Technical documentation

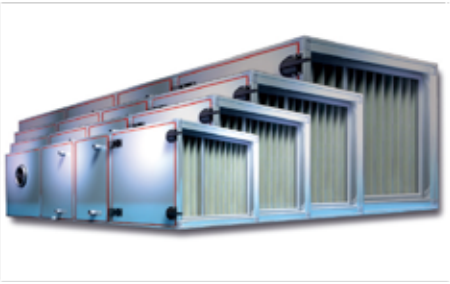
Air handling units

KG/KGW Top 21 - 1000

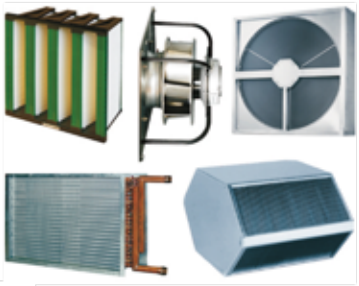
Wolf system design – everything from one supplier

Engineering support

Casing technology



Integral components



After-sales service

Integral refrigeration technology

Integral heating technology

Integral combined heat and power generation

Integral instrumentation and control technology

Certificates / quality

EC Directives

With the CE mark, the manufacturer declares that, pursuant to EU Regulation 765/2008, the product complies with the applicable requirements laid down in the Community harmonisation legislation.

Air handling equipment - certified energy efficiency

Defines new energy efficiency ratings on the basis of EN 13053 A1 2010. Assesses the speed category, effective power consumption of the fan motor (P class) and energy efficiency of the heat recovery system (H class).

DIN 1946 T4 12/2008

This standard regulates the requirements of the technical equipment level, sizing and design of air handling systems for operating theatres, and takes account of VDI 6022/31, ÖNORM H 6020 and SWKI 99-3.
In the 12/2008 edition, the technical rules and requirements from VDI 2167 guidelines, sheet 1 2007-08, are combined with those of DIN 1946.

VDI 6022

VDI guideline for hygienic engineering, design and maintenance of air handling equipment. Guideline VDI 6022 largely corresponds to Swiss standard SWKI VA 104-1 and Austrian standard H 6021.

Certificates / quality

EMC Directive

These products comply with Directive 2004/108/EC
Electrical compatibility of electrical and electronic products

ATEX

TÜV Süd certifies that Wolf GmbH is permitted to design and manufacture air handling systems in accordance with the conditions of Directives 94/9/EC (ATEX 95), provided that fundamental health and safety regulations are met.

Safety tested by the TÜV GS

Units meet the safety requirements of the Equipment and Product Safety Act.
Every single unit undergoes a special high voltage and earth test before being shipped.

ISO 9001/2008:

Every product is subject to specific requirements and is produced according to individually required quality assurance measures.
At Wolf GmbH, we exceed these product requirements by implementing a comprehensive quality management system, with the goal of ensuring that everything our company does is in line with the requirements of our customers. As a result, we work tirelessly to improve our products and processes.

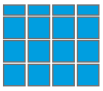
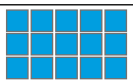
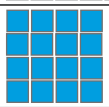
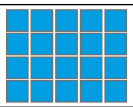
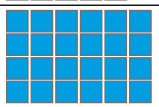
Environmental management guidelines

The Environmental Pact of Bavaria is an agreement between the Bavarian State Government and the Bavarian Industry Association. It is based on voluntary participation, individual responsibility and cooperation. In the Environmental Pact, the Bavarian State Government and the Bavarian Industry Association declare their firm conviction that natural resources can be better protected with the help of voluntary and reliable cooperation between state and economy than with law and legislation alone. The main focus is on preventing future environmental damage, rather than repairing it after the event.

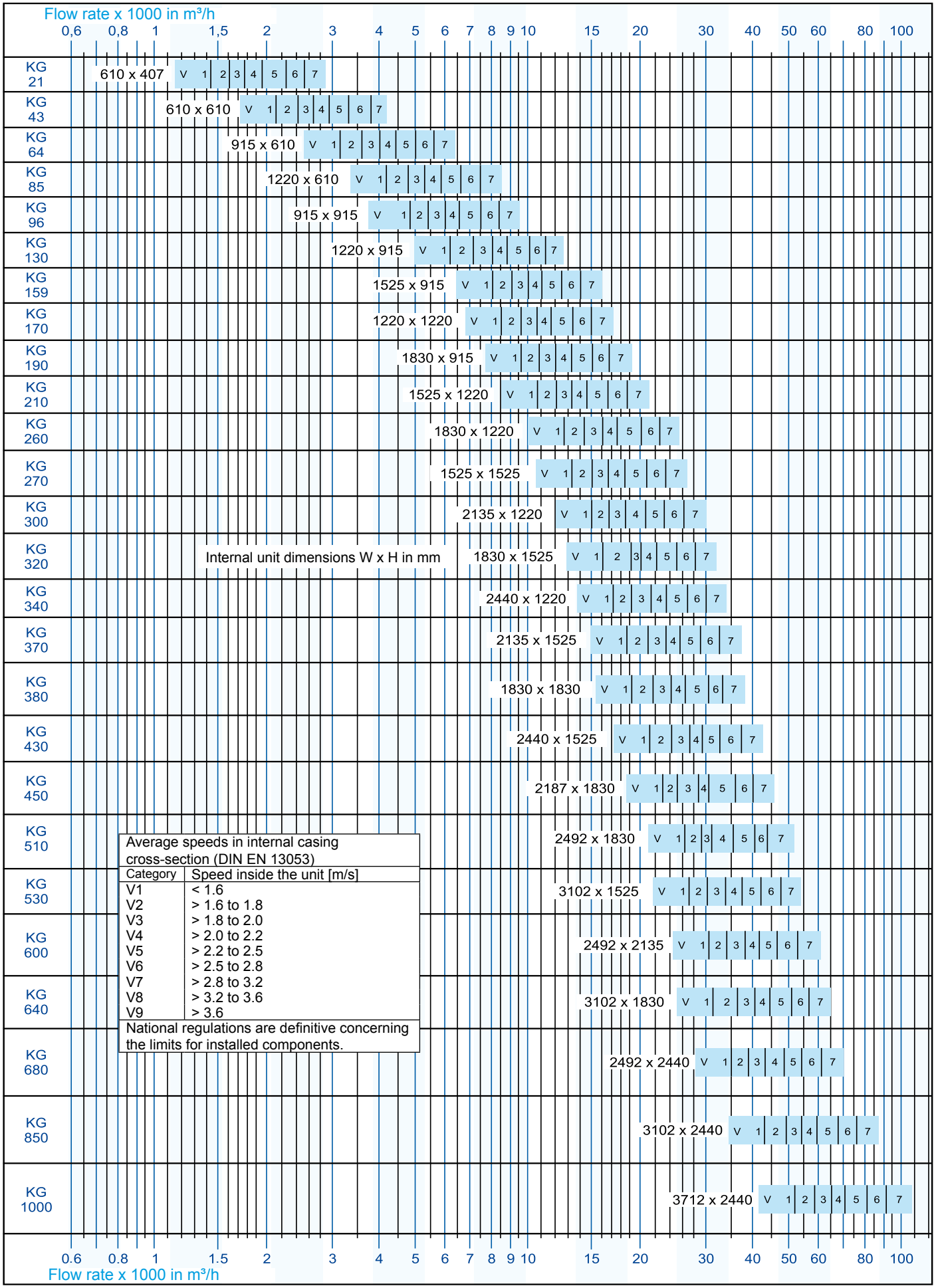
Gost-R

This certificate proves that the product quality of Wolf air handling units meets the requirements of the relevant standards laid down by the Russian Federation.

Gost-TR

Size	Nominal air flow rate [m³/h]	Filter arrangement 1/1 filters	Filters (pce)			Internal dimensions [mm]		External dimensions [mm]	
			Quarter	Half	Whole	Width	Height	Width	Height
KG Top 21	2125			1S / ⅔S		610	407	711	508
KG Top 43	4250				1	610	610	711	711
KG Top 64	6375			1	1	915	610	1016	711
KG Top 85	8500				2	1220	610	1321	711
KG Top 96	9562		1	1 / 1S	1	915	915	1016	1016
KG Top 130	12,750			2S	2	1220	915	1321	1016
KG Top 159	15,935		1	1 / 2S	2	1525	915	1626	1016
KG Top 170	17,000				4	1220	1220	1321	1321
KG Top 190	19,125			3S	3	1830	915	1931	1016
KG Top 210	21,250			2	4	1525	1220	1626	1321
KG Top 260	25,500				6	1830	1220	1931	1321
KG Top 270	26,562		1	2 / 2S	4	1525	1525	1626	1626
KG Top 300	29,750			2	6	2135	1220	2236	1321
KG Top 320	31,875			3S	6	1830	1525	1931	1626
KG Top 340	34,000				8	2440	1220	2541	1321
KG Top 370	37,185		1	2 / 3S	6	2135	1525	2236	1626
KG Top 380	38,250				9	1830	1830	1931	1931
KG Top 430	42,500			4S	8	2440	1525	2541	1626
KG Top 450	44,625			3	9	2187	1830	2289	1984
KG Top 510	51,000				12	2492	1830	2594	1984
KG Top 530	53,125			5	10	3102	1525	3204	1679
KG Top 600	59,500			4S	12	2492	2135	2594	2289
KG Top 640	63,750				15	3102	1830	3204	1984
KG Top 680	68,000				16	2492	2440	2594	2594
KG Top 850	85,000				20	3102	2440	3204	2594
KG Top 1000	102,000				24	3712	2440	3814	2594

Schematic illustration of the filter arrangement; spare filters can only be ordered with the order number
S = vertical filter bags


Flow rate x 1000 in m³/h
0,6 0,8 1 1,5 2 3 4 5 6 7 8 9 10 15 20 30 40 50 60 80 100
KG 21
610 x 407
KG 43
610 x 610
KG 64
915 x 610
KG 85
1220 x 610
KG 96
915 x 915
KG 130
1220 x 915
KG 159
1525 x 915
KG 170
1220 x 1220
KG 190
1830 x 915
KG 210
1525 x 1220
KG 260
1830 x 1220
KG 270
1525 x 1525
KG 300
2135 x 1220
KG 320
Internal unit dimensions W x H in mm
1830 x 1525
KG 340
2440 x 1220
KG 370
2135 x 1525
KG 380
1830 x 1830
KG 430
2440 x 1525
KG 450
2187 x 1830
KG 510
2492 x 1830
KG 530
3102 x 1525
KG 600
2492 x 2135
KG 640
3102 x 1830
KG 680
2492 x 2440
KG 850
3102 x 2440
KG 1000
3712 x 2440
V 1 2 3 4 5 6 7
Average speeds in internal casing cross-section (DIN EN 13053)
Category | Speed inside the unit [m/s]
V1 | < 1.6
V2 | > 1.6 to 1.8
V3 | > 1.8 to 2.0
V4 | > 2.0 to 2.2
V5 | > 2.2 to 2.5
V6 | > 2.5 to 2.8
V7 | > 2.8 to 3.2
V8 | > 3.2 to 3.6
V9 | > 3.6
National regulations are definitive concerning the limits for installed components.
0.6 0.8 1 1.5 2 3 4 5 6 7 8 9 10 15 20 30 40 50 60 80 100
Flow rate x 1000 in m³/h

Unit classification according to EN 1886

Air handling units of the KG Top / KGW Top series are classified as complete units in "non-combustible" category A1 to DIN 4102. All units can be designed in accordance with hygiene guideline VDI 6022.
The units are HV-tested and earth-tested as standard, bear the GS symbol (TÜV-certified safety) and are CE-designated.
The special casing design as a Faraday system guarantees EMC (electromagnetic compatibility) of the components installed.

	KG Top	KG Top.eco
Heat transfer category	T2	T2
Thermal bridge category	TB3	TB2
Filter bypass leakage	≤ 0.4 %	≤ 0.4 %
Casing tightness category	L1	L1
Mechanical strength of the casing	D1	D1

Insertion loss DE of the KG / KGW Top casing

	Hz	125	250	500	1000	2000	4000	8000
KG Top	dB	17	20	31	34	36	38	44
KG Top.eco	dB	17	21	31	34	36	38	44

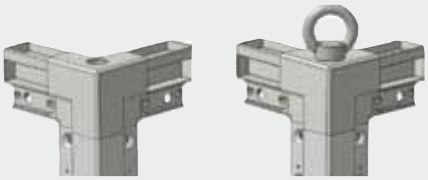
Specification

Thermal insulation:	Thickness s	50 mm
	Thickness of floor/ceiling from KG 450 upwards	76 mm
Building material category (to DIN 4102)		A1 (non-combustible)
Thermal conductivity λ		0.04 W/mK
Casing: Heat transfer coefficient k		0.6 W/m²K
Sound insulation dimension R_W (to DIN/EN ISO 717 Part 1) KG Top		41 or 43 dB (with test verification)

Layout

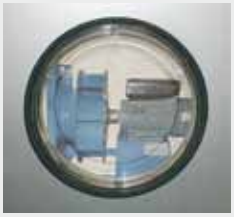
Air handling unit laid out in a modular design, consisting of inherently stable, self-supporting, fully galvanised units. If required, these can easily be separated from one another, and optionally split into all individual parts. The components can be recycled. Full galvanisation according to EN 10142 and EN 10143. Permanently resilient seals between the units, suitable for excess pressure and underpressure, ensure maximum tightness of the unit.
All gaskets are closed cell, silicone-free, and resistant to disinfectants and ageing.

Casing construction
KG 21 - 430: 50 x 50 x 1.5 mm
KG 450 - 1000: 76 x 76 x 2 mm



Self-supporting version (no base frame required)
Unit consisting of double square tube profiles secured with injection moulded angle joints. Frame moulded and fully galvanised to EN 10142 and EN 10143.
As an option, the casing can easily be split thanks to injection moulded angle joints and removable sandwich panels.

Casing for indoor installation



Thickness of casing panels 50 mm, comprising internal and external casing panels without thermal bridges made from fully galvanised sheet steel to EN 10142 and EN 10143.
(From the KG 450 upwards, the floor and ceiling are 76 mm thick.) Sound and thermal insulation is provided by high grade, non-flammable mineral wool insulation, building material category A1 to DIN 4102. It is sandwiched between the internal and external casing panels and will not slip or be shaken out of position. Walk-on floor panels, designed to be hygienic, smooth and free of gaps.
Casing panels have smooth surfaces and are easy to clean. They are secured to the frame yet easy to remove.

Optional
- Internal casing panels made from stainless steel
- Powder coating using RAL colours (min. thickness 60 µm)
- Inspection port Ø min. 150 mm with twin wall, without thermal bridges
- Base frame 200 to 500 mm

Weatherproof casing

Thickness of casing panels 50 mm, comprising internal and external casing without thermal bridges made from fully galvanised sheet steel to EN 10142 and EN 10143 (from KG 450 upwards, the floor and ceiling are 76 mm thick). Sound and thermal insulation is provided by high grade, non-flammable mineral wool insulation, building material category A1 to DIN 4102. It is sandwiched between the internal and external casing panels and will not slip or be shaken out of position.
Walk-on floor panels, designed to be hygienic, smooth and free of gaps.
Casing panels have smooth surfaces and are easy to clean. They are secured to the frame yet easy to remove.
Walk-on angled roof made from galvanised sheet steel for complete water drainage, with all-round drip edge. Lateral roof protrusion 50 mm.
All-round, fully galvanised drip edge mounted as standard on units with a fitted base frame.

Optional
- Internal and/or external, stainless steel casing panels
- Powder coating using the RAL colour chart (min. thickness 60 µm)

Base frame 200 to 500 mm high. Version with or without thermal insulation.
Intake/discharge hood with all-round drip moulding for controlled water drainage, equipped as standard with grille to keep wildlife out.
Outdoor air intake section with corrosion-resistant, thermally insulated condensate pan with fall on all sides to the 1 ¼" side drain connector (1 ½" from KG/KGW Top 450 upwards) that is integrated into the unit frame for continuous, complete condensate drainage. Weatherproof porch to provide protection from the rain for external fittings and pipework.

Inspection door

Rotating closure can be locked

Rotating closure with automatic catch

The inspection door is 50 mm thick. The hinges of the inspection door are on the outside. Open the door using tools and the integral grip moulding. The contact pressure can be adjusted via the rotary latches.
Special, all-round, non-ageing profile with double lip seal is highly effective against excess pressure and underpressure.
The inspection door consists of an internal and an external section made from fully galvanised sheet steel.
High grade mineral wool insulation, building material category A1 (non-combustible) to DIN 4102, is inserted between the internal and external sections and sealed metallically on all sides.
Thermal and acoustic properties such as thermal insulation between the casing panels.
Door handles on the pressure side are equipped with automatic safety catches.

Optional
- Internal and/or external, stainless steel casing panels
- Powder coating using RAL colours (min. thickness 60 µm)
- Inspection port Ø min. 150 mm with twin wall, without thermal bridges
- Door catch
- Lever closures that can be locked from the outside, or continuous lever closures that can be opened from inside and out

EC fan motor unit

Particularly quiet, highly efficient, free-running fan with single sided intake, connected directly to a 50 or 60 Hz EC motor, energy category IE4. Variable speed control via 0 - 10 V control signal.

2D radial impeller with swirl diffuser, mounted on an electronically commutated external rotor motor with integral PCB.

Backward-curving impeller blades. Flow-optimised intake nozzle with pressure test connector made from galvanised sheet steel. Complete unit statically and dynamically balanced in accordance with DIN/ISO 1940 to balancing quality G 6.3 on two levels. EC external rotor motor with maintenance-free ball bearings and long lasting lubrication.

Unit can be used with all power supply utility networks with standard air flow rate. Optimised motor technology, soft start, integral current limitation.

Control cable (0-10 V or 4-20 mA), supply voltage and floating fault message contact (250 V/2 A) routed out of easy-to-install and robust terminal box on the outside of the air handling unit. Highly compact electronics design with adjustable PID controller, fulfils all necessary EMC guidelines and all requirements relating to perturbation.

Straightforward installation as no screened cable or additional inverter are required. Very low noise commutation logic, 100 % controllable.

IP rating IP54, insulation class B.

Maximum permissible air temperature 40°C at rated output.

Complete unit is fitted with structure-borne noise insulation.

Safety mechanisms:

- Anti-blocking protection
- Motor soft start
- Mains undervoltage detection
- PCB and motor protected against excessive temperatures
- Short circuit protection
- Function tested

Free-running impeller

Fan/motor unit with free-running, backwards-curved, high performance impeller fitted directly on the motor shaft. Threaded, corrosion-protected support structure. Entire unit secured to C-profile sections and isolated through anti-vibration elements.
Impeller weighted with hub, balancing quality G 2.5 to ISO 1940 T1. Galvanised sheet steel intake nozzle at the rear for optimum flow to the impeller. Intake nozzle firmly secured to the support panel and adjusted to ensure optimum gap centres. Taper Lock hub made from grey cast iron with threaded fitting. IE2 three-phase standard motor, 400 V, 50 Hz, motor protection with PTC thermistor, thermal category F, motor suitable for inverter operation. Maximum permiss. air temperature 60 °C.
Option to measure the flow rate at the intake nozzle.

<u>Optional</u>
- Ring testing wire
- Motor max. 7.5 kW with fitted inverter (max. air temperature 35 °C)

Free-running impeller in ATEX

- Fan/motor unit with free-running, backwards-curved, high performance impeller in explosion-proof design compliant with ATEX 100 (electrically conductive paint, impeller with intake nozzle made from brass or copper, pressure-resistant encapsulation of motor in accordance with ATEX directives).

Inverter

For variable speed control (5 to 90 Hz) of the fan motor with quadratic torque pattern, anti-interference to EN 55011 and EN 61800-3 via anti-interference filter. Connecting cable between the motor and inverter with screened cable. Integral motor protection thanks to PTC thermistor monitoring. Prewired with control panel and preset at the factory.

Inverter for variable speed control of asynchronous three-phase motors, especially for driving air handling equipment
- No output reduction at nominal motor speed compared to direct mains operation
- Complete installation unit with integral butterfly valve to reduce perturbation
- Integral anti-interference filter to maintain the limits set by EN 55011 and EN 61800-3
- With automatic energy optimisation for maximum motor efficiency in partial load operation
- Output with switching stability, protected against short circuits and earth faults
- Operation permissible with multiple motors
- Ambient temperatures: 0 - 45 °C for protection rating IP 00/20 and IP 54

Graphic programming unit with plain text for commissioning settings and display of all data relevant for operation (for IP 20 appliances, can be removed with copy function), with keys for start, stop, manual and automatic mode.

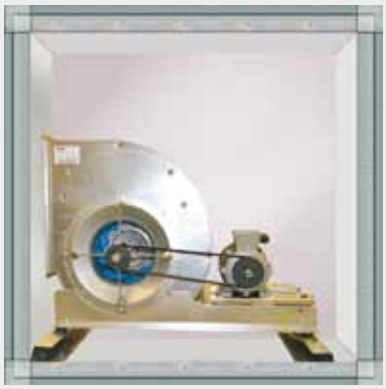
Standard functions:
Automatic motor adjustment, automatic start-up and delay time adjustment, min. and max. speed restriction, fixed speed selection, synchronisation with motors that are already running, motor PTC thermistor analysis, V-belt monitoring, hours run meter, fault message memory, PID controller (scalable in process variables).
Operation with reduced speed at excess temperature, undervoltage or failure of a mains supply phase, real-time clock for time-dependent control, separate inverter hours run meter and motor hours run meter.

Inputs/outputs:
2x analogue inputs (reversible 0-10 V/0-20 mA), scalable and invertible
4x digital inputs 24 V logic, either H or L active
2x digital terminals 24 V logic, usable as either input or output
2x floating changeover contacts, programmable function and pick-up/drop-out delay
1x programmable analogue output 0/4-20 mA, scalable internal auxiliary voltage supply:
24 V/DC for wiring the digital inputs and, if necessary, for supplying enabled actual value transducers
10 V/DC for set value potentiometer 1kOhm and motor protection PTC thermistor

Interfaces:
- USB port for PC communication with optional software
- RS-485 connection for Modbus RTU and BACnet MS-TP fieldbus connection

Optional
- Sinus filter (LC motor filter)
- Repair switch for on-site bypass circuit (which enables 50 Hz emergency mode)
- Installation kit for mounting the programming unit in an external enclosure in accordance with IP 54
- IP 00/20 for control panel integration

Radial fan with V-belt drive



Fan and motor mounted on stable base frame; base frame positioned on flexible anti-vibration mounts.
High performance radial fan with double sided intake and backwards or forwards-curved impeller blades.
Shaft aligned to run true, reduced to standard diameter at both ends to accommodate V-belts.
With stable bearings and acoustically tested, precision, deep groove ball bearings, lubricated with ageing-resistant lithium soap grease. Impeller statically and dynamically balanced in accordance with VDI 2060.
Can easily be removed from the casing for repairs and maintenance work.
Driven by three-phase motor 400 V/50 Hz, model B3, thermal category F, protection rating IP 55, TÜV GS tested, wired motors HV-tested and earth-tested as standard.
Power transmission through high performance V-belt and pulleys.
Pulleys secured with Taper Lock clamping bushings to DIN 6885.
Fan and motor secured in the casing to be free from vibrations (up to motor model size 180 on tensioning carriage), with equipotential bonding as standard.
Connection between fan and airtight, vibration-isolated front panel.

Optional
- Flat belt drive with tensioning carriage
- Spiral fan housing with inspection port
- Spiral fan housing with condensate drain connection
- Protective door grille
- Fan/motor in ATEX 100
- Inverter

Heating coil section

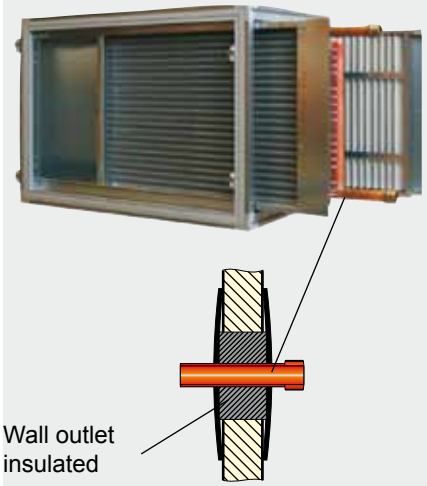
With removable PWW air heating coil (permissible operating pressure 16 bar, test pressure 30 bar), copper tubes with press-fitted, optimised and profiled high performance aluminium fins, receiver at least made from steel and coated, built into a galvanised sheet steel frame suitable for hot water or steam operation. Connections with inch thread or flange and mating flange, sealed off from the casing with rubber collars. Wall outlet with diffusion-proof and closed-cell insulation.

Optional
- Air heating coil in galvanised steel design
- Copper/copper air heating coil (copper tubes/copper fins)
- Air heating coil, copper/aluminium coated
- Receiver made from copper
- Air heating coil in stainless steel design
- Connections with air vent and drain connectors
- Removable frost protection frame with handle
- Angled connections for internal pipe routing
- With TÜV approval

Heating coil section with removable electric air heating coil

- For 3 x 400 V, in separate casing
- Non-glowing heating grid with low surface temperature
- Fully wired terminal strip with integral temperature limiters and additional high limit safety cut-out

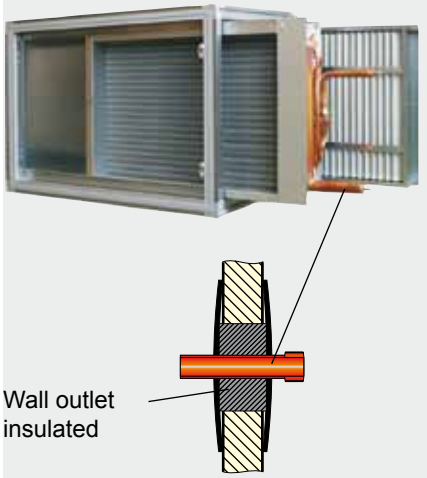
Cooling coil section



With removable PKW high performance air cooling coil (permissible operating pressure 16 bar, test pressure 30 bar), copper tubes with press-fitted, optimised and profiled high performance aluminium fins, copper receiver, built into a galvanised sheet steel frame suitable for pumped cold water operation.
Connections with inch threads. Wall outlet with diffusion-proof and closed-cell insulation.
Mist eliminator made from PP, can be extracted via removable inspection panel and completely split into sections.
Corrosion-resistant, thermally insulated 3D aluminium pan with fall on all sides to the drain connector that is integrated into the unit frame for continuous, complete condensate drainage.

Optional
- High performance air cooling coil in galvanised steel design
- High performance air cooling coil, full coated in copper/aluminium
- High performance air cooling coil, copper/copper
- High performance air cooling coil in stainless steel design
- Connections with air vent and drain connectors
- Air cooling coil frame made from stainless steel
- 3D pan made from stainless steel
- Slide rails made from stainless steel
- Angled connections for internal pipe routing
- With TÜV approval

Cooling coil section (direct evaporator)



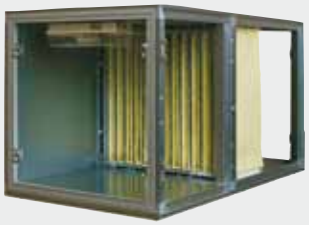
With removable high performance air cooling coil as direct evaporator. Refrigerant connection with distributor for multiple injection. Copper tubes with press-fitted, optimised and profiled high performance aluminium fins, copper receiver, built into a galvanised sheet steel frame.
Wall outlet with diffusion-proof and closed-cell insulation.
Mist eliminator made from PP, can be extracted via removable inspection panel and completely split into sections.
Corrosion-resistant, thermally insulated 3D aluminium pan with fall on all sides to the side drain connector, including drain, that is integrated into the unit frame for continuous, complete condensate drainage.

Optional
- Direct evaporator designed with separate and/or interlinked circuits
- Heat pump circuit
- Slide rails made from stainless steel
- High performance air cooling coil, full coated in copper/aluminium
- Angled connections for internal pipe routing
- With TÜV approval

Bag filter section
KG/KGW Top 21 - 510, 600

Equipped as standard with bag filter, grade G4, M5, F7, F9, that can be removed at the side, clipped to inert, closed-cell seal with quick-release mechanism, can be released manually, design compliant with VDI 6022. Temperature-resistant from 30 °C to 90 °C and 100 % relative humidity.
Filter frame press-mounted on all sides without gaps. Incident flow across the entire filter surface area as unit cross-section is optimised for filter dimensions. High contact pressure due to leverage in the quick-release mechanism.
Filter surface area for bag filters at least 10 m² per 1 m² unit cross-sectional area.

Optional
Bag filter clipped into place
KG/KGW Top 21 - 510, 600



Bag filter, grade G4, M5, F7, F9, clipped to inert, closed-cell seal, can be released manually and removed on the stale air side. Bag filters have no contact with the floor, therefore design is compliant with VDI 6022. Temperature-resistant from 30 °C to 90 °C and 100 % relative humidity. Filter frame press-mounted on all sides without gaps. Incident flow across the entire filter surface area as unit cross-section is optimised for filter dimensions. High contact pressure due to elastic force and dynamic pressure of the air handled.

KG/KGW Top 530/640 - 1000

Standard bag filter, grade G4, M5, F7, F9, clipped to inert, closed-cell seal, can be released manually and removed on the stale air side. Temperature-resistant from 30 °C to 90 °C and 100 % relative humidity. Filter frame press-mounted on all sides without gaps. Incident flow across the entire filter surface area as unit cross-section is optimised for filter dimensions. High contact pressure due to elastic force and dynamic pressure of the air handled.

Optional for filter
- Synthetic filters M5, M6, F7
- Biostatic filters
- Active charcoal filters with mounting frame and bayonet catch
- Metal filters
- HEPA filters with mounting frame
- Bag filter section with 3D pan and drain
- Compact filters
- Filters that can be incinerated
- Frame made from stainless steel
- Frame coated (RAL colours, at least 60 µm)

Combined mixed filter section for KG/KGW Top 21 - 380

Removable filter frame with V-shaped, renewable filter mat, grade G4, made from synthetic fibres; can be removed at the side. Inspection door on the operating side, opened with tools and integral grip moulding.

Optional
- Louvre damper to DIN EN 1751 with counter-acting, linked, plastic-mounted profile fins with lip seal in tightness category 2, max. leakage 40 l/m²/s, linkage and adjusting lever for manual or motorised operation
- Canvas flange
- Insulating connector without folds and with soundproofing

HEPA filter section

Special installation frame with press-mounting device for the filter, which provides tightly sealing filter fitting and optimised inspection options.
Absolute HEPA filter with frame made from galvanised sheet steel.
Filter surface area at least 80 times larger than the face area, thanks to the use of folded fibreglass medium and conical aluminium separators.
Casting compound between filter pack and frame made from polyurethane; seal made from neoprene.
Filter grade "S" to DIN 24184 or "H13" to DIN EN 1822.
Separation level above 99.95 % or at least 99.997 % with 0.3 µm particle size.
Every filter is checked individually.

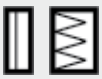
Silencer section

Flow-optimised mineral fibre splitters with glass fibre cover (tested to DIN EN ISO 7235), building material category A1 (non-combustible to DIN 4102), treated on one side with absorbent and reflective material, encased in galvanised sheet steel frame. Surfaces are moisture-repellent, abrasion-resistant up to 20 m/sec and cleanable. Splitter width 200 mm.

Optional
- Splitters with perforated plate cover
- Splitters can be removed at the side
- Splitter width 230 mm (for increased soundproofing)
- Coated splitters

Components / dimensions

(some units may ultimately be shorter if individual components are combined)

KG/KGW Top	mm	21	43	64	85	96	130	159	
EC fan Horizontal air flow 	L	610	610	712	712	712	712	1017	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Free-running fan 	L	712	814	915	915	1017	1119	1220	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
A: Empty section required if intake does not cover entire cross-section									
Fan section with V-belt drive 	L	712	814	1017	1017	1119	1322	1322	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Heating coil section (also KVS) 	L	305	305	305	305	305	305	303	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Heating coil section with frost protection frame 	L	509	509	509	509	509	509	509	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Cooling coil section (also KVS) 	L	610	610	610	610	610	610	610	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Cooling coil section, long (also KVS) 	L	814	814	814	814	814	814	814	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Mixed exhaust air section (with 2 internal dampers L + 203 mm) 	L	610	610	712	915	814	915	712	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Mixed and filter section (with 2 internal dampers L + 203 mm) 	L	814	814	915	1119	1017	1119	1322	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Short filter section 	L	305	305	305	305	305	305	305	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Bag filter section 	L	712	712	712	712	712	712	712	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Bag filter, short section 	L	509	509	509	509	509	509	509	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Compact filter **Panel filter / V-filter** 	L	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Silencer section 									
Type 11, type 1	L	915	915	915	915	915	915	915	
Type 12, type 2	L	1119	1119	1119	1119	1119	1119	1119	
Type 13, type 3	L	1424	1424	1424	1424	1424	1424	1424	
Type 14, type 4	L	1627	1627	1627	1627	1627	1627	1627	
	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
Empty section with/without inspection door 	L	305	305	305	305	305	305	305	
	L	509	509	509	509	509	509	509	
	L	712	712	712	712	712	712	712	
Empty section, steam humidifier	L	1424	1424	1424	1424	1424	1424	1424	
Empty section, high pressure	L	-	1424	1424	1424	1424	1424	1424	
humidifier section	W	712	712	1017	1322	1017	1322	1627	
	H	509	712	712	712	1017	1017	1017	
KGXD vertical/horizontal Highly efficient 	L	1220 / 1627	1627 / 1627	1627 / 2034	1627 / 2034	2034 / 2034	2034 / 2643	2034 / 3254	
	W	712 / 1424	712 / 1424	1017 / 2034	1322 / 2644	1017 / 2034	1322 / 2644	1627 / 3254	
	H	1018 / 509	1424 / 712	1424 / 712	1424 / 712	2034 / 1017	2034 / 1017	2034 / 1017	
Thermal wheel heat exchanger RWT 	L	400	400	400	400	400	400	400	
	*WxH	1424x915	1424x1119	2034x1322	-	2034x1627	2644x1830	-	
	**WxH	1119x1017	1119x1424	1424x1424	1322x1424	1627x2034	1932x2034	2034x2034	

Dimensions in [mm] * Version: Air flows adjacent ** Version: Air flows one above the other

For **KGW:** Lateral roof protrusion 50 mm, roof height 30 to 60 mm, base frame height at least 200 mm

Dimensions and weights are for reference; actual data subject to individual configuration

Components / dimensions

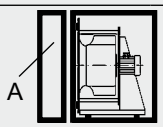
(some units may ultimately be shorter if individual components are combined)

KG/KGW Top

	170	190	210	260	270	300	320	340	370	380	430
	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1637
	1322	1220	1322	1627	1424	1627	1525	1525		1830	1830
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	Length of the empty section is 1.5 x impeller diameter										
	1322	1322	1627	On request	1627	On request	1932	1830	1932	1932	1932
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	305	305	305	305	305	305	305	305	305	305	305
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	509	509	509	509	509	509	509	509	509	509	509
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	610	610	610	610	610	610	610	610	610	610	610
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	814	866	814	814	814	814	814	866	814	814	814
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	915	712	1119	915	1119	915	1322	915	1118	1322	1118
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	1322	1525	1322	1525	1322	1729	1830	1932	1729	1830	1932
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	305	305	305	305	305	305	305	-	305	305	-
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	712	712	712	712	712	712	712	712	712	712	712
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	509	509	509	509	509	509	509	509	509	509	509
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712	509 / 712
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	915	915	915	915	915	915	915	915	915	915	915
	111	1119	1119	1119	1119	1119	1119	1119	1119	1119	1119
	1424	1424	1424	1424	1424	1424	1424	1424	1424	1424	1424
	1627	1627	1627	1627	1627	1627	1627	1627	1627	1627	1627
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	305	305	305	305	305	305	305	305	305	305	305
	509	509	509	509	509	509	509	509	509	509	509
	712	712	712	712	712	712	712	712	712	712	712
	1424	1424	1424	1627	1627	1627	1627	1627	1627	1627	1627
	1424	1424	1424	1627	1627	1627	1627	1627	1627	1627	1627
	1322	1931	1627	1932	1627	2237	1932	2542	2237	1932	2542
	1322	1017	1322	1322	1627	1322	1627	1322	1627	1932	1627
	2643 / 2643	2034 / 3864	2643 / 3254	2643/3864	3254 / 3254	2643/3864	3254 / 3864	2643 / 3864	3254/3864	3660 / 3864	3254 / 3864
	1322 / 2644	1931 / 3864	1627 / 3254	1932/3864	1627/3254	2237/4474	1932 / 3864	2542 / 5084	2237/4474	1932 / 3864	2542 / 5084
	2644 / 1322	2034 / 1017	2644 / 1322	2644/1322	3254/1627	2644/1322	3254 / 1627	2644 / 1322	3254/1627	3864 / 1932	3254 / 1627
	400	400	440	440	440	440	440	440	440	440	510
	2644x1830	1931	3254x2237	-	3864x2542	-	3864x2542	-	-	4579x2900	-
	1932x2644	1932x2034	2237x2644	2338x2644	2237x3254	2644x2644	2745x3254	2542x2644	2847x3254	2745x3864	3152x3254

Components / dimensions

(some units may ultimately be shorter if individual components are combined)

KG/KGW Top	mm	450	510	530	600	640	680	850	1000
EC fan Horizontal air flow 	L	On request	On request	On request	On request	On request	On request	On request	On request
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Free-running fan 	L	1883	1883	1883	2086	1985	On request	On request	On request
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
		A: Empty section required if intake does not cover entire cross-section. Length 1.5 x impeller Ø							
Fan section 	L	1985	2290	1680	2290	2290	2391	2290	2290
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Heating coil section (also KVS) 	L	357	357	663	357	663	357	662	662
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Heating coil section with frost protection frame 	L	560	560	866	560	866	560	866	866
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Cooling coil section (also KVS) 	L	662	662	866	662	866	662	866	866
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Cooling coil section, long (also KVS) 	L	866	866	1070	866	1070	866	1070	1070
	W	2290	2290	3205	2290	3205	2290	2290	2290
	H	1985	1985	1680	1985	1985	1985	1985	1985
Mixed exhaust air section (with 2 internal dampers L + 203 mm) 	L	1374	1578	1273	1578	1578	1578	1985	2086
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Mixed and filter section (with 2 internal dampers L + 203 mm) 	L	-	-		-		-	-	-
	W	-	-	X	-	X	-	-	-
	H	-	-		-		-	-	-
Short filter section 	L	-	-		-		-	-	-
	W	-	-	X	-	X	-	-	-
	H	-	-		-		-	-	-
Bag filter section 	L	764	764	1273	764	1273	1273	1273	1273
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Bag filter, short section 	L	560	560	1070	560	1070	1070	1070	1070
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Compact filter		-	-	-	-	-	-	-	-
Panel filter / V-filter		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
Silencer section									
Type 11, type 1 	L	967	967	On request	967	On request	967	967	967
Type 12, type 2	L	1171	1171	On request	1171	On request	1171	1171	1171
Type 13, type 3	L	1476	1476	On request	1476	On request	1476	1476	1476
Type 14, type 4	L	1679	1679	On request	1679	On request	1679	1679	1679
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
Empty section with/without inspection door 	L	560	560	560	560	560	560	560	560
	L	764	764	764	764	764	764	764	764
	L	967	967	967	967	967	967	967	967
Steam humidifier, empty section	L	1679	1679	1679	1679	1679	1679	1679	1679
High pressure humidifier section	L	1679	1679	1679	1679	1679	1679	1679	1679
	W	2290	2595	3205	2595	3205	2595	3205	3815
	H	1985	1985	1680	2290	1985	2595	2595	2595
KGXD vertical/horizontal 	L	-	-	-	-	-	-	-	-
	W	-	-	-	-	-	-	-	-
	H	-	-	-	-	-	-	-	-
Thermal wheel heat exchanger RWT 	L	440	440	510	510	510	510	510	550
	*WxH	5189x2900	5189x3611	-	5189x3815	-	5188x3813	6409x3867	7628x4172
	**WxH	2900x3969	3001x3969	3204x3358	3611x4579	3611x3962	3815x5189	3815x5189	4221x5189

Dimensions in [mm] * Version: Air flows adjacent ** Version: Air flows one above the other

For **KGW:** Lateral roof protrusion 50 mm, roof height 30 to 60 mm, base frame height at least 200 mm

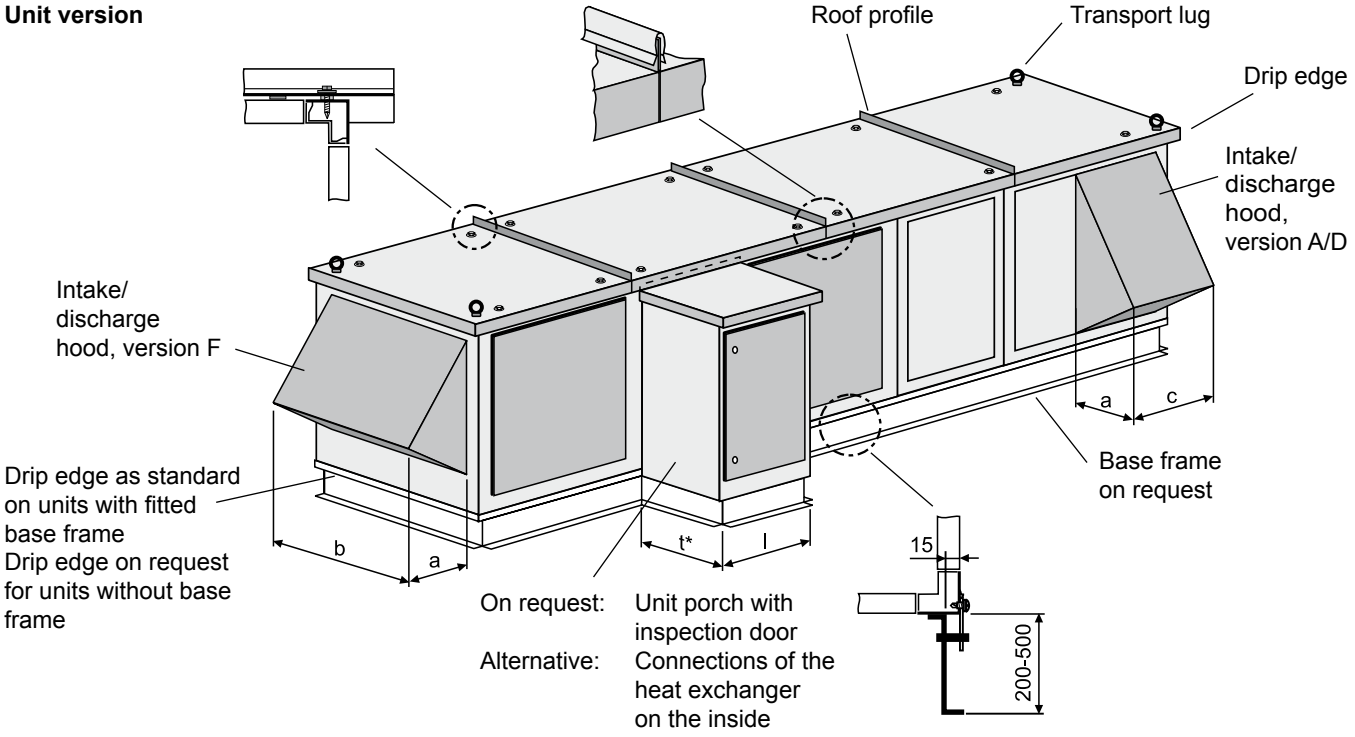
Dimensions and weights are for reference; actual data subject to individual configuration

KG/KGW Top	Weights in kg	21	43	64	85	96	130
Fan section without motor drive	Fan section with forwards-curved fan	67	88	125	160	170	250
	Fan section with backwards-curved fan	65	85	120	160	170	250
Free-running impeller/ EC fan	With electric motor	88	105	160	220	233	332
Heating coil section Cu/Al	Heating coil section	25	35	45	50	55	54
	Heating coil section type 1, complete	36	50	65	85	95	88
	Heating coil section type 2, complete	36	50	65	85	95	92
	Heating coil section type 3, complete	39	55	75	90	100	104
	Heating coil section type 4, complete	43	60	80	100	110	117
Heating section KVS	Heating coil section type II, complete	54	75	105	130	140	154
	Heating coil section type III, complete	57	80	110	135	150	167
Heating coil section Cu/Al with frost protection frame	Heating coil section with frost protection frame	32	45	55	60	65	71
	Heating coil section type 1, complete	43	60	75	95	105	117
	Heating coil section type 2, complete	43	60	75	95	105	117
	Heating coil section type 3, complete	46	65	85	100	110	121
	Heating coil section type 4, complete	50	70	90	110	120	133
Heating coil section, galvanised steel	Heating coil section	25	35	45	50	55	54
	Heating coil section type 1, complete	57	80	115	150	160	192
	Heating coil section type 2, complete	71	100	150	190	215	258
	Heating coil section type 3, complete	71	100	160	210	230	313
	Heating coil section type 4, complete	104	145	230	290	340	458
Heating coil section, galvanised steel with frost protection frame	Heating coil section with frost protection frame	32	45	55	60	65	71
	Heating coil section type 1, complete	64	90	125	155	170	208
	Heating coil section type 2, complete	79	110	160	200	225	275
	Heating coil section type 3, complete	82	115	170	220	240	329
	Heating coil section type 4, complete	111	155	240	320	350	475
Cooling coil section	Cooling coil section	32	45	55	60	65	71
	Cooling coil section with mist eliminator	36	50	65	70	75	83
	Cooling coil section with direct evaporator type A	54	75	100	120	130	146
	Cooling coil type 7 / direct evaporator type B	61	85	115	135	150	171
	Cooling coil type 8	64	90	120	140	160	183
	Cooling coil type 12	57	80	110	160	180	208
Cooling coil KVS	Cooling coil section type II, complete	61	85	115	140	150	171
	Cooling coil section type III, complete	64	90	120	150	160	183
Cooling coil section, long	Cooling coil section	43	60	65	80	85	88
	Cooling coil section with mist eliminator	46	65	75	90	95	100
	Cooling coil section with direct evaporator type A	64	90	110	140	150	163
	Cooling coil type 7 / direct evaporator type B	71	100	125	160	170	188
	Cooling coil type 8	75	105	130	170	180	200
	Cooling coil type 12	68	95	120	180	200	225
Cooling coil KVS with cooling coil section, long	Cooling coil section type II, complete	71	100	125	160	170	188
	Cooling coil section type III, complete	75	105	130	170	180	200
Scrubber section	Scrubber section, thermally insulation (KGW)	-	159	196	-	224	274
	Scrubber section, not thermally insulation (KG)	-	149	185	-	211	258
Mixed and exhaust air section	Mixed and exhaust air section	32	45	60	90	95	104
	Mixed and exhaust air section with 1 damper	39	55	70	105	110	125
Mixed and filter section	Mixed and filter section	36	50	75	100	110	129
	Mixed and filter section, complete with filter G4	39	55	80	115	125	146
Bag filter section	Bag filter section with bag filter G4, F5, F7, F9	43	60	80	100	105	113
Bag filter, short section	Bag filter, short section with bag filter G4, F5, F7, F9	36	50	70	90	95	105
Silencer section	Silencer section complete type 11, type 1	57	80	105	140	155	167
	Silencer section complete type 12, type 2	68	95	125	160	185	183
	Silencer section complete type 13, type 3	79	110	140	200	215	225
	Silencer section complete type 14, type 4	93	130	175	230	260	292
Empty section	Length in mm / weight	305/25	305/35	305/45	305/50	305/55	305/50
		509/35	509/45	509/55	509/60	509/65	509/67
		712/50	712/70	712/80	712/85	712/90	712/100
Empty corner section	Length in mm / weight	712/50	712/70	1017/85	1017/90	1017/95	1321/100
Steam/high pressure, humidifier empty section		100	140	120	125	125	150
Crossflow heat exchanger	KGXD vertical with bypass	154	215	315	480	500	779
	KGXD horizontal with bypass	154	215	315	480	500	779
Thermal wheel heat exchanger	RWT	96	135	215	250	255	283
Roof (only KGW)	Roof per linear metre	2	2.9	4.2	4.2	4.2	5.1
Base frame (200 mm tall)	Base frame per linear metre	5	5.1	5.1	5.1	5.1	5.1
Base frame (200 mm tall)	kg/m unit length	15	20	20	25	25	25

KG/KGW Top	Weights in kg	159	170	190	210	260	270	
Fan section without motor drive	Fan section with forwards-curved fan	245	270	280	410	560	570	
	Fan section with backwards-curved fan	250	270	285	420	570	580	
Free-running impeller/ EC fan	With electric motor	320	398	420	471	550	580	
Heating coil section Cu/Al	Heating coil section	65	61	90	65	75	75	
	Heating coil section type 1, complete	85	85	95	105	105	105	
	Heating coil section type 2, complete	88	98	100	110	115	120	
	Heating coil section type 3, complete	96	106	110	125	130	130	
	Heating coil section type 4, complete	100	122	120	140	145	150	
Heating section KVS	Heating coil section type II, complete	155	154	200	185	190	190	
	Heating coil section type III, complete	170	171	220	200	205	210	
Heating coil section Cu/Al with frost protection frame	Heating coil section with frost protection frame	110	85	120	89	105	110	
	Heating coil section type 1, complete	130	122	150	140	145	150	
	Heating coil section type 2, complete	135	130	150	140	155	160	
	Heating coil section type 3, complete	140	138	160	145	160	170	
	Heating coil section type 4, complete	150	154	170	160	180	190	
Heating coil section, galvanised steel	Heating coil section	65	65	85	61	70	75	
	Heating coil section type 1, complete	220	230	280	284	330	350	
	Heating coil section type 2, complete	315	310	390	439	520	540	
	Heating coil section type 3, complete	340	375	410	496	580	610	
	Heating coil section type 4, complete	390	550	610	658	780	810	
Heating coil section, galvanised steel with frost protection frame	Heating coil section with frost protection frame	110	85	120	89	100	110	
	Heating coil section type 1, complete	280	250	300	317	370	390	
	Heating coil section type 2, complete	380	330	400	471	550	580	
	Heating coil section type 3, complete	410	395	440	520	620	640	
	Heating coil section type 4, complete	460	570	610	683	790	840	
Cooling coil section	Cooling coil section	90	85	100	81	95	100	
	Cooling coil section with mist eliminator	120	100	140	114	130	140	
	Cooling coil section with direct evaporator type A	150	175	170	195	230	240	
	Cooling coil type 7 / direct evaporator type B	180	205	220	230	240	250	
	Cooling coil type 8	210	220	230	236	280	290	
	Cooling coil type 12	240	250	300	309	370	380	
Cooling coil KVS	Cooling coil section type II, complete	180	205	220	203	240	250	
	Cooling coil section type III, complete	200	220	250	228	260	280	
Cooling coil section, long	Cooling coil section	110	105	120	100		125	
	Cooling coil section with mist eliminator	130	120	150	134		165	
	Cooling coil section with direct evaporator type A	170	195	200	215		265	
	Cooling coil type 7 / direct evaporator type B	190	225	240	223	On request	275	
	Cooling coil type 8	200	240	270	256		315	
	Cooling coil type 12	250	270	300	329		405	
Cooling coil KVS with cooling coil section, long	Cooling coil section type II, complete	200	225	240	223		275	
	Cooling coil section type III, complete	220	240	270	248		305	
Scrubber section	Scrubber section, thermally insulation (KGW)	-	317	-	362	-	411	
	Scrubber section, not thermally insulation (KG)	-	299	-	340	-	386	
Mixed and exhaust air section	Mixed and exhaust air section	100	125	120	122	140	150	
	Mixed and exhaust air section with 1 damper	120	150	150	154	180	190	
Mixed and filter section	Mixed and filter section	150	155	220	199	-	245	
	Mixed and filter section, complete with filter G4	180	175	240	215	-	265	
Bag filter section	Bag filter section with bag filter G4, F5, F7, F9	120	135	120	154	180	190	
Bag filter, short section	Bag filter, short section with bag filter G4, F5, F7, F9	100	120	100	135	160	170	
Silencer section	Silencer section complete type 11, type 1	180	200	210	219		270	
	Silencer section complete type 12, type 2	220	220	240	252	On request	310	
	Silencer section complete type 13, type 3	320	270	350	301		370	
	Silencer section complete type 14, type 4	340	350	370	325		400	
Empty section	Length in mm / weight	305/49	305/60	305/57	305/65	305/10	305/70	
		507/70	509/80	507/81	509/85	509/90	509/90	
		1119/130	712/120	1322/170	712/130	712/130	712/130	
Empty corner section	Length in mm / weight	-	1321/130	-	1627/240	1627/280	1627/290	
Steam/high pressure, humidifier empty section		170	180	190	240	On request	290	
Crossflow heat exchanger	KGXD vertical with bypass	560	935	650	1121	On request	1380	
	KGXD horizontal with bypass	-	935	-	1121	-	1380	
Thermal wheel heat exchanger	RWT	200	340	280	382	450	470	
Roof (only KGW)	Roof per linear metre	8.5	5.1	8.5	5.1	5.1	5.1	
Base frame (200 mm tall)	Base frame per linear metre	10.2	5.1	10.2	5.1	5.1	5.1	
Base frame (200 mm tall)	kg/m unit length	45	25	50	25	25	25	

	300	320	340	370	380	430	450	510	530	600	640	680	850	1000
	630 640	660 670	400 400	650 680	690 710	600 600	790 850	1060 1200	1050 1300	1050 1400	1100 1300	1150 1200	1450 1500	1650 1700
	700	724	600	800	860	800	871	1077	1090	1137	On request	On request	On request	On request
	90 150 160 170 190 190 230	93 160 168 185 202 202 253	110 170 190 200 210 270 300	110 180 195 210 230 230 300	110 190 200 220 240 240 300	120 190 200 250 270 310 340	247 347 367 407 437 587 647	273 383 413 453 483 653 713	290 410 45 480 520 705 760	301 421 161 501 541 721 781	320 450 500 540 580 650 710	330 460 510 550 600 670 730	429 579 629 679 729 829 879	499 689 754 819 884 1009 1069
	110 170 180 200 210	122 185 194 211 227	140 240 240 260 290	145 210 230 250 270	145 220 230 250 270	180 290 290 310 340	264 364 384 424 454	293 403 433 473 503	310 430 470 505 550	321 441 481 521 561	340 470 520 560 610	350 480 530 570 620	452 602 652 702 752	525 715 780 845 91
	90 550 610 900 1010	93 581 640 926 1095	110 400 550 650 790	110 660 510 980 1250	110 690 760 1100 1300	120 550 800 910 1110	On request	On request	On request	On request	On request	On request	On request	On request
	110 600 630 905 1030	122 632 665 926 1095	140 420 550 720 880	140 700 750 1010 1220	145 750 790 1100 1300	180 630 870 970 1170	On request	On request	On request	On request	On request	On request	On request	On request
	100 140 - 200 310 410 280 300	105 152 - 211 328 438 286 312	140 210 300 320 340 450 320 360	120 180 - 240 380 500 330 370	125 180 - 250 390 520 340 370	180 230 350 410 480 580 410 480	273 373 - 633 673 723 633 673	302 412 - 702 752 802 702 752	On request	331 451 - 771 821 881 771 821	On request	360 490 - 840 910 970 830 910	452 306 - 1002 1052 1142 1002 1052	525 715 - 1225 1285 1345 1225 1285
	On request	131 177 - 236 354 463 312 337	170 230 320 440 480 540 440 480	On request	155 210 - 280 420 550 370 400	180 250 380 460 510 610 460 510	On request	On request	On request	On request	On request	On request	On request	On request
	- -	486 458	- -	- -	564 531	- -	624 587	685 643	- -	752 705	- -	875 821	1055 995	1217 1148
	180 250	185 261	220 270	220 300	220 310	300 360	346 406	402 472	420 480	429 495	450 530	458 540	582 662	702 792
	- -	340 370	370 410	- -	390 420	410 450	- -	- -	- -	- -	- -	- -	- -	- -
	180	202	230	230	240	250	405	446	530	542	580	591	707	848
	170	180	170	220	230	200	368	406	480	490	510	539	656	783
	On request	312 354 413 514	320 380 460 520	360 400 480 600	370 420 490 610	360 440 520 620	449 517 603 662	501 571 680 750	On request	560 630 759 829	On request	609 699 828 908	743 847 1002 1106	868 996 1176 1303
	305/80 509/90 712/140 -	305/80 509/95 712/140 1931/320	305/83 507/110 712/140 1424/280	305/90 507/100 710/170 -	305/90 509/100 712/180 1931/340	305/100 507/150 1322/450 -	560/264 760/282 970/299 -	560/290 760/320 970/330 -	560/305 760/330 970/350 -	560/316 760/341 970/360 -	560/320 760/350 970/380 -	- 760/369 970/389 -	- 760/441 970/463 -	- 760/512 970/538 -
	On request	300	290	350	360	490	362	400	410	429	450	458	546	633
	On request -	On request On request	1200 -	On request On request	On request On request	- -	On request On request	On request On request	On request -	On request On request	On request -	On request On request	On request On request	On request On request
	600	648	550	750	770	800	900	1000	On request	On request	On request	On request	On request	On request
	7.9	7.9	10.2	7.9	7.9	10.2	10	13	13	13	13	13	16	16
	5.1	5.1	10.2	5.1	5.1	10.2	5.1	5.1	5.1	5.1	51	5.1	5.1	5.1
	50	50	50	50	50	50	55	60	60	60	60	60	70	70

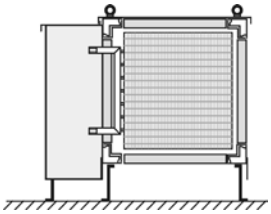
Unit version



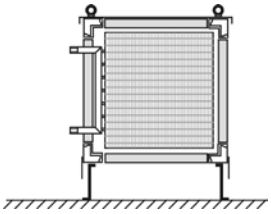
* Subject to unit design: t = min. 712 mm

Dimensions
Intake hood / discharge hood
Dimensions [mm]

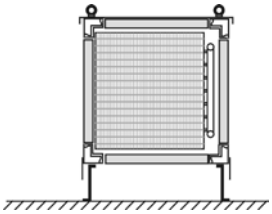
	a	b	c
KGW 21	318	668	566
KGW 43	462	668	566
KGW 64	462	973	668
KGW 85	On request		
KGW 96	678	973	770
KGW 130	678	1278	871
KGW 159	678	1583	1075
KGW 170	893	1278	871
KGW 190	678	1888	1278
KGW 210	893	1583	1075
KGW 260	On request		
KGW 270	678	1583	1075
KGW 300	On request		
KGW 320	678	1888	1278
KGW 340	893	1230	1690
KGW 370	On request		
KGW 380	893	1888	1278
KGW 430	678	1230	1690
KGW 450	893	2193	1278
KGW 510	893	2498	1481
KGW 530	On request		
KGW 600	893	2498	1481
KGW 640	On request		
KGW 680	893	2498	1481
KGW 850	893	2498	1888
KGW 1000	893	2498	1990



External heat exchanger connections in weatherproof unit porch with inspection door.
Weatherproof unit porch thermally insulated on request.
(l = subject to unit design).



Heat exchanger connections outside the casing.

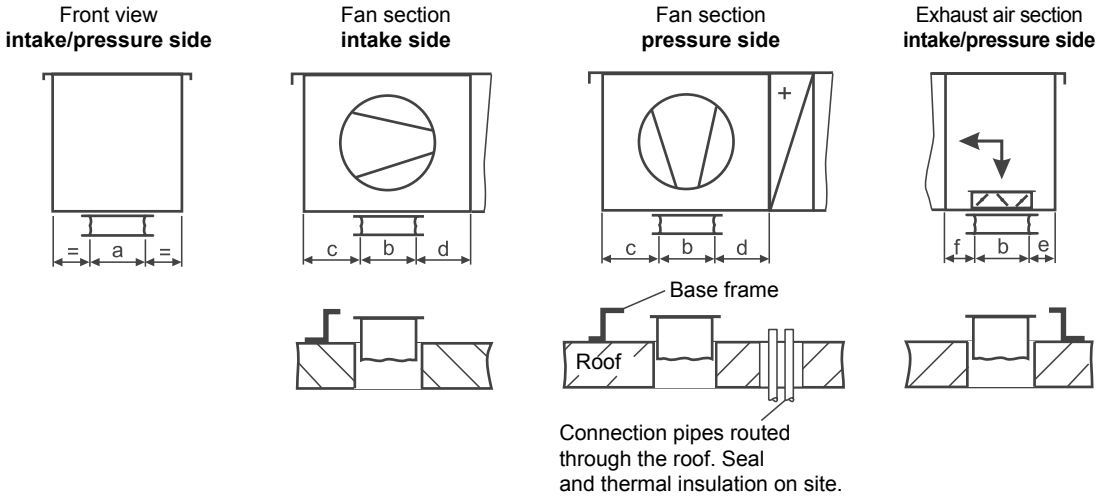


Internal heating coil connections can be made in or against the air flow direction.
Internal cooling coil connections can only be made against the air flow direction.
Connection pipes and fittings are installed in a further empty section.

Thermal insulation for the connection pipes and fittings on site.

Connection dimensions

Duct connection facing downwards (KGW); view of operating side



KG Top	Fan section								Exhaust air section			
	Intake side				Pressure side				Intake/pressure side			
	a	b	c	d	a	b	c	d	a	b	e	f
21	303	303	205	205	249	249	238	428	303	303	103	205
43	303	405	205	205	338	338	219	359	303	405	103	103
64	608	405	306	306	411	411	223	586	608	405	103	204
85	608	506	153	358	411	411	223	586	608	506	205	204
96	608	608	255	255	503	503	239	581	608	608	103	103
130	913	710	306	306	619	619	299	608	913	710	103	103
159	913	608	357	357	619	619	299	608	913	608	256	255
170	913	710	306	306	619	619	299	608	913	710	103	103
190	1218	608	357	357	619	619	299	608	1218	608	357	357
210	1218	811	306	509	765	765	355	609	1218	811	154	154
260	On request								1523	608	153	561
270	1218	811	306	509	765	765	355	609	1218	811	154	154
300	On request								1828	608	204	713
320	1523	1015	205	713	898	898	470	665	1523	1015	205	103
340	1828	608	1018	204	801	801	603	426	1828	608	204	916
370	On request								1828	811	204	510
380	1523	1015	205	713	898	898	470	665	1523	1015	205	103
430	1828	811	205	916	898	898	473	663	1828	811	204	713
450	1828	1015	485	485	898	898	486	598	1828	1015	179	179
510	1828	1523	383	383	1130	1130	601	660	1828	1218	179	179
530	On request											
600	2113	1198	546	546	1130	1130	601	660	2113	1198	190	190
640	On request											
680	2113	1198	596	596	1130	1130	601	660	2113	1198	190	190
850	2418	1808	241	241	1267	1267	649	373	2418	1401	291	291
1000	2418	1909	190	190	1267	1267	649	373	2418	1503	291	291

All dimensions are for reference; actual data subject to individual configuration.
For heating coils with internal connections, an additional empty section **must** be provided for the pipework **upstream or downstream** of the heating coil section.
Minimum length of the empty section l_{min} = 509 mm.
For cooling coils with internal connections, an additional empty section **must** be provided for the pipework **upstream of** the cooling coil section. Coil connection for the cooling coil can only be made against the air flow direction.
Minimum length of the empty section l_{min} = 509 mm.
If the base frame is not fitted to the air handling unit, all inlets/outlets inside the frame must be protected against water ingress before the air handling unit is positioned. Thermally insulate pipe outlets.

The decision as to which fan model is used in operation is influenced mainly by the application and associated requirements, such as pressure increase, space requirement, flow rate, partial load characteristics, hygiene, explosion protection, etc.
Wolf offers the ideal drive system for every application.

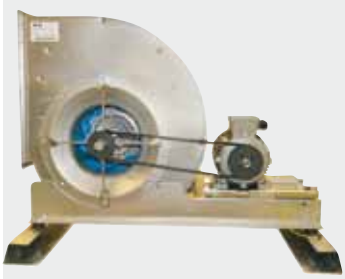
Fans with EC motor

- Energy efficiency category IE4 (IEC 60034-30)
- 100 % controllability
- Low noise generation
- Highly efficient even in the partial load range
- Easy to clean due to unimpeded access to all components
- High operational reliability and easy maintenance thanks to direct drive
- No EMC issues as the control PCB is integrated into the motor
- Very long service life
- High control accuracy due to flow rate measuring device using calibrated intake nozzle
- Extremely high system efficiency

Free-running impeller

- Energy efficient operation due to demand-dependent matching of the air volume using the inverter.
- Easy to clean due to unimpeded access to all components
- High operational reliability and easy maintenance thanks to direct drive
- High control accuracy due to flow rate measuring device using calibrated intake nozzle

Fans with spiral housing and V-belt drive



- High fan efficiency levels
- High pressure increases possible
- Spare parts available quickly
- Drive with Taper Lock wedge disc system
- Optional:
    - Motor encapsulation
    - Flat belt drive
    - Condensate drain connector
    - Inspection cover

ATEX

- Air handling units can be supplied as ATEX versions for explosion protection zones 1 and 2
- TÜV Süd certification with EC certificate of conformity for both versions

Encapsulated motor

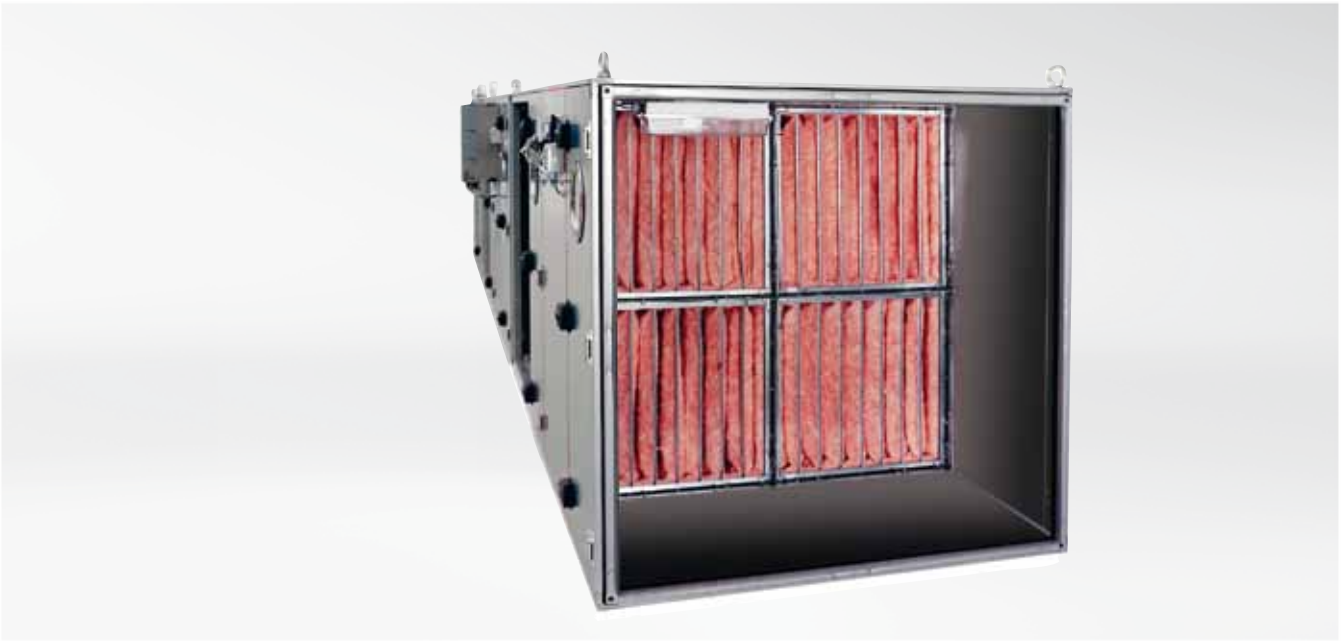
- Motor encapsulated with external ventilation
- Motor located in housing cooled with fresh air Suitable for conveying air with raised temperature, e.g. extract air from the kitchen. (Observe unit layout acc. to VDI 2052)

DIN 1946 / T4 (08/2012)

- For the highest hygiene requirements
- Motor/fan unit coated, easy to clean and 100 % controllable
- Motor/fan unit available with either EC or standard motor

Motor removal apparatus

- Crane rail to facilitate the removal and re-installation of even the heaviest motors for service and repair. Makes replacement possible in the shortest time.



Wolf offers optimised filter systems with low operating costs for every application.

- With Wolf air handling units, the entire internal cross-section is always fully utilised
- Filters can be removed at the side with quick-release mechanism, which reduces investment costs as units can be shorter in length
- Maintenance costs are reduced due to filter change at the side

Filters with a bag design

Energy optimised bag filter

- Bags always vertical
- Very short filter bags
- Special V-shape of the bags prevents contact with the floor
- Available from stock in Mainburg
- Various filter grades available
- Large filter surface area compliant with VDI 6022
- Stable metal frame, temperature-resistant from -30 to +90 °C
- Very high number of bags

Bag filter, long

- Bags always vertical
- Very long service life thanks to large filter surface area
- Low pressure drop
- Available from stock in Mainburg
- Various filter grades available
- Stable metal frame, temperature-resistant from -30 to +90 °C

Compact filter

Panel filter

- Compact filter with high efficiency
- Frame made from plastic
- Fibreglass medium
- Can be incinerated
- Low insertion depth; width of filter frame 48/96 mm

V filter

- Compact filter with extremely high dust storage capacity
- Low energy costs
- Fibreglass medium
- Can be incinerated
- Very long service life

Filters for special applications

Grease filter

- Metal filter for filtration of grease or oil mist
- Stainless steel frame
- Stainless steel medium
- Can be cleaned
- Up to 95 % filtration efficiency on oil mist and grease aerosols
- Also effective against dust, sand, paint, etc.

HEPA filter

- HEPA filter H 13 to EN 779
- Used in the fields of industry, research, medicine, pharmaceuticals and nuclear technology
- Filtration of airborne aerosols, viruses and bacteria
- Excellent tightness due to special mounting frame

Active charcoal filter

- For filtration of odours from organic and inorganic gases
- Renewable
- Low pressure drop
- Easy installation
- Pre-filtering with F7 filter grade in accordance with EN 779 is recommended

Silencers

Function

Wolf splitter silencer units are suitable for use in air handling units in accordance with VDI 6022, DIN 1946 T2 and T4, RLT 01 and VDI 3803.

Silencer units are designed to minimise transmission to the ductwork of sound generated by the fan unit and from flow noise. By using different silencer types and splitter widths, we can optimally adjust sound emissions to the duct system to customer requirements, whilst keeping the pressure drop low.

- Abrasion-resistant up to 20 m/s thanks to high grade glass fibre cover
- High biosolubility
- Impregnated to be rot-resistant and moisture-repellent
- Non-combustible to DIN 4102 A2
- Max. operating temperature up to 100 °C
- Low operating costs due to flow-optimised, profiled splitter frame

Removable splitters

- Project-specific sound data in accordance with the TÜV-tested Wolf configuration program.
- Gap/splitter ratio optimally matched to pressure drop and soundproofing thanks to the use of varying splitter widths
- Hygienically optimised due to: - Floor area free of vertical gaps
  - Easily cleanable splitters
  - Easily removable splitters

Insertion loss DE in dB(A)

	Octave band (Hz)							
Type	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1	3	6	15	16	18	13	10	9
11	4	8	18	21	23	17	13	14
2	3	8	19	20	23	17	12	10
12	5	10	22	24	28	21	15	15
3	4	11	25	26	29	21	14	12
13	7	3	29	30	36	25	18	18
4	5	13	29	30	33	23	15	13
14	9	16	34	34	41	27	19	19

If 2 silencers are connected in series: DE = DE1 + DE2 - 3 dB(A)

Heat exchangers
(heating/cooling coils)

All heating and cooling coils meet the requirements of VDI 6022 and must be thoroughly cleaned. They are accessible from both sides and can be removed. Whether it is made from copper/aluminium, galvanised steel or copper/copper, every heat exchanger is configured specially for your application.

Options

- Hot-dip galvanised
- Epoxy-coated

Mist eliminator

The position of the mist eliminator behind the air cooling coil protects system components against rot.

For cleaning, mist eliminators can be removed easily and completely dismantled.

Mist eliminators are required for cooling coils and direct evaporators from an air velocity above 2 m/s.

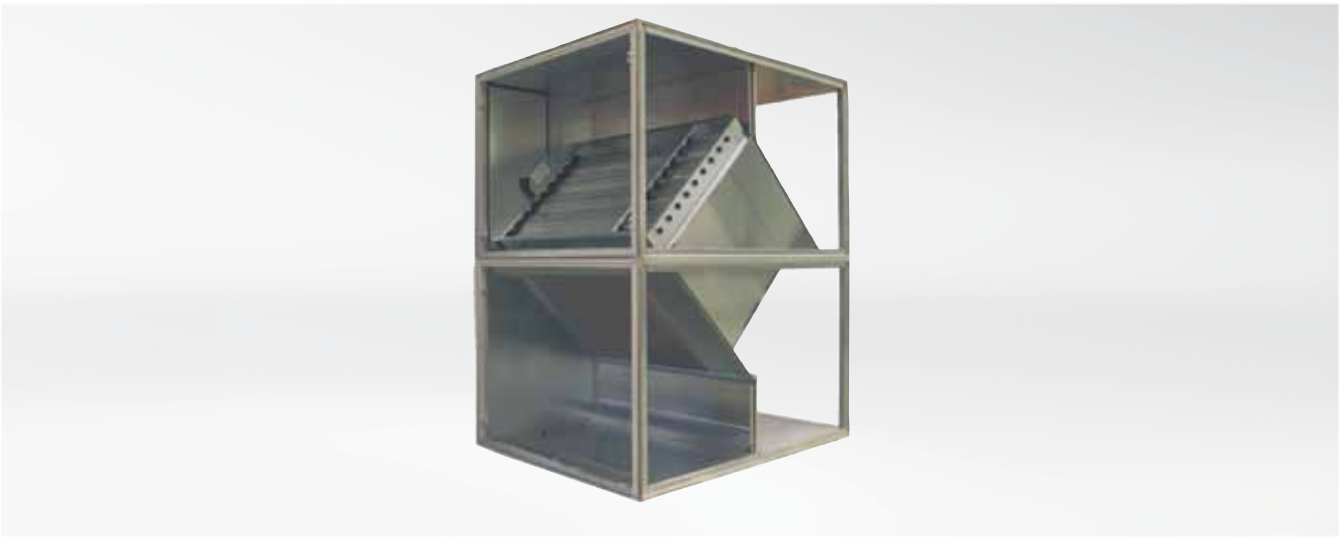
Quick-draining 3D pan

Condensate is created wherever air is cooled or humidified. It must be removed quickly and reliably.

The Wolf 3D pan, made from aluminium or stainless steel, has a three-dimensional fall, which reliably prevents water residues and the associated hygiene risks from bacterial growth.

Options

- Siphon, loose
- Siphon with heating option



Not only does it make ecological and topical sense to recycle heating or cooling energy, it is also extremely worthwhile for the operator and investor of air handling systems from a business point of view.
Wolf air handling technology offers architects, design engineers and operators a variety of heat recovery systems.

Heat recovery systems:
- Reduce operating costs
- Lower the primary energy consumption
- Lead to lower investment costs for heat sources, cooling sources, pipework and pumps

Crossflow plate heat exchanger

Heat recovery systems from Wolf air handling technology at a glance:

Function description

The hot and cold air are channelled past each other in the crossflow. Energy is recovered through the transfer of the hot/cold air flows. The air flows are completely separated from each other by aluminium panels.

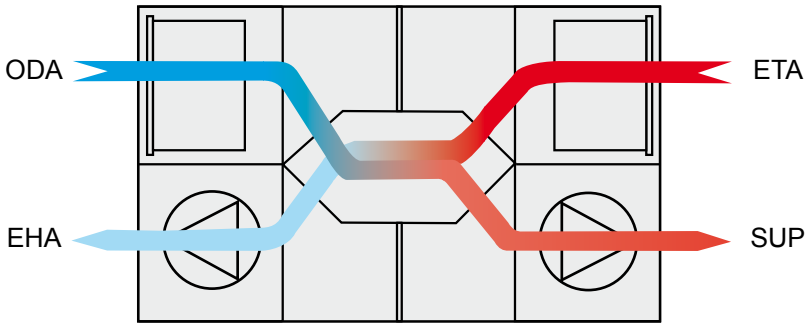
Optional:

Integral recirculation air damper

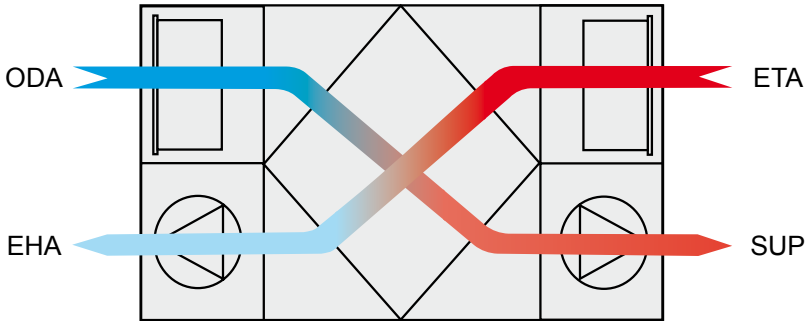
Benefits
- Temperature efficiency up to 70 % dry
- No moving parts
- Practically maintenance-free
- No mixing of supply air and extract air
- Summer bypass possible via integral bypass
- Excellent cost/benefit ratio and space factor for small and medium-sized units
- Sensible heat recovery only (moisture is extracted)
- Suitable for adiabatic cooling

Countercurrent plate heat exchanger

Benefits
- Efficiency up to 90 %
- No moving parts
- Practically maintenance-free
- No moisture transfer
- No mixing of supply air and extract air
- Compact, efficient and economically ideal solution for small and medium-sized air volumes
- Frost protection function via integral bypass
- Summer bypass possible via integral bypass



Highly efficient KGXD



Thermal wheel heat exchanger

Function description

Rotors suitable for heating and cooling mode.

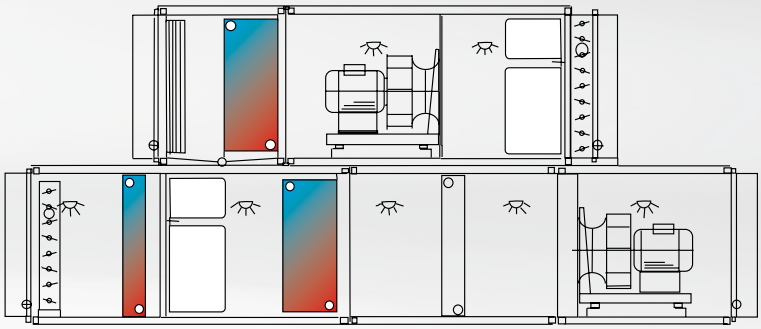
The rotating accumulator mass absorbs the energy from the (hot) extract air flow and transfers it to the supply air flow.

Benefits

- Temperature efficiency level up to approx. 80 %
- Option for moisture transfer
- Easy to service
- Space saving due to short design
- Low pressure drop
- Optimum economic viability at higher air volumes
- Very low space requirement
- Self-cleaning effect thanks to countercurrent operation
- Latent and sensible energy recovery possible
- Usually the most economical solution for average and high air volumes

Optional

- Sorption rotor
- Enthalpy rotor
- Control unit for output optimisation, e.g. summer and winter mode
- Purging chamber



Run-around coil system

Benefits

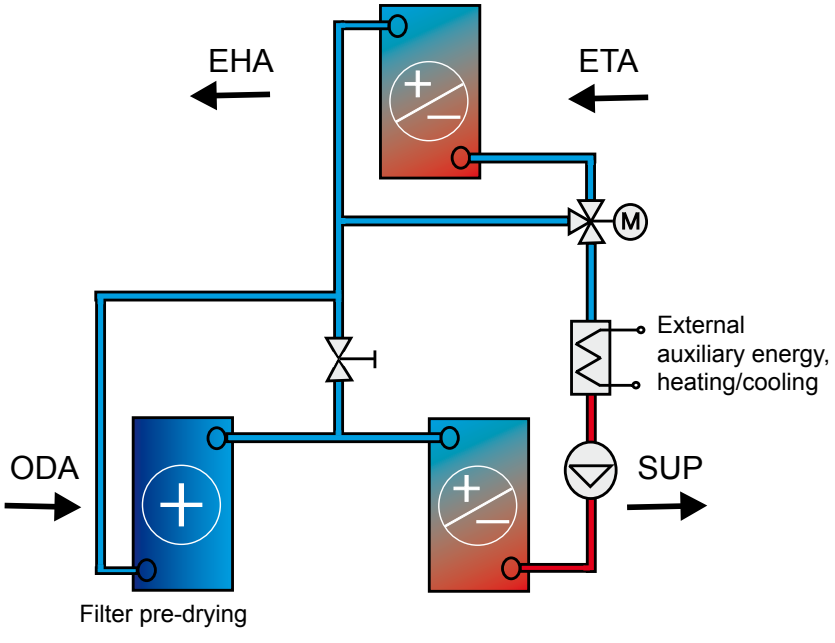
- Temperature efficiency up to approx. 70 % possible, subject to version
- Extract air and outdoor air completely separated from each other (compliant with DIN 1946 TH)
- Thanks to the special construction, it is not possible for contaminated extract air to be transferred into the supply air
- Ideal for retrofitting in older systems
- If auxiliary energy is available on site, extended heating (/cooling) is possible, so the reheating coil may not be necessary

Function diagram

Energy is recovered by being transferred to the heat exchanger in the extract air flow. The heated/cooled transfer medium then heats/cools the heat exchanger in the supply air flow and transfers its energy to this air flow.

The run-around coil system enables an external auxiliary energy source to be integrated, to temper the supply air.

In addition, a preheater coil can be integrated into the system for filter pre-drying.



Air humidification is extremely important in air handling systems.
When the relative humidity in a room is within a comfortable range, the productivity of the occupants will be at its best. At the same time, their vulnerability to catching illnesses will be at its lowest.
In order to prevent the air humidification itself becoming a source of disease, Wolf ensures that the design of its humidification systems is compliant with professional standards.

Overview of Wolf air humidifiers

High pressure humidifier

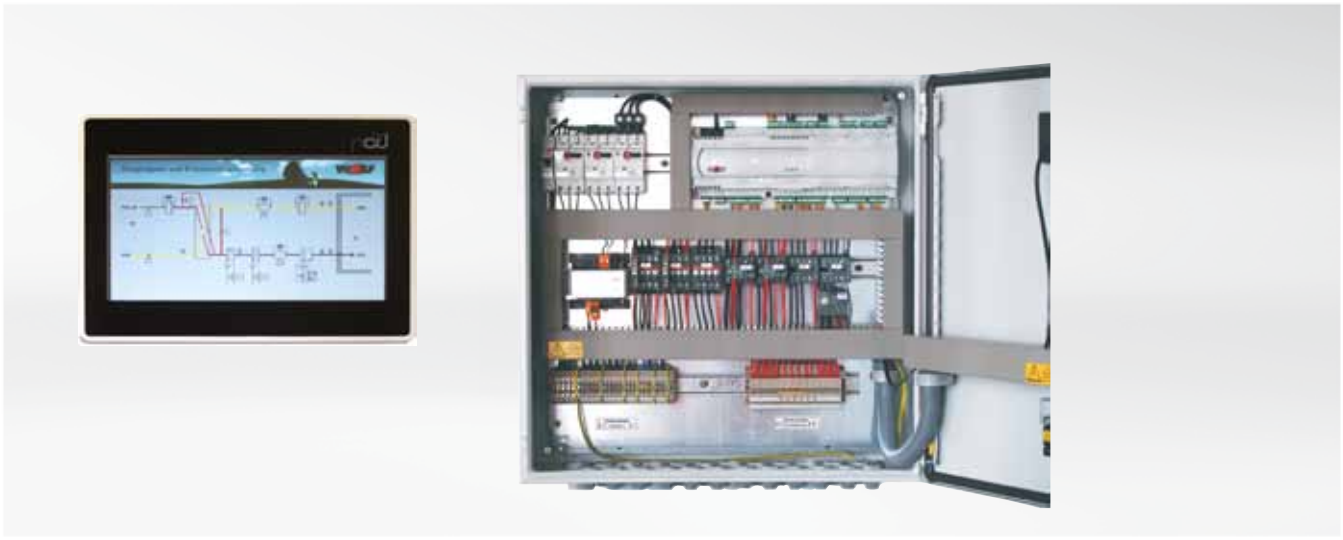
- Extremely hygienic as there is no circulating water (only osmosis water)
- High humidifier output up to 90 % relative humidity, subject to demand
- Variable humidifier control via variable speed humidifier pumps
- Complete **drainage** to the side through 3D pan
- Internal casing / 3D pan made from **stainless steel**
- Good accessibility via large inspection door to facilitate maintenance with inspection port that can be blacked out

Steam humidifier

- Extremely hygienic due to sterile steam
- Easy to service thanks to large inspection door
- Highly reliable
- 3D pan included as standard

Contact humidifier

- Suitable for adiabatic extract air cooling
- For circulating water or fresh water
- Complete drainage through 3D pan made from aluminium or stainless steel
- Internal casing made from stainless steel
- Good accessibility via large inspection doors to facilitate maintenance with inspection port that can be blacked out



Air handling technology is constantly becoming more specialised and the demand for compatibility between air handling units and their associated control units is becoming ever more important. The Wolf control system therefore offers a customer-specific solution, whether it is integrated into the unit to save space or provided as a separate control panel. The task of the control unit is to regulate air handling systems with a minimum of energy costs and operating effort, and to achieve an optimum level of operational reliability, economic viability and convenience.

Control functions

- Weather-compensated set value control
- Control of indoor air, extract air, supply air, temperature and humidity as a cascade with minimum and maximum limits (PI controller)
- Supply air temperature and humidity control (PI controller)
- Sequences for temperature and humidity (mixer dampers, heating coil, cooling coil, heat recovery, humidifier)
- Adaptation and time optimisation
- CO2 control

Control and monitoring function

- Time switch program
- Filter monitor
- Frost protection
- Fire damper monitoring and signalling
- V-belt/fan monitoring
- Free night cooling
- Refrigeration control
- Heating control

Unit control panel

- Space saving integration of all power and MSR assemblies into the unit
- Individual and flexible adaptation to the casing geometry

Installation

- EMC- compliant installation on or in the unit
- Thermal motor protection
- Display and control of air volume, power consumption, etc.

The ATEX Directive describes the measures required to protect against explosion. It obliges both installer and operator to ensure the protection of people and property against the risk of explosion. Wolf Mainburg is one of the few manufacturers of air handling units that has experience with ATEX units in a variety of applications.

Applications for ATEX units

- Paint shops
- Petrol stations
- Production facilities with hazardous substances
- Pharmacies

A risk analysis using a checklist specially designed by Wolf helps the design engineer or property developer with the classification of air handling units in accordance with explosion prevention regulations.

Check list (for sales manager to classify corr. to the explosion protection guideline 94/9/EG)
Air-handling units KG / KGW Top in eexplosion proof ATEX - design

customer:		unit size:		version:	KGT ☐ inside installationg / KGTW ☐ outside installation
project:		position:		no.:	

unit type:

supply air unit ☐ **exhaust air unit** ☐

combined supply and exhaust air unit (only exhaust air unit in explosion proof design) ☐
supply air unit protected by air tight and automatic shut-off damper. **No** return air damper.
heat recovery: only possible with KVS. alternatively „only zone 2": KGX/KGXD on customer confirmation (see below)

combined supply and exhaust air (supply and exhaust air unit in explosion proof design) ☐
return air damper: zone 2: return air damper possible zone 1: no return air damper possible
heat recovery: zone 2: KVS / RWT / KGX/KGXD possible zone 1: only KVS possible

design:	unit **inside**:	**zone 2** ☐ classification: **II 3G c IIB**		**no zone** ☐
		zone 1 ☐ classification: **II 2G c IIB**		
PLEASE NOTE: Atmosphere inside and outside the unit has to be indicated!	temperature class: ignition temperature :	T1 ☐ > 450 °C	T2 ☐ > 300 °C	T3 ☐ > 200 °C	T4 ☐ > 135 °C
	unit **outside**:	**zone 2** ☐ classification: **II 3G c IIB**		**no zone** ☐
		zone 1 ☐ classification: **II 2G c IIB**		
	temperature class:	T1 ☐	T2 ☐	T3 ☐	T4 ☐

Wolf offers the KG Top air handling unit with certified hygiene quality to DIN 1946 T3 for use in hospitals, clean rooms and the food processing industry.

Hygiene components with special properties

- Fan in EC design (alternatively free-running impeller), easy to clean thanks to hygienic coating, cables kept short and routed to the outside, motor variably controllable

- Airtight louvre dampers, internal in accordance with DIN 1946 T4, also in tightness categories 2 and 4 in accordance with DIN 1759, can be designed with double lip, gears outside the air flow
- Servomotor designed as spring return motor; if there is a power failure, damper closes automatically due to non-electrical spring return

- Filter with clip design; free of gaps to prevent filter bypass leakage; at least 10 m² filter surface area per m² unit cross-section. Filter frame is corrosion-resistant thanks to foam seal; stainless steel floor is easy to clean

- Heating coil heat exchanger (Cu/Al)
  Frame coated or made from stainless steel,
  distance between fins > 2 mm

  Cooling coil heat exchanger (Cu/Al)
  Frame made from stainless steel, receiver from copper,
  distance between fins > 2.5 mm

- Thermally insulated condensate pan made from stainless steel with fall on all sides for complete drainage

Wolf combines individual air handling units with integral refrigeration technology to form complete units. The entire units come from a single supplier and the delivery and warranty limits are clearly defined. All refrigeration components are integrated into the air handling unit to save space. Thanks to the modular design of Wolf air handling units, the position of all function components is flexible. There is an individual and optimal solution for every single application.

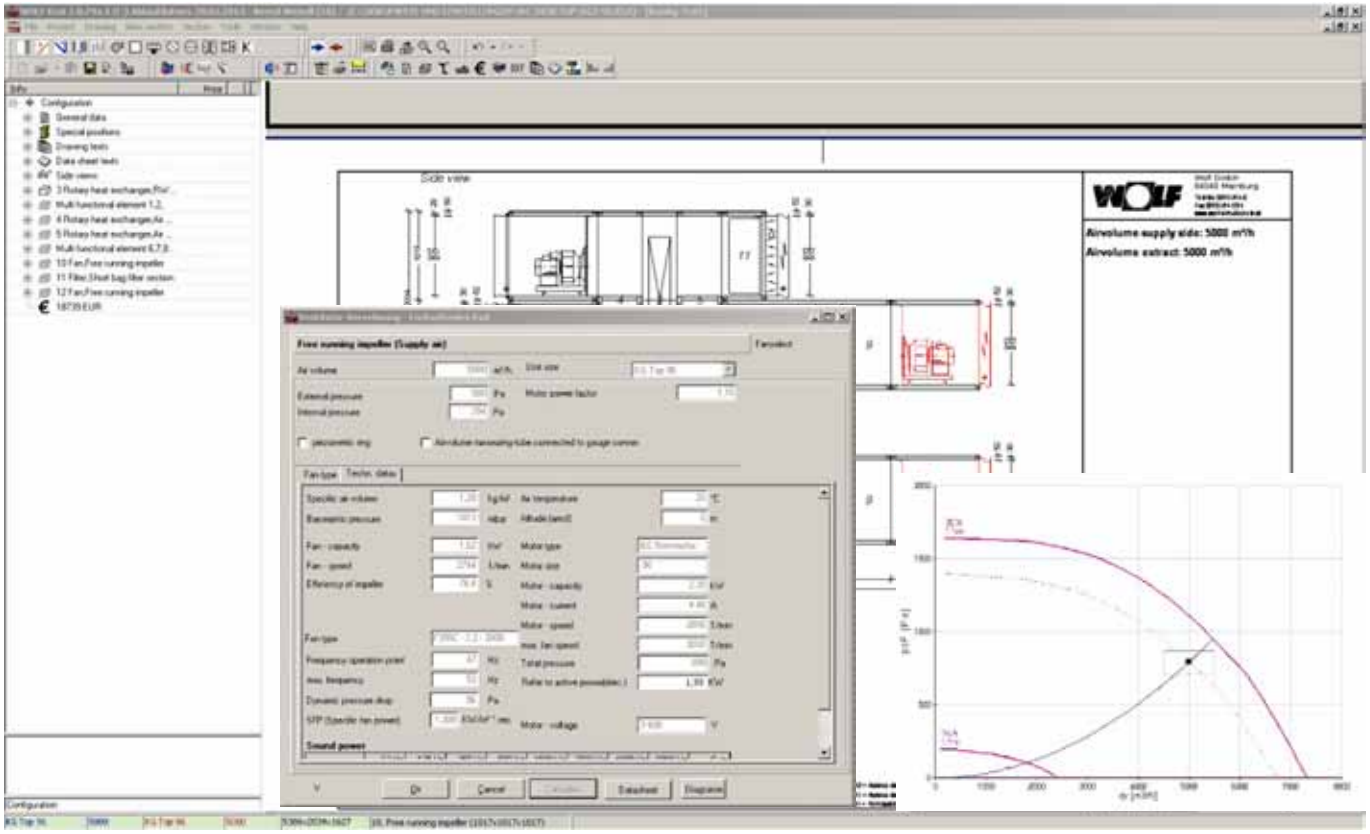
Refrigeration components

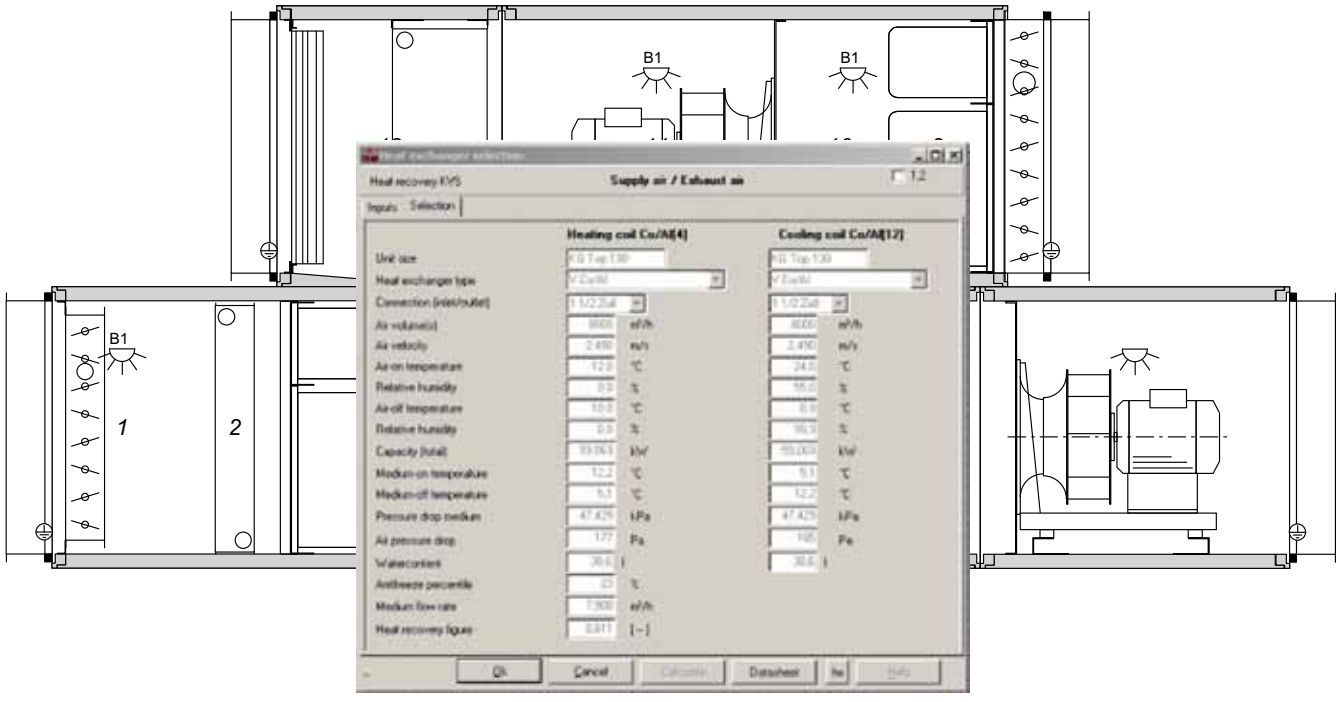
- Digital scroll systems with output-dependent control
- Piston compressor sets with cylinder shutdown
- Highly efficient inverter-controlled compressor sets
- Multi stage composite systems
- Heat exchanger for refrigerant pump or other heat pump (option)
- Integral or external condenser

Benefits of integral refrigeration technology

- High operational reliability
- Stand-alone
- Cooling capacity and medium temperature matched to demand
- Suitable for heat recovery in winter
- Synergy effect when dehumidifying/reheating and utilising the heat of condensation
- No distribution or standby losses

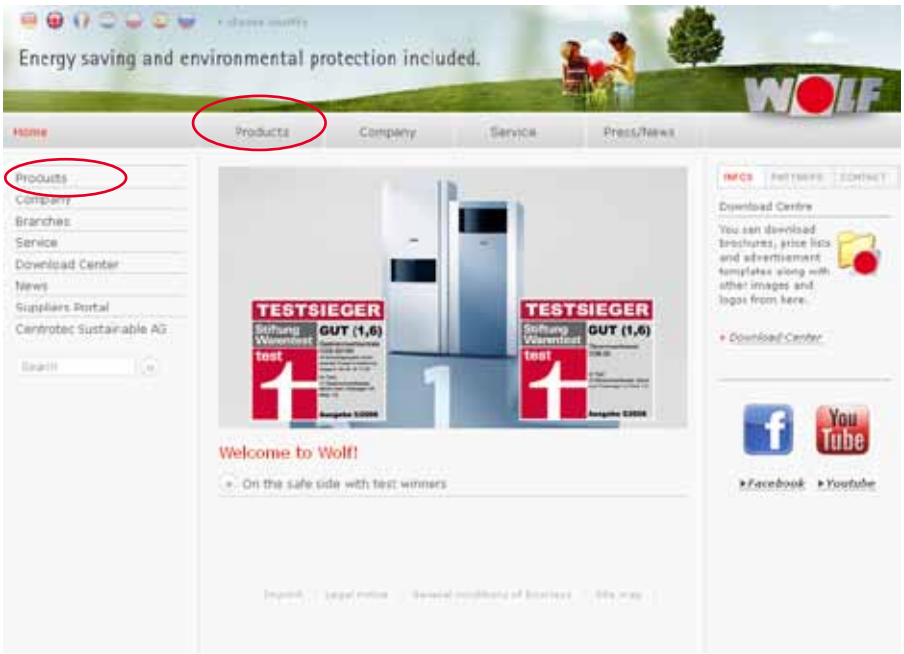
Sample illustrations from the Wolf configuration software for designing KG Top air handling units

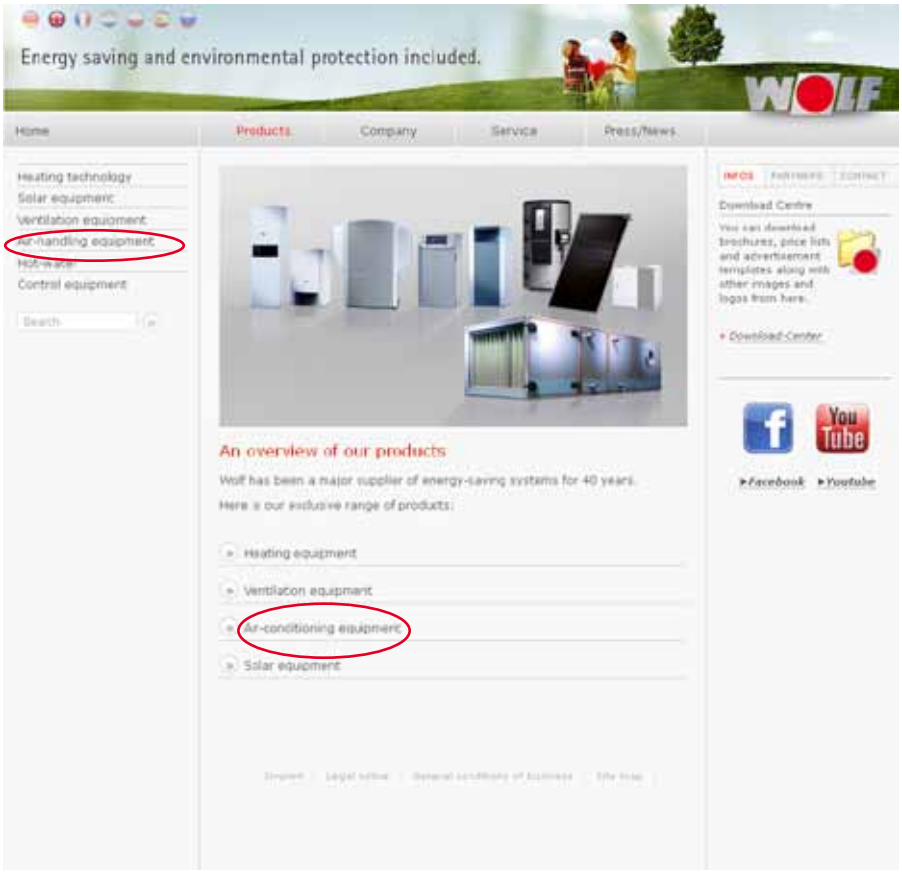




Further information on Wolf air handling units and other system components for air handling, ventilation and heating can be found on our homepage:

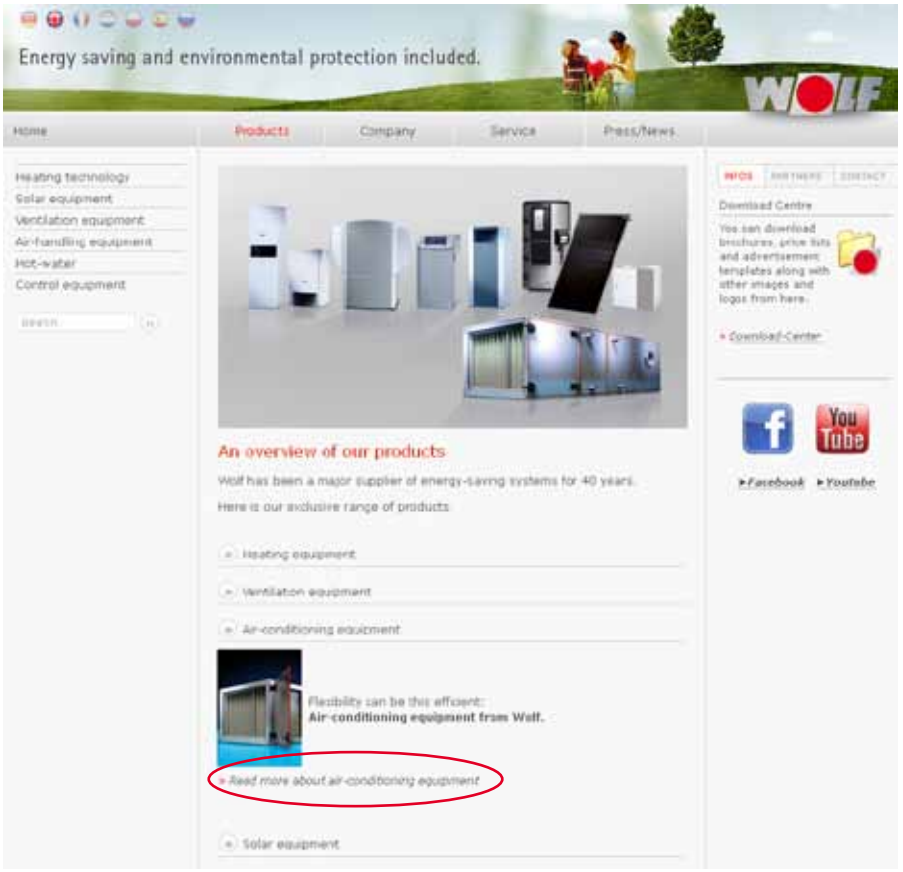
www.wolf-heiztechnik.de

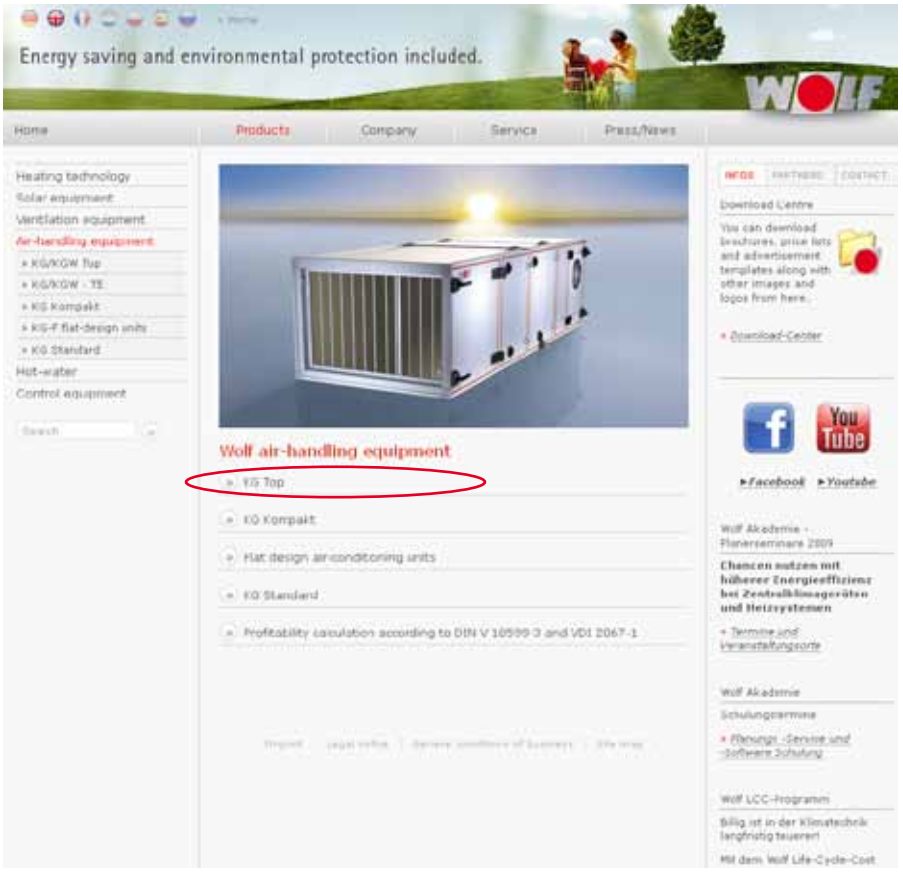


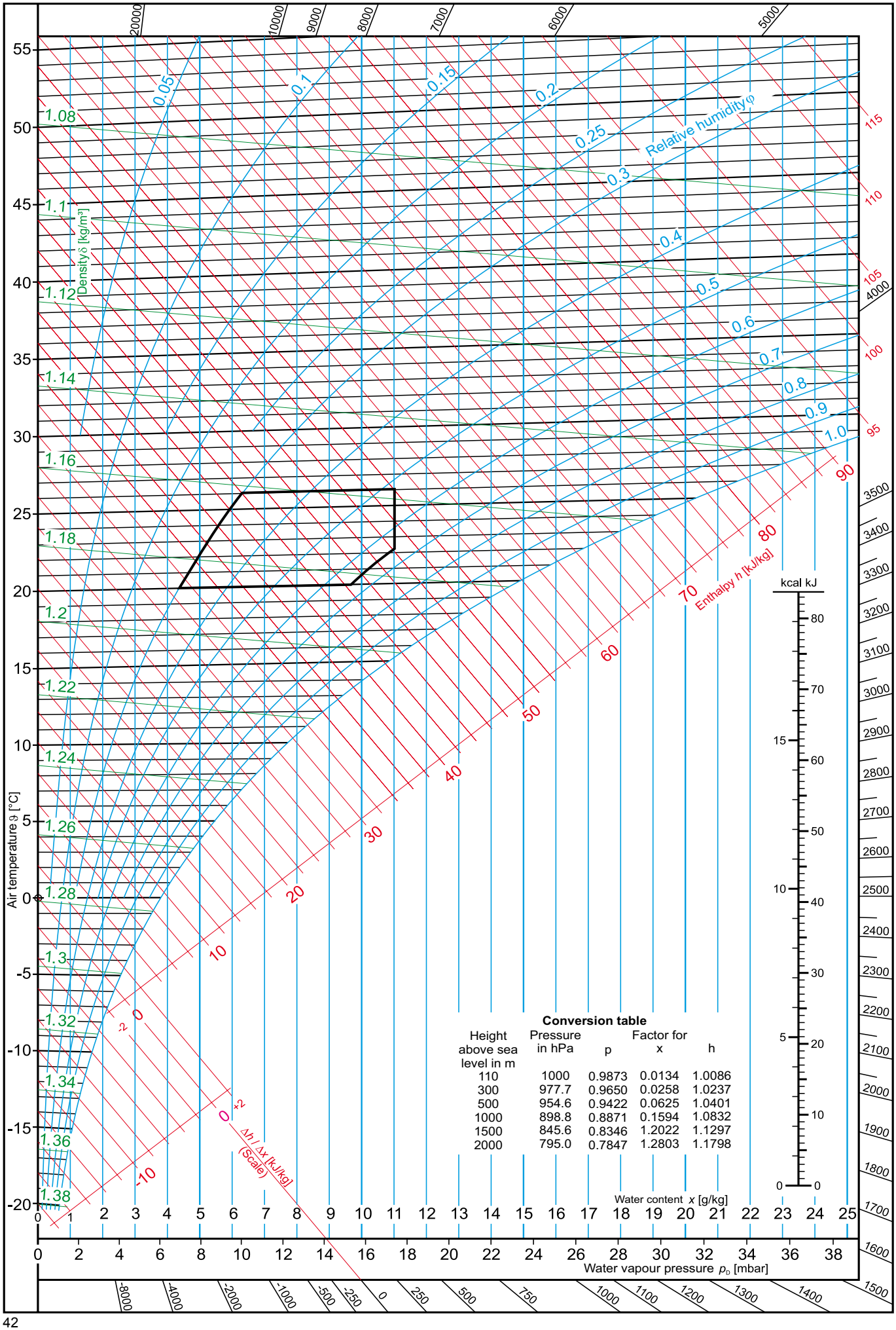


Homepage

KG/KGW Top






Relative humidity φ
0.05
0.1
0.15
0.2
0.25
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Density ϑ [kg/m³]
1.08
1.1
1.12
1.14
1.16
1.18
1.2
1.22
1.24
1.26
1.28
1.3
1.32
1.34
1.36
1.38
Enthalpy h [kJ/kg]
Air temperature ϑ [°C]
Water content x [g/kg]
Water vapour pressure p_D [mbar]
Δh / Δx [kJ/kg] (Scale)
kcal kJ
Conversion table
Height above sea level in m
Pressure in hPa
Factor for
p
x
h
110 1000 0.9873 0.0134 1.0086
300 977.7 0.9650 0.0258 1.0237
500 954.6 0.9422 0.0625 1.0401
1000 898.8 0.8871 0.1594 1.0832
1500 845.6 0.8346 1.2022 1.1297
2000 795.0 0.7847 1.2803 1.1798

The extensive equipment range of the system supplier Wolf offers the ideal solution for commercial and industrial buildings, in new build and modernisation projects alike. The range of Wolf control units can meet any demand for heating convenience. All equipment is easy to operate and works with high energy efficiency and reliability. Photovoltaic and solar thermal systems can be quickly integrated into existing systems. Wolf equipment is easily and quickly installed and maintained.

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