



Room-based solutions,
cooling capacity > 50 kW

CoolW@ll

Energy efficiency and maximum capacity are no contradiction. And certainly not with the CoolW@ll.

Cooling capacity > 50 kW



We at Weiss Klimatechnik really know the needs of our customers to cool steadily growing data centres with low energy and space as possible. And for this reason we broke new ground when developing the CoolW@ll. The complete height and width of the technical room is used for air-conditioning by application of large surface heat exchangers - which is so easy. And so brilliant.





Perfect air-conditioning for your computer centre

The key idea of the surface cooling system is to move in a wall with cooling and filter module from the bottom to ceiling so that the complete surface of this wall can be utilized by heat exchanger modules - with this the infrastructure can be scaled in a unique way and can be modulated according to the local conditions.

A reliable principle

The CoolW@ll works in the same manner as an air-conditioning cabinet, with fans for air conveyance and a heat exchanger to cool the air. Whereas any air-conditioner unit can only exploit the heat exchange surface in the device itself, the CoolW@ll utilises the complete height and width of the computer room to cool the air. The entire IT room thus becomes an air-cooling unit.

Adequate output for every need

The specific cooling capacity in comparison with precision air-conditioning units can be increased by more than 40% due to the significantly expanded cooler surface and the flexible air volume flow with fans in the false floor.

Consequently, the output of the CoolW@ll increases flexibly relative to the growing cooling demands of computer rooms. This ensures the achievement of much enhanced scalability when compared to conventional precision air-conditioners.

Criteria	deltaclima®	CoolW@ll
Cooling capacity > 50 kW		✓
Low space		✓
Cold chamber concept		✓
Innovative system		✓
Micro-scalability		✓

A sensible investment for your company

Save energy

Cooling of the computer room can be precisely controlled through the design of the heat exchanger and number of fans. The drastic reduction in internal pressure losses is achieved as a consequence, resulting in a considerable drop in energy consumption when compared to air-conditioning cabinets. And the larger the cooling capacity required, the greater the saving achieved. Investment costs are, in any case, lower than the new installation of precision air-conditioner units.

Create the space you need

The complete dispensing with air-conditioning cabinets means that considerably more space is available, and capacities can also be expanded without difficulty in existing space concepts. The outlay for the installation of the CoolW@ll is roughly equivalent to that of conventional air-conditioner units.

The CoolW@ll principle

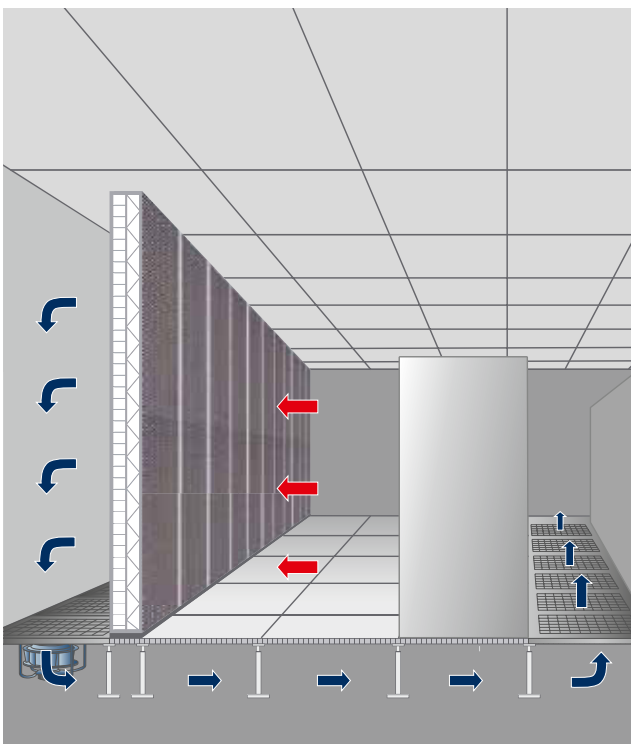
The CoolW@ll consists of a wall with a cooling and filter module encompassing a separate control and special energy-saving EC fans. The fans ensure that the required



air flow is established behind the cooling wall. They force and filter the hot air out of the computer room through the cooling wall, conveying the cold air through the double floor back to the racks. One to its flexibility the CoolW@ll can also be used in reverse operation so that the air flow dissipates not air via the false floor and supplier cold air via the cooling wall.

