

Pool air handling units





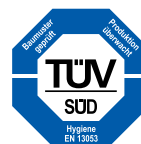
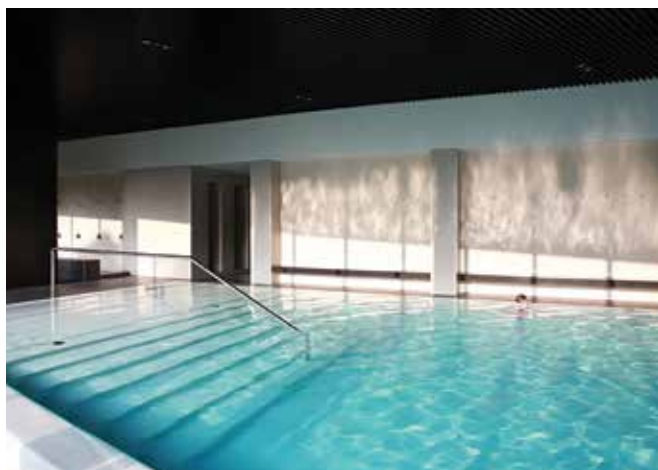
Hotel Lone (Rovinj, Croatia)

PRO-KLIMA

PRO-KLIMA was founded in 1967 and has until 2015 developed to be the regional leader in air preparation devices manufacturing. In 2015 the company became part of the German conglomerate WOLF.

Through using advanced technologies and many years of experience we successfully take part in many diverse projects across the globe.

PRO-KLIMA follows advances in technology and uses investments in knowledge and development to continuously offer advanced and innovative adaptable solutions and professional support even for the most demanding projects.



MODULAR AIR HANDLING UNITS • HYGIENIC AIR HANDLING UNITS • COMPACT AIR HANDLING UNITS • REGENERATIVE AIR HANDLING UNITS • ADIABATIC COOLING AIR HANDLING UNITS



Admiral Grand Hotel (Slano, Croatia)

WHY CHOOSE PRO-KLIMA

Pool technology has become a significant part of our product range over the years. We have delivered devices for a variety of projects, from small private objects, public and private facilities to luxury hotels and large sports arenas and complexes.

Offering complete solutions for projects with many different and special requirements is our specialty, from devices for ventilation, heating and cooling of conference halls, compact units with multiple filtration for contaminated air discharge to devices for dehumidification, cooling and heating large pool areas. We approach each request individually and find innovative engineering solutions to achieve an ideal combination of components, construction and technology.

As each request is unique, our engineers retain an individual and innovative approach. By creating a perfect combination of components, construction and technology, we deliver



high performance devices that function independently or as part of a system, reducing costs and creating a healthy and comfortable indoor climate.

In cooperation with the best manufacturers of individual components, we develop optimal technologies and offer complete support from design and calculation assistance, service and maintenance up to dismantling and safe disposal.

MODULAR POOL AIR HANDLING UNITS

PRO-KLIMA multifunctional modular pool units come in 18 standard sizes for indoor or outdoor installation with air flows from 2000 to 35000 m³/h and many options and configuration variations available upon request. Apart from 18 standard sizes, it is possible to create devices according to project requirements, which makes them ideal for renovations, reconstructions and other particularly demanding projects.

The units are equipped with state-of-the-art technology such as heat pumps and full automatic control with an interactive interface. Only components with high corrosion protection such as polypropylene or aluminum heat recovery systems and copper exchanger are installed, and the device itself is constructed from elements of highest quality and powder coated for corrosion resistance.

Upon request, the device can include a water condenser for additional pool water heating and/or a reversible heat pump which allows a year-round regulation of pool space microclimate conditions.



