75$  kW) with motor protection as cold conductor
- ▶ Up to DN50: three-way valve with external thread, PN16, housing made of red brass, electromotive actuator; from DN50 upwards: three-way valve with flange connection, PN16, valve housing in ductile cast, electro-motive actuator
- ▶ Up to DN50: ball valve made of corrosion-proof red brass, PN10; from DN50 upwards: maintenance-free soft-seal intermediate flange shut-off flap with centering lugs, PN16, ball valves before the pump for shut-off during maintenance, additional ball valves on the exits of hydraulic module
- ▶ Up to DN50: strainer with sleeve connection in slanted design, PN16, exchangeable sieves by slanted design; from DN50 upwards: welded flange strainer, installed before the high-pressure centrifugal pump for optimal protection of pump components
- ▶ Membrane expansion tank with 10 bar maximal pressure and cap valve, approved up to 50 % frost protection
- ▶ Glycol collecting tray with 1" connection for collecting of the entire glycol mixture in leakage case
- ▶ Frequency converter for stepless speed control of high-pressure centrifugal pumps; The converter is a complete unit with programming and operating unit with clear text unit and integrated repair switch
- ▶ Energy optimised regulation controls by a free-programmed DDC controller, adjustment of the programming to the respective project requirements, regulation via BACnet or Modbus possible, continuous communication of the operating states with the BMS
- ▶ Switchboard made of powder-coated sheet steel, DDC-controller installed in switchboard, 8-line display in switchboard door, inside lighting and socket 230V in switchboard, cable entry internal from below, external from above, door hinge right- or left-hand
- ▶ The system can be operated at optimum efficiency level thanks to continuous flow rate monitoring of the supply and extraction air (by means of pressure cells in the fan nozzle), as well as to monitoring of the fluid volume flow rate in the hydraulic unit

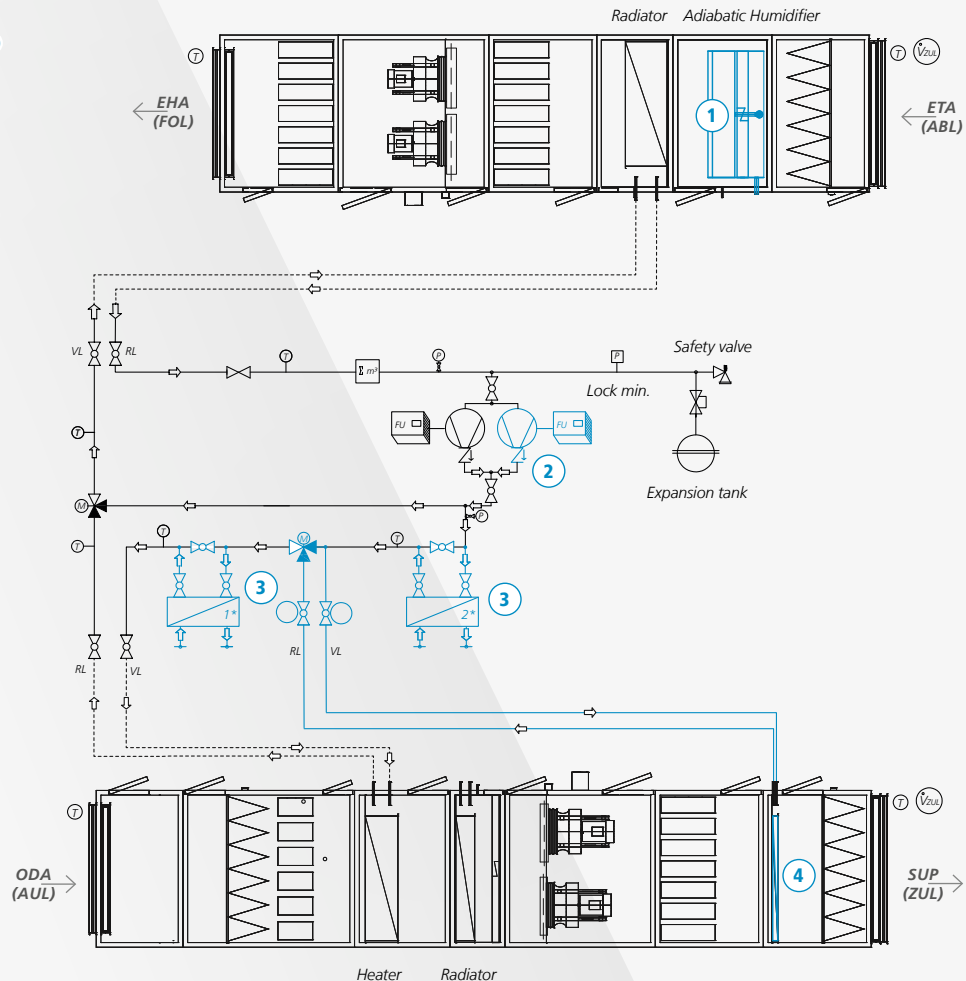


- **Adiabatic return air humidification ①** for a higher cold recovery and electric cold power reduction for the supply air conditioning. Improves the cold recovery by means of a return air humidifier before the coil with driven from the Therm-Connect magna control. So the necessary additional cooling power for the supply air cooling gets considerably reduced and the cold generation can be designed smaller and energetically optimized.

- **Redundant double pump ②**  
Redundant system consisting of 2 pumps at full power withswitching from failures to working hours for a continuous operation. Alternative: Double pump with reduced power for providing full output in combined operation. In case of failure, the plant can be operated with slightly reduced output.

- **Additional heat / cold feeding ③**  
Plate heat exchanger for feeding additional energy to be provided by customer, saving further registers in air inlet and reducing plant costs and pressure losses during operation.

- **Re-heater for de-humidification ④** If a dehumidification is intended in the supply air section, the air is cooled down sufficiently below the dew point and then has to be re-heated up to the inlet level. With optimal dimensioning, an additional run around circuit coil can raise the air temperature back to the desired supply air temperature. Moreover by means of the main heating coil the supply air is pre-cooled for dehumidification. For a better regulation of this system, an additional three-way ball valve is installed in the exit to the re-heater. This valve regulates the capacity for the re-heater by the WOLF controls of the run around coil circuit system.



Double pump



Heat feed



Diffusion-tight insulation

► **Armaflex system insulation**

All the components and pipes inside the hydraulic unit insulated by high quality, diffusion-proof Armaflex

► **Piping in stainless steel**

High-grade piping made of INOX-stainless steel and pump housing made of AISI304 stainless steel

► **Weatherproof housing for outdoor installation**

Complete housing in resistant design. The roof is glued with a special, 2,8 mm thick, UV-proof plastic foil and has got a drip edge all around

► **Second supply/extract air handling unit**

The air volume flows of a second supply or extract air handling unit can be connected with additional inputs to the controller. This provides the option of operating two air handling units in parallel mode by one Therm-Connect magna station

► **Performance calculation**

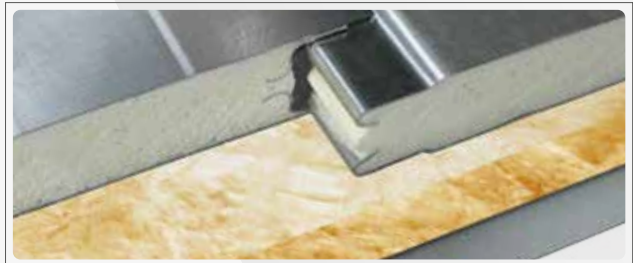
The transmitted power of the THERM-CONNECT magna unit is calculated with help of recording the air-side temperatures before and after the coils and the water-side values. In addition the calculation of the heating and cooling energy is always done over the period of a month. These values are stored in the controller and can be called up later



Switch cabinet



weatherproof casing



Exterior thermal-panelling possible (T1/TB1)

## magna - ADVANTAGES

- energy-optimized efficiency control
- electronic flow measurement
- Performance adjustment to supply and return air flows
- Many possibilities

- Adjustable, periodical pump run for keeping free the pump seat when unit not in use.
- Integrated frost protection control for keeping free the coils and for efficient working of the run around coil system
- Freely programmed DDC-control with display and fault message as plain text display



Freely programmed DDC-control



Control panel with plain text display

# THERM-CONNECT *magna HP*

## THE HIGH EFFICIENCY RUN AROUND COIL SYSTEM WITH INTEGRATED HEAT PUMP



High quality heat exchangers



Components completely piped



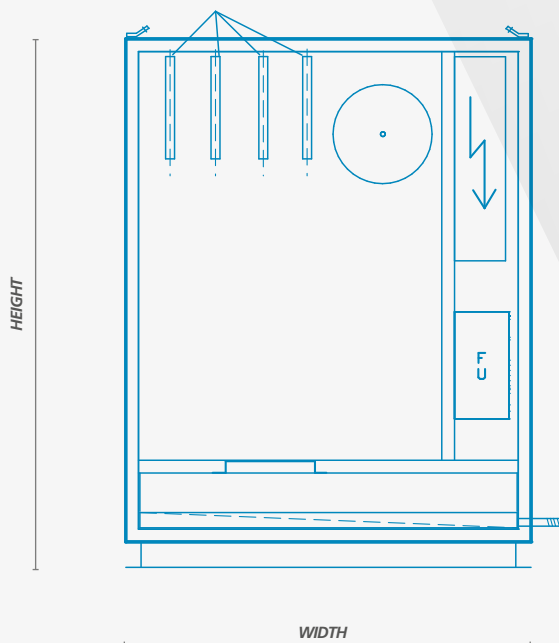
Integrated control cabinet

Diffusion-tight insulation

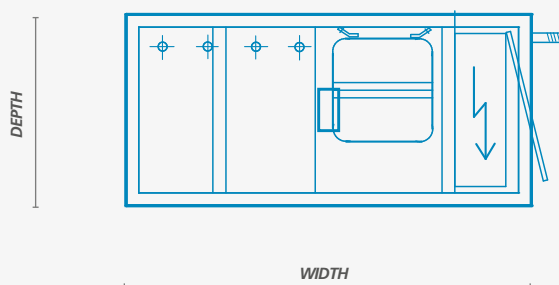
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100	35	Ø 108x2,0	2050	2550	1450	150	400	1000	15,0
125	50	Ø 134x1,33	2050	2550	1450	150	400	1200	18,5



## SIDE VIEW



## TOP VIEW



- ▶ Pre-assembled and internally wired unit for quick and easy installation on site
- ▶ Integrated and capacity-controllable reversible heat pump (R513A, GWP 613.4)
- ▶ Independent and functionally self-contained overall system.
- ▶ Project-specifically defined, controlled and demand-optimised generation and shifting of heating and cooling capacity. The required conditioning of the supply air is ensured without any additional heating and cooling energy on the building side.
- ▶ Reversible heat pump matched to the total heating and cooling demand and integrated in the HKV system. Reversible heat pump integrated in the high efficiency run around coil system. Temperature transfer efficiency > 90 %!
- ▶ Highly efficient, multi-step high-pressure centrifugal pump in vertical design with inline connections; All pumps are equipped with a user-friendly mechanical seal in cartridge construction and a seal suitable for glycol for easy maintenance; At least IE3-standard motors ( $\geq 0,75$  kW) with motor protection as cold conductor
- ▶ Up to DN50: three-way valve with external thread, PN16, housing made of red brass, electromotive actuator; from DN50 upwards: three-way valve with flange connection, PN16, valve housing in ductile cast, electro-motive actuator
- ▶ Up to DN50: ball valve made of corrosion-proof red brass, PN10; from DN50 upwards: maintenance-free soft-seal intermediate flange shut-off flap with centering lugs, PN16, ball valves before the pump for shut-off during maintenance, additional ball valves on the exits of hydraulic module
- ▶ Up to DN50: strainer with sleeve connection in slanted design, PN16, exchangeable sieves by slanted design; from DN50 upwards: welded flange strainer, installed before the high-pressure centrifugal pump for optimal protection of pump components
- ▶ Membrane expansion tank with 10 bar maximal pressure and cap valve, approved up to 50 % frost protection
- ▶ Glycol collecting tray with 1" connection for collecting of the entire glycol mixture in leakage case
- ▶ Frequency converter for stepless speed control of high-pressure centrifugal pumps; The converter is a complete unit with programming and operating unit with clear text unit and integrated repair switch
- ▶ Energy optimised regulation controls by a free-programmed DDC controller, adjustment of the programming to the respective project requirements, regulation via BACnet or Modbus possible, continuous communication of the operating states with the BMS
- ▶ Switchboard made of powder-coated sheet steel, DDC-controller installed in switchboard, 8-line display in switchboard door, inside lighting and socket 230V in switchboard, cable entry internal from below, external from above, door hinge right- or left-hand
- ▶ The system can be operated at optimum efficiency level thanks to continuous flow rate monitoring of the supply and extraction air (by means of pressure cells in the fan nozzle), as well as to monitoring of the fluid volume flow rate in the hydraulic unit

# magna HP - OPTIONS

- **Adiabatic return air humidification ①** for a higher cold recovery and electric cold power reduction for the supply air conditioning. Improves the cold recovery by means of a return air humidifier before the coil with driven from the Therm-Connect magna control. Hence, the integrated heat pump can be designed smaller and used in an energy-optimised way.

- **Redundant double pump ②**

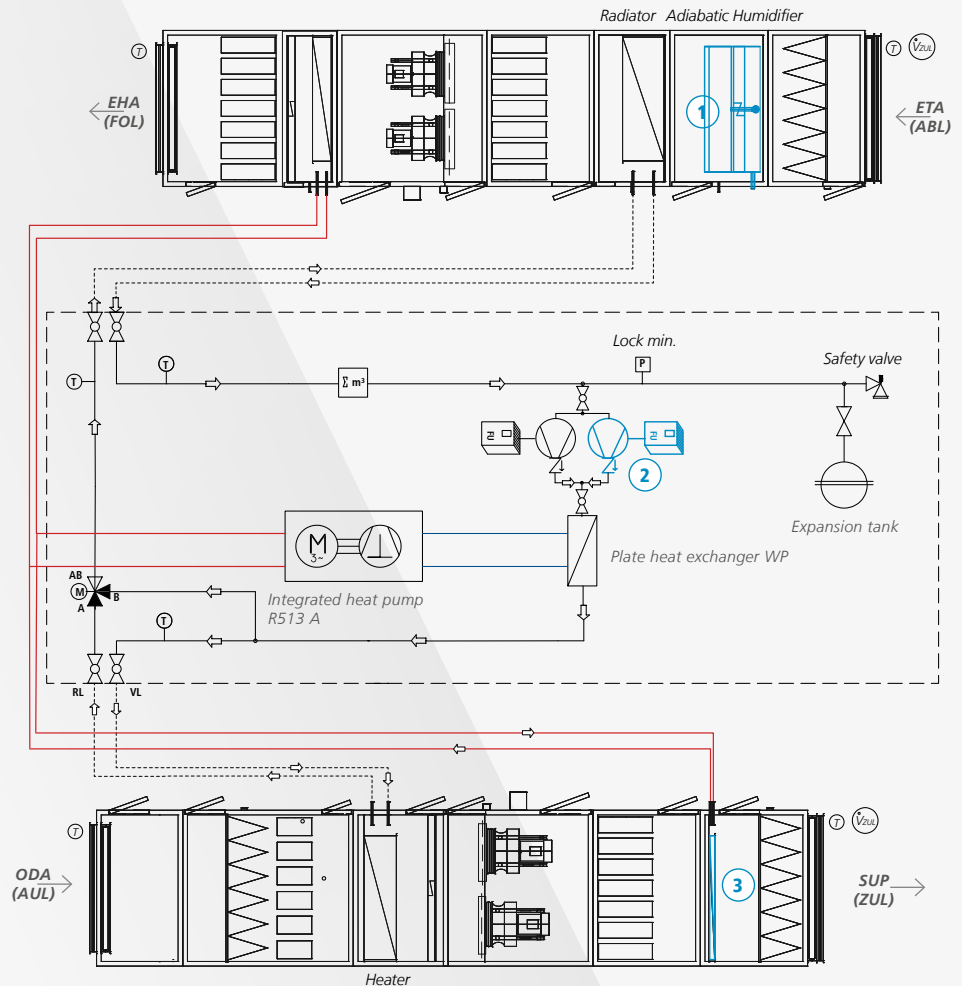
Redundant system consisting of 2 pumps at full power withswitching from failures to working hours for a continuous operation. Alternative: Double pump with reduced power for providing full output in combined operation. In case of failure, the plant can be operated with slightly reduced output.

- **Re-heater for de-humidification ③**

If dehumidification is provided in the supply air, the air is cooled to far below the dew point and must then be reheated to the blow-in level. The reheating takes place up to the desired blow-in temperature via the free waste heat of the heat pump.

- **Additional heat / cold feeding**

Plate heat exchanger for feeding additional energy to be provided by customer, saving further registers in air inlet and reducing plant costs and pressure losses during operation.



4-way reversing valve for heating and cooling



Continuously capacity-controllable compressor and frequency-controlled high-performance pump

► **Armaflex system insulation**

All the components and pipes inside the hydraulic unit insulated by high quality, diffusion-proof Armaflex

► **Piping in stainless steel**

High-grade piping made of INOX-stainless steel and pump housing made of AISI304 stainless steel

► **Weatherproof housing for outdoor installation**

Complete housing in resistant design. The roof is glued with a special, 2,8 mm thick, UV-proof plastic foil and has got a drip edge all around

► **Second supply/extract air handling unit**

The air volume flows of a second supply or extract air handling unit can be connected with additional inputs to the controller. This provides the option of operating two air handling units in parallel mode by one Therm-Connect magna station

► **Performance calculation**

The transmitted power of the THERM-CONNECT magna unit is calculated with help of recording the air-side temperatures before and after the coils and the water-side values. In addition the calculation of the heating and cooling energy is always done over the period of a month. These values are stored in the controller and can be called up later

► **Integrated heat pump**

With the help of the integrated heat pump (R513A), the temperature potential of the recovered heat is increased, which raises the supply air temperature up to the required setpoint. Similarly, the reversal of the heat pump process results in the cold feeding into the run around coil circuit. Thus downstream heating and cooling coils in the air handling unit can be saved. Due to the precisely defined, controlled and demand-optimised generation and shifting of heating and cooling power the required conditioning of the supply air is achieved - without any other additional heating and cooling energy.



*Diffusion-tight insulation*

ting and cooling energy. This eliminates investment and operating costs (for the supply of external refrigeration and heat generators) as well as the necessary connection, hydraulics, actuators and control.

The reversible heat pump integrated in the HVAC system is tailored to the integrated in the run around coil system, temperature transmission efficiencies of > 90 % are possible!

## magna HP - ADVANTAGES

- energy-optimized efficiency control
- electronic flow measurement
- Performance adjustment to supply and return air flows
- Many possibilities
- Adjustable, periodical pump run for keeping free the pump seat when unit not in use.
- Integrated frost protection control for keeping free the coils and for efficient working of the run around coil system
- Freely programmed DDC-control with display and fault message as plain text display
- No additional external cooling or heating required
- Reduction of interfaces, hydraulics and I&C
- Saving unit length



*Freely programmed DDC-control*



*Control panel with plain text display*



# HEATING VENTILATION AIR CONDITIONING

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