The generous heat exchange surfaces mean that higher water temperatures can also be used. This enables the extended exploitation of external air during operation with indirect free cooling.

The CoolW@ll can be integrated in the existing cold water mains network without difficulty.



CoolW@ll - Advantages at a glance

- Most energy-efficient product of its class
- Modular construction with matching individual elements
- Unique Scalable infrastructure
- Maximum operating and investment security
- Flexible space architecture
- Minimum space requirement
- Future security by great extensibility
- Simple insertion

The CoolW@ll. Saves space and energy.

An exemplary calculation based on a computer room with an area of 960 m² was made to compare the performance of precision air-conditioner units with the deltaclima CoolWall®.

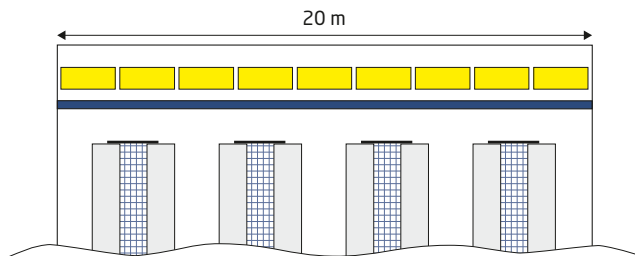
In order to compare the capacity of precision air-conditioning units with the CoolW@ll, an example calculation based in a data centre of 500 m² has been drawn up.

Nine precision air-conditioning units with maintenance corridor resp. one CoolW@ll and 22 fans in the false floor are installed in a data centre - width 20 m, length 25 m - on the front side of 20 m. The heat transfer media are supplied with cooling water, a supply temperature of 12 °C and a return temperature of 18 °C. The air inlet temperature into the heat transfer media is 27 °C. The cooling capacity for both examples was calculated and for plant operation it was assumed that one unit each is provided as a reserve.

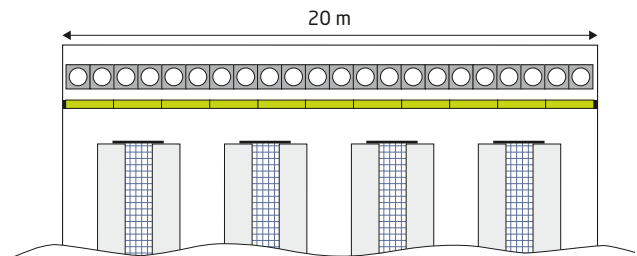
The result:

The CoolW@ll achieves a higher cooling capacity (>40%) than usual precision air-conditioning units (with high-efficiency coolers) at the same room space due to the higher heat exchanger surface. The CoolW@ll is able to dissipate about 2,0 kW each m² room space whereas the precision air-conditioning units manage almost 1,4 kW.

Version: precision air-conditioner Units



Version: CoolW@ll



Specific capacities dissipated: 701 kW/500 m² = 1.4 kW/m²

Specific capacities dissipated: 998 kW/500 m² = 2 kW/m²

Series		Circulating Air Type A 2 Fans	Weiss CoolW@ll 300.4 CW 18.3 R9 2 Fans
Number of units	Qty	(8+1)	(10+1)
Number of operating units in normal operation	Qty	8	10
Air quantity per unit	m ³ /h	24.000	29.000
External pressing	Pa	50	50
Chilled water supply / return	°C	12/18	12/18
Return water temperature	°C	27	27
Cooling capacity per unit	kW	91,4	104,0
Power consumption of fans each unit	kW	3,8	4,2
Useful cooling capacity each room	kW	701	998
Power increase each room			+297 kW = 42%

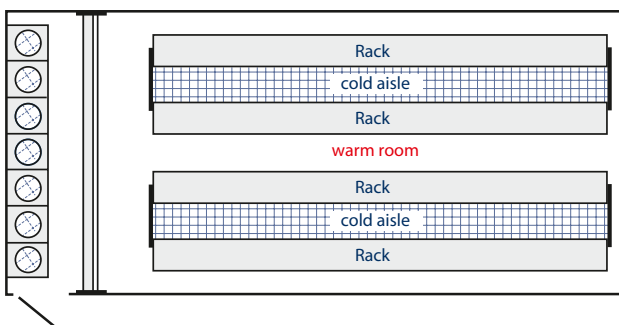
We reserve the right to make technical improvements.