1a Panel filters for compact units (an option for modular)



1b Bag filters for modular units



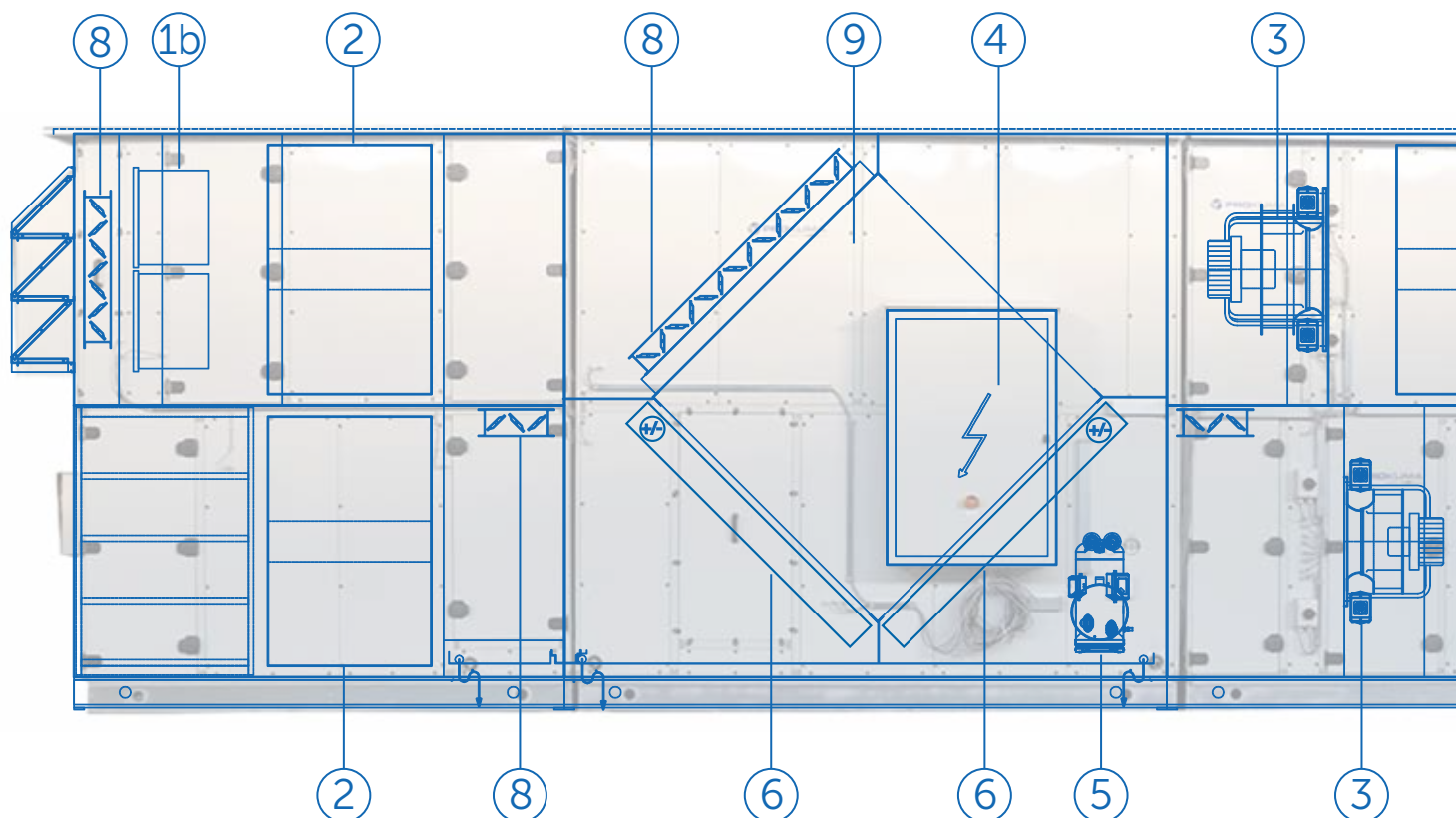
2 Sound attenuators that do not absorb or retain moisture



3 Fans with EC motors and built-in measuring systems



4 Wired and tested control panel with a pre-installed application





- ⑤ Heat pump with R410A medium



- ⑥ Copper exchangers with elements of regulation



- ⑦ Air tight construction with a thermal break



- ⑧ Anodized aluminum dampers



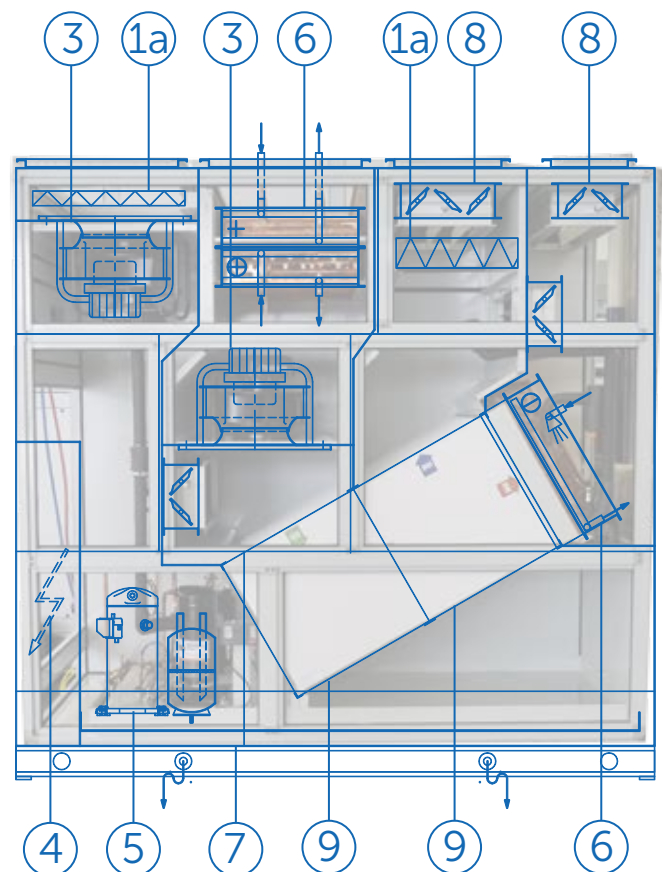
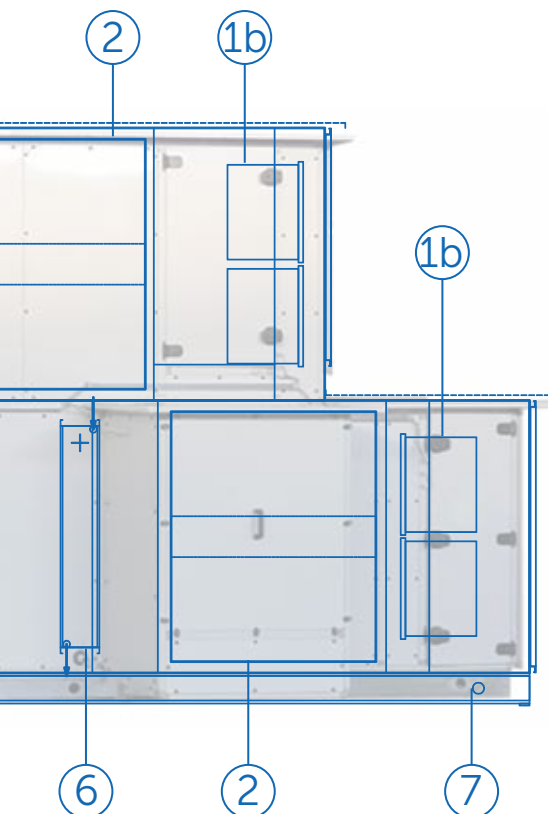
- ⑨ High efficiency heat recovery system

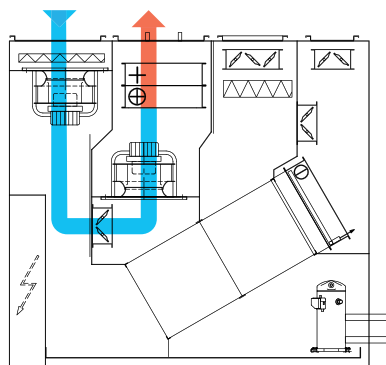
COMPACT POOL AIR HANDLING UNITS

Compact pool air handling units are equipped with specially selected components with integrated heat recovery and high corrosion resistance. The compact pool air handling unit is a factory-wired, fully automated device with a pre-installed application for pool technologies. High performance and small dimensions make it perfect for smaller projects, while the plug & play design with integrated automatic control makes it easy to mount, maintain and use, and the lifecycle costs of the product are reduced to a minimum.

The unit is manufactured in two standardized dimensions with air flows from 1300 to 3200 m³/h for interior installation.

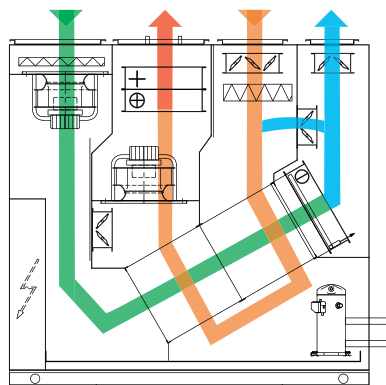
Upon request, the device can include a water condenser for additional pool water heating.





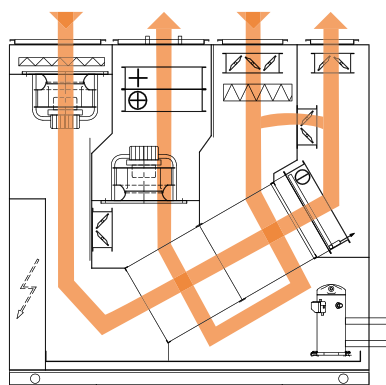
WINTER MODE – QUICK HEATING

At startup, the system can quickly warm up using a water heater



WINTER MODE – DEHUMIDIFICATION

Dehumidification through heat pump usage for higher heat recovery



SUMMER MODE

Ventilation without heat pump usage - dehumidification through ventilation

Mechanical and thermal characteristics

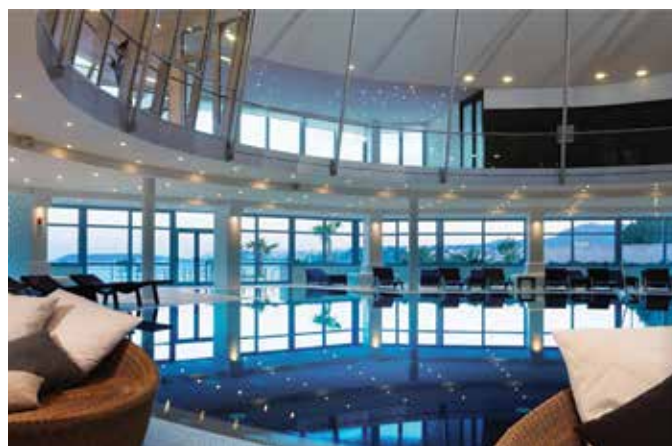
Mechanical stability class - D1
Casing air leakage at 400 Pa or 700 Pa - L1
Filter bypass leakage - F9
Thermal transmittance - T2
Thermal bridge factor - TB2

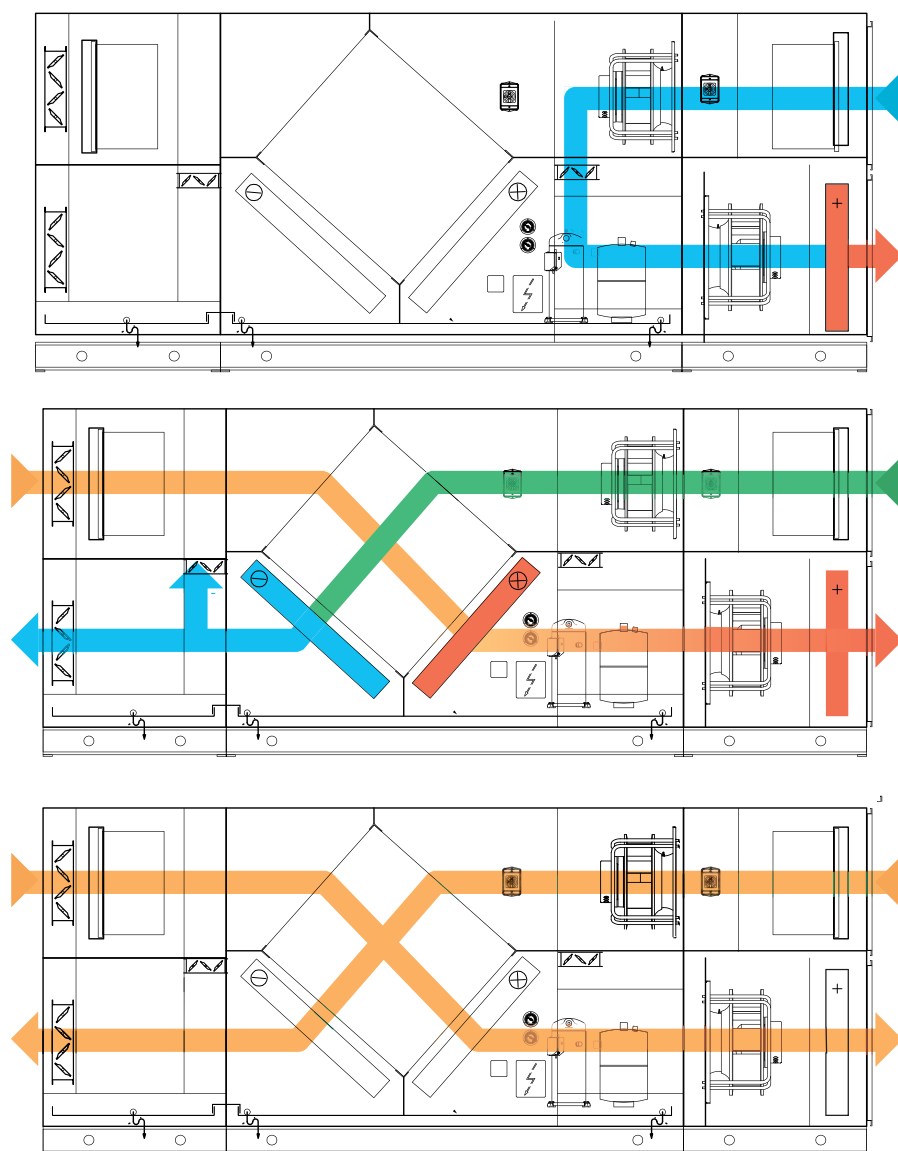
Le Méridien Lav (Split)

SUMMER MODE – COOLING

The reversible heat pump system enables additional cooling of the pool area

Valamar Dubrovnik President





Adriatic Hvar



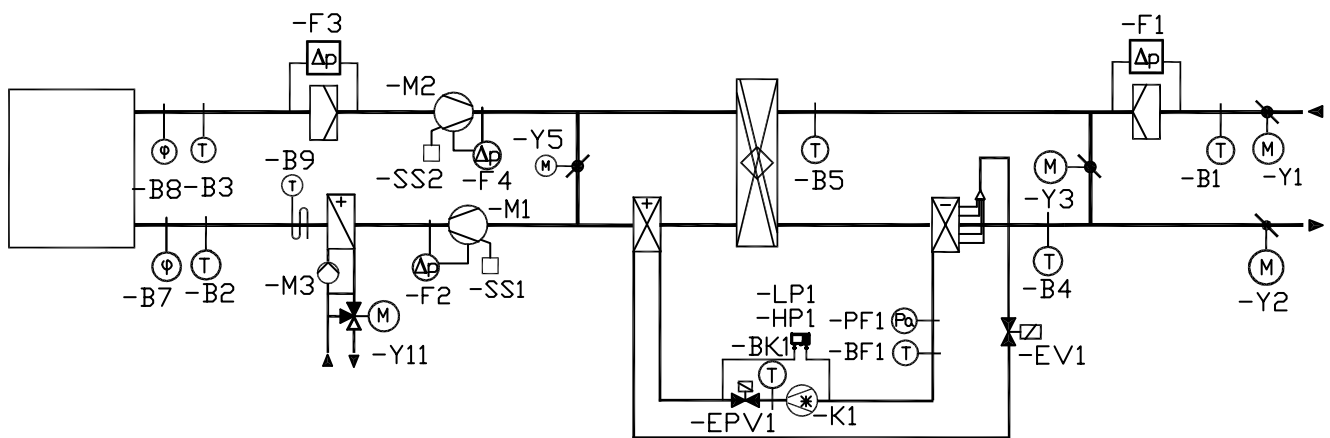


AUTOMATIC CONTROL

The automatic control system includes a factory wired, tested and examined control cabinet integrated in the unit, a DDC controller and all necessary field equipment. All components are mounted and connected and a specially developed PRO-KLIMA application for pool devices is installed.

The application for pool devices is specially tailored to specific dehumidification requirements in order to prevent condensation and keep the air within the limits of optimal micro-climate conditions. Set values which trigger system reactions are set individually and are completely adaptable to project conditions.

The application direct online access via web browser (HMI@web), i.e. a remote access that enables service personnel to view the device display directly through their own devices ('remote service') in order to swiftly resolve any problems or doubts.



-VDC	Fire alarm signal
-B1,-B2,-B3, -B4,-B5	Duct temperature sensor
-B7,-B8	Duct humidity sensor
-B9	Frost thermostat
-F1,-F3	Differential pressure switch
-F2,-F4	Air flow sensor
-Y1	Damper drive
-Y2	Damper drive
-Y3	Damper drive
-Y5	Damper drive
-Y11	Damper drive
-SS1,-SS2	Service switch

-M1,-M2	Fan supply / exhaust
-M1,-M2	Fan supply / exhaust
-M3	Heater pump
-K1	Compressor + heater
-HP1,-LP1	High, low pressure protection
-EPV1	Electromagnetic valve
-EV1	Electric expansion valve
-PF1	Refrigerant pressure sensor
-BF1	Refrigerant temperature sensor
-BK1	Compressor temperature measurement
-DS / -ZA	System start/stop / group error
-MOD	MODBUS Communication
-U	Main power supply

**The illustrated scheme is an example, actual schemes are individual and vary depending on selected options*

time program with an adjustable weekly program and options for free days and holidays	<input checked="" type="checkbox"/>
supply and exhaust fan operation control through an air flow sensor - constant air flow	<input checked="" type="checkbox"/>
cascade control between the temperature and relative air humidity in the area (exhaust air) and the supply air temperature with minimum and maximum limit values for the supply	<input checked="" type="checkbox"/>
energy efficient integrated heat pump control for air dehumidification	<input checked="" type="checkbox"/>
communication protocols: BACnet / IP, BACnet, LON, web connection (simple graphical display)	<input type="checkbox"/>
changing flow ratios between supply and exhaust fans	<input checked="" type="checkbox"/>
frost protection with an anti-freeze sensor on the air side	<input checked="" type="checkbox"/>
supply and exhaust air filter control with active differential pressure sensors	<input checked="" type="checkbox"/>
dehumidification and ventilation using fresh air (free cooling)	<input checked="" type="checkbox"/>
water condenser and pool water heating functions	<input type="checkbox"/>
heat pump activation at low outdoor temperatures	<input checked="" type="checkbox"/>
heat recovery system with maximum economical flap (MECH)	<input checked="" type="checkbox"/>
dislocated control unit (room unit)	<input type="checkbox"/>
web browser access	<input checked="" type="checkbox"/>
archiving trends and alarms on an SD card	<input checked="" type="checkbox"/>
easier cause of failure diagnostics	<input checked="" type="checkbox"/>
option of sending a common error report from the controller	<input checked="" type="checkbox"/>
remote start / stop	<input checked="" type="checkbox"/>
day and night mode	<input checked="" type="checkbox"/>
supply air temperature control in sequences - heat recovery system, heat pump, water heater	<input checked="" type="checkbox"/>
pre-heater control	<input type="checkbox"/>
summer / winter compensation, preheating function	<input checked="" type="checkbox"/>

☒ included

☐ optional



VDI POOL WEB APP

Application for calculating the required amount of air for pool area dehumidification and quick selection of standard air handling units with integrated automatic controls for calculated air flows.



New

AIR VOLUME FLOW CALCULATION ACC VDI 2089

Pool without attractions

Pool air temperature	30	°C
Indoor air humidity	54	%
Pool water temperature	28	°C
Pool surface area	200	m ²

Pool with attractions

Pool air temperature	30	°C
Indoor air humidity	55	%
Pool water temperature	28	°C
Pool surface area	100	m ²

Channel with extra attractions

Pool air temperature	30	°C
Indoor air humidity	54	%
Pool water temperature	28	°C
Length of channel	0	m
Average width of channel	0,8	m

Pool attractions

Attraction name	Quantity
Wild water channel	0
Water mushroom	1
Counter-current swimming facility	0
Neck massage shower	0
Underwater jets	0
Bubble fountain	0
Geyser	1
Children's slide (10m)	1
Massage area	0
Loungers	0
Seats	5

Min air change check

Room volume	0	m ³
Min. Air Change	5	AC/h

Calculate

In just a few moments by simply entering parameters, additional pool functionalities and surrounding space characteristics, this app provides a detailed calculation of the required amount of air for the selected pool area according to VDI 2089-1:2010 guidelines and information on air handling units designed for stated requirements. By filling out the required fields, the program automatically selects a basic version of the compact pool unit or the modular version with corresponding nominal flows according to the calculation.

The application enables access to calculations according to VDI guidelines, technical data sheets, Mollier's h-x diagrams, tender text with product descriptions and drafts of the device in DWG format, while complete documentation is also available in compressed format.

Results - evaporated water mass flow, [kg/h]

Pool type	Closed	Open min.	Open max.
Basic pool	1,49	14,94	59,76
Pool with attractions	0,73	16,86	43,62
Channel with attractions		0,00	0,00
Total	2,22	31,80	103,37

Results - Supply air flow

Min supply air mass flow	19.504	kg/h
Min. Supply air volume flow	16.254	m3/h

Result – Min. air change check

Min. Supply air volume flow	0	m3/h
Supply air volume flow	16.254	m3/h

Min. air change check valid only for comparison to min. supply air volume flow.

For recommended model selection only min. supply air volume flow from VDI calculation is used as relevant.

Recommended air handling unit size: POOL 170

Min. Air Flow	Nom. Air Flow	Max. Air Flow
10000	17000	20000
		m3/h

Recommended model selected acc. the first bigger nominal air volume flow

For exact calculation of recommended model with calculated air volume flow, please send inquiry to sales department.

VDI

TD

HX

TXT

DWG

ALL

Send inquiry

Our staff will respond to your inquiry with all necessary information, detailed drawings, prices and professional support during the project.



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PRO-KLIMA is dedicated to reducing its own carbon footprint and creating energy-efficient products. By optimizing the consumption of materials and energy and by educating and encouraging our partners on environmentally responsible behavior, we strive to take care of the environment and contribute to the development of an environmentally conscious and sustainable society. Rethink, sort, recycle.