Change your technical room into a cooling unit. Extremely scalable and flexible. Just tailored to your needs.

The CoolW@ll can be provided in all conceivable dimensions and variations, f. ex. on one side, two sides, in the middle or across the corner. Thus it can be adapted extremely flexible to each room architecture. The cooling surface which - in comparison with classic air-conditioning units - can be extended at any time and the flexibly adjustable air volume flow with the fans in the false floor enables a maximum adaptation of the cooling capacity. Beyond, the new installation of a CoolW@ll is less expensive than the installation of new precision air-conditioning units.

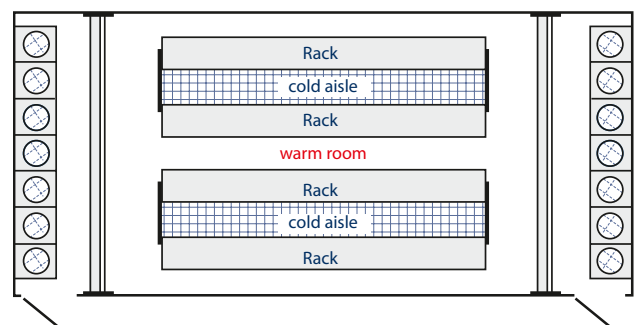
The cooling surfaces of the CoolW@ll consist of modular building components in two sizes (2.400 x 1200 mm und 2.400 x 1.800 mm) so that each computer room can be equipped over the complete wall surface, Independent of the room size.

Single-sided installation



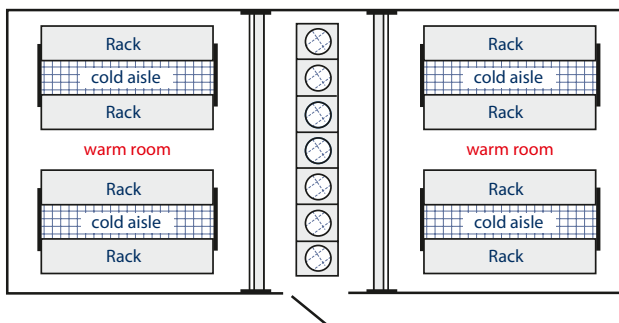
The computer room is supplied via a CoolW@ll at the end wall.

Double-sided installation



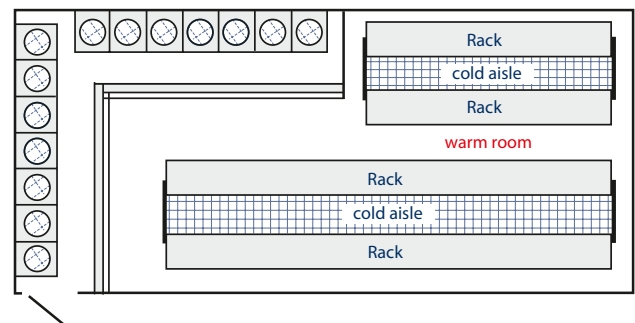
The computer room is supplied via two CoolW@ll units at both end walls.

Central installation



Two computer rooms are supplied simultaneously via two CoolW@ll units separated from each other.

Corner installation



A computer room can also be supplied by two CoolW@ll units located in the corners if the end wall on its own is too narrow.

Energy comparison

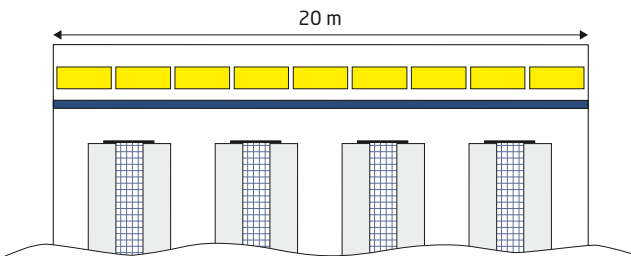
Initial situation:

- Expansion of a data centre area of 500m² each
- Heat load each room: 700 kW
- Partition wall between infrastructure and IT area

Operating conditions:

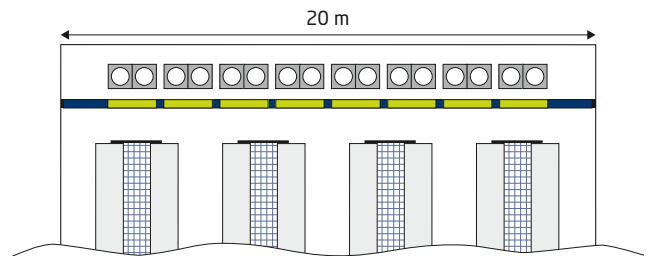
- Return air: 27 °C /30 % r. h.
- Cold water supply | return : 12/18 °C
- External pressure: 50 Pa
- Filter class: G4
- Redundancy: min. n+1
- Running Redundancy

Version 8+1



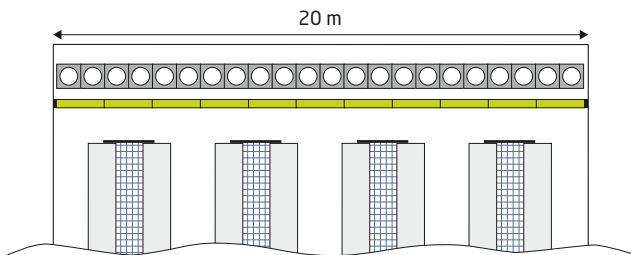
Circulating air-conditioning units with fans be low floor level, enlargement not possible.

Version 7+1



With CoolW@all design with min. space requirements the energy costs are lowered by 17 %, the Installation place is smaller by 22 % (with same benefit cooling capacity), lower investment costs, and enlargement is possible at any time.

Version 7+4



Maximum CoolW@all placement, energy costs lowered by 55 % (with same benefit cooling capacity) or 42 % more cooling capacity.

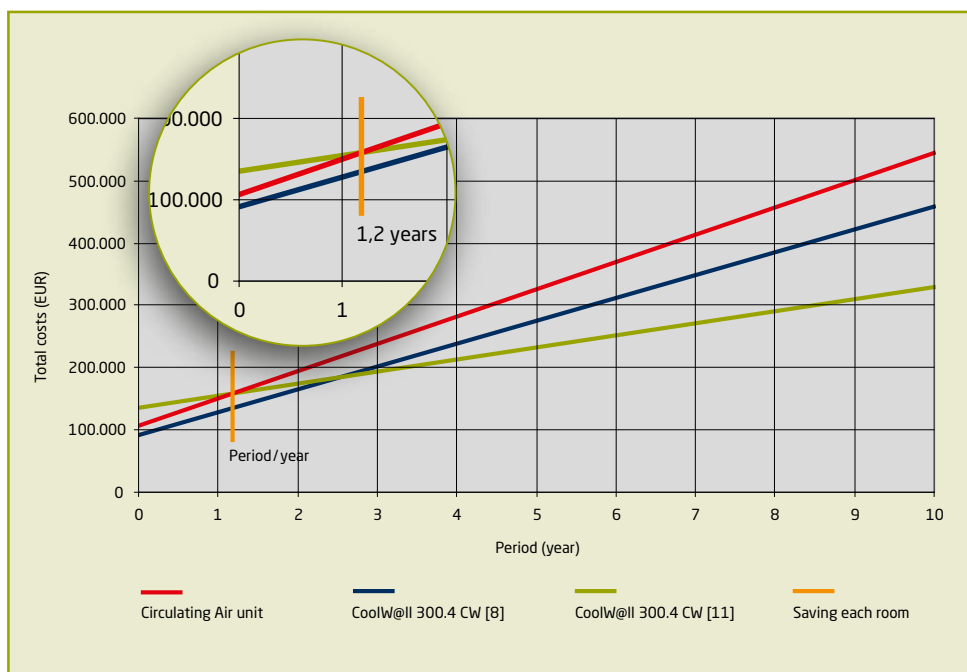
These are the reasons why the CoolW@ll is the most efficient product of its class at present:

- Lowest internal pressure losses
- Maximum utilization of the cooler surfaces
- Optimum flow conditions Large-surface high-efficiency heat exchangers
- Latest fan technology

Series		"Circulating Air Type A 2 Fans"	"Weiss CoolW@ll 300.4 CW 18.3 R9 2 Fans"	"Weiss CoolW@ll 300.4 CW 18.3 R9 2 Fans"
Number of units	Qty	(8+1)	(7+1)	(7+4)
Number of operating units in normal operation	Qty	9	8	11
Air quantity per unit	m ³ /h	20,500	24,300	16,400
Cooling capacity per unit	kW	8,3	90,2	64,8
Power consumption of fans each unit	kW	2,6	2,6	1,8
Total power consumption of fans each room	kW	23,4	20,8	11
Useful cooling capacity each room	kW	150	701	702
Electronic pump capacity each unit	kW	0,77	0,6	0,39
Total power consumption each unit	kW	3,37	3,2	1,39
Total power consumption each room	kW	30,3	25,6	15,3
Annual energy costs * (15 Cent/kWh)	€/year	44,795	37,025	20,091
Saving each room	€/year		-7.770,00	-24.704,00
Saving each room	%/year		-17%	-55%

* incl. possible extra expenditure at generation of chilled water
We reserve the right to make technical improvements.

Energetic Comparison - Total Costs



[8] Period: 10 years =
Difference: 88.282 €

[1 0] Period: 10 years =
Difference: 222.609 €

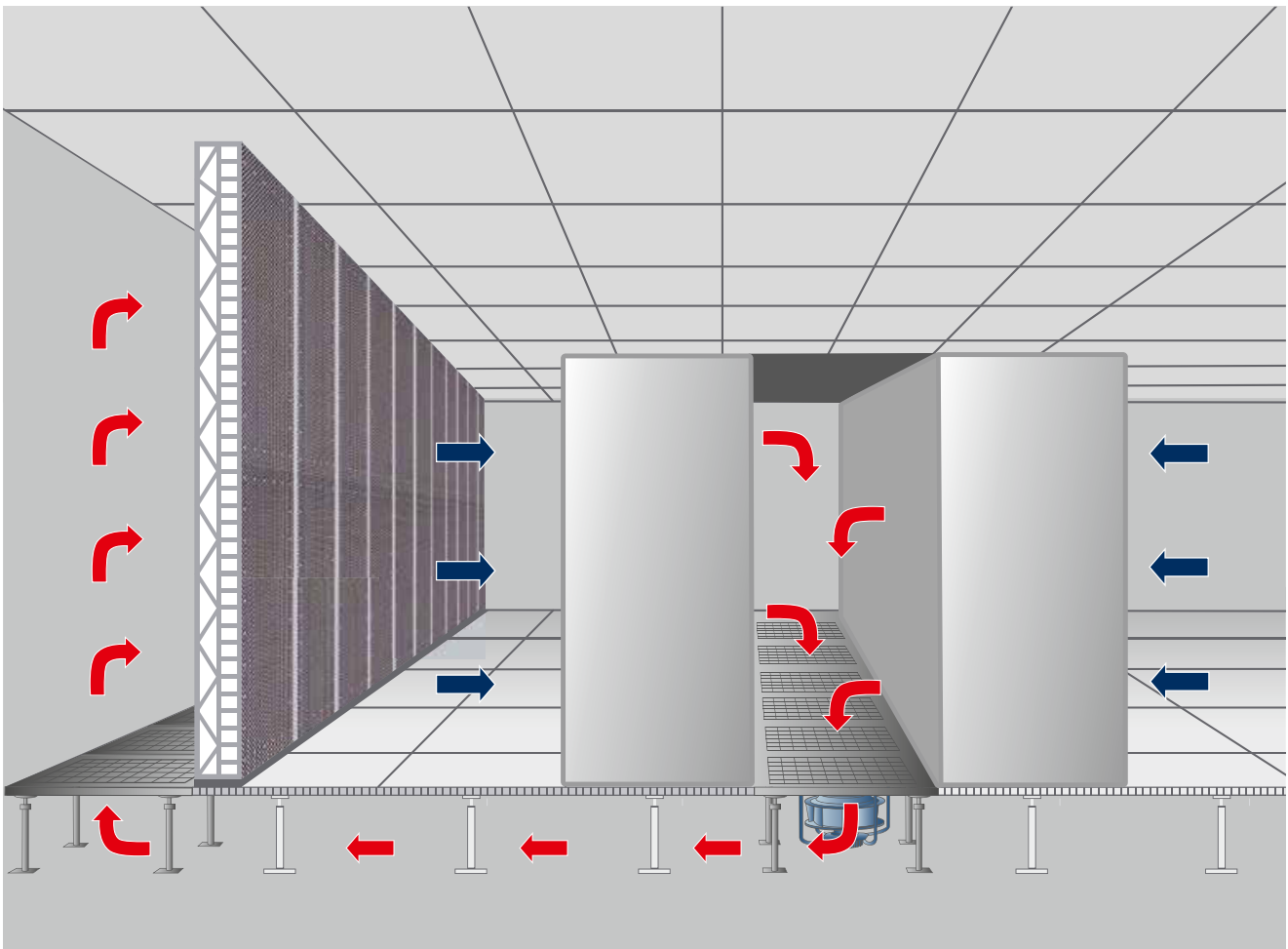
Saving each room with a
heat load of 700 kW

Flexibility over the entire surface

When it comes to cooling servers, the CoolW@ll is available in two versions: the warm room and cold room concept.

The warm room concept involves the introduction of cooled air into the double floor and its conveyance via the perforated double floor plates to the rack suction points. The cooling air flows through the server cabinet at a temperature of e.g. between 20 and 26 °C, absorbs the heat present and returns to the circuit via the cooling wall.

Air conveyance is reversed in the cold room concept. The air is fed into the room through the cooling wall and suctioned into the server. It absorbs the heat present here and returns to the circuit via the double floor. At this, the complete room appears as a "compensation room" and the IT staff is working in cooled environment.



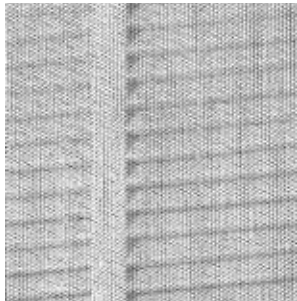
Cold room concept

Technical data



Housing

- Greater housing rigidity, thanks to the welded and painted design of the frame profiles
- Housing casing removable all round
- Side visible in computer centre is perforated
- Electrophoretic dip priming and powder coating, RAL 9005
- Can be transported with the crane eyelets
- Innovative design
- Simple on-site installation



Controller/regulator

- pcs+ compact controller with built-in operating panel consists of an LCD display and a foil keypad with 6 keys.
- USB connection for installation and maintenance work
- Optimized, independent control for a master/slave compound up to 16 CollW@lls
- Optionally possible is the connection to serial surveillance/remote maintenance system Modbus® - communication protocol via interface board RS485
- GLT connection via other standards than RS485 Modbus® (BACnet, SNMP, HTTP, E-Mail) are optionally possible via other expansion boards.



Filter

- G4 cassette air circulation filter
- Installed directly on the heat exchanger
- Filter changed from the front
- Filter seal replaced when filter is changed
- Fiberplast frame
- Continuous filter monitoring via differential pressure sensor



Cooling

- Room height cooling segments with large-surfaced Cu/Al heat exchanger
- Slat spacing is greater than 2 mm, allowing easy access for cleaning work
- Low passage speed, which results in reduced pressure loss
- Condensate pan is easy to clean
- Cold circuit with internal piping, including continuous 2-way valve, optional 3-way valve
- Material: Brass and/or red brass
- Easy connection by customer



Fan

- The fan motor unit is simply suspended in the double floor grid
- High-performance radial fan with optimised efficiency, no volute casing, with backward inclined blades, single-sided suctioning
- Drive motor integrated as EC external rotor in impeller
- Fan speed is configured via EC control to suit the individual flow
- Replacement possible from above
- All electrical connections with plug connector

Accessories and equipment options

- Side wall panelling
- 3-way valve
- Cold aisle control

Series		180.4 CW	300.4 CW
Size		12.3	18.3
Nominal volume flow			
Air quantity	m ³ /h	18.000	30.000
External pressing	Pa	20	20
Cooling CW - Cold water 10 °C / 15 °C and air intake 26 °C / 45 % rel. humidity			
Cooling capacity, total	kW	73	121,1
Cooling capacity, sensible	kW	68	113
SHR (Sensible Heat Ratio)		0.93	0.93
Medium volume flow	m ³ /h	12.55	20.84
Cooler pressure loss	kPa	29.9	28.2
Valve pressure loss	kPa	9.8	27.1
Connection	Inch	Rp 2	Rp 2 1/2
Cooling CW - Cold water 12 °C / 18 °C and air intake 28 °C / 40 % rel. humidity			
Cooling capacity, total	kW	69.9	116.1
Cooling capacity, sensible	kW	69.9	116.1
SHR (Sensible Heat Ratio)		1.00	1.00
Medium volume flow	m ³ /h	10.04	16.67
Cooler pressure loss	kPa	19.8	18.7
Valve pressure loss	kPa	6.3	17.4
Connection	Inch	Rp 2	Rp 2 1/2
Cooling CW - Cold water 10 °C / 15 °C and air intake 30 °C / 30 % rel. humidity			
Cooling capacity, total	kW	93.8	155.8
Cooling capacity, sensible	kW	93.8	155.8
SHR (Sensible Heat Ratio)		1.00	1.00
Medium volume flow	m ³ /h	16.13	26.79
Cooler pressure loss	kPa	46.5	43.9
Valve pressure loss	kPa	16.3	44.9
Connection	Inch	Rp 2	Rp 2 1/2
Filter at intake			
Type		Cassette filter	
Filter class as per DIN EN 779		G4	G4
Fan unit - impeller 630 mm			
Type		EC motor, directly driven, free wheeling	
Number*	Qty.	2	3
Power consumption, total	kW	1.6	2.92
Max. current consumption	A	8.6	12.9
Weight per fan unit	kg	59	59
Min. double floor height	mm	550	550
Sound data			
Sound output level, low-pressure side	dB (A)	73	77
Sound output level, high-pressure side	dB (A)	78	82

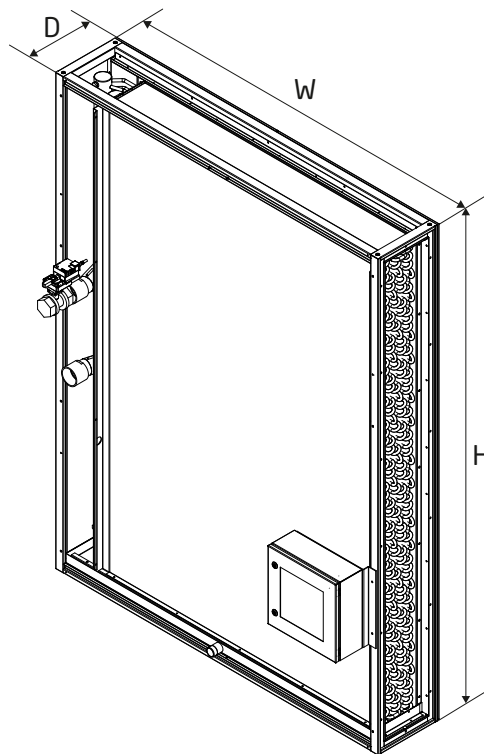
**Number of fans can be selected.

We reserve the right to make technical improvements.

Model		180.4 CW	300.4 CW
Fan unit - Impeller 450 mm			
Type	EC motor, directly driven, free wheeling		
Number*	Qty.	3	5
Power consumption, total	kW	1.8	3
Max. current consumption	A	7.5	12.5
Weight per fan unit	kg	39	39
Min. double floor height	mm	500	500
Sound data			
Sound output level, low-pressure side	dB (A)	80	82
Sound output level, high-pressure side	dB (A)	86	88
Base unit			
Width	mm	1,200	1,800
Depth	mm	350	350
Height (above double floor)	mm	2,400	2,400
Footprint	m ²	0.42	0.63
Weight	kg	200	300
Connection voltage	V/Ph/Hz	400/3/50	400/3/50

**Number of fans can be selected.

Unit view



Series	W (width)	H (height)	D (depth)
180.4 CW	1.200	2.400	350
300.4 CW	1.800	2.400	350

We reserve the right to make technical improvements.

The new space saver for perfect IT climate



Weiss Klimatechnik is presenting another innovative air-conditioning concept for data centres: The new CoolW@ll modular which unites excellent cooling capacity and extremely low energy consumption. In addition it offers absolute flexibility in interior design. The modular solution "room in room" can be accurately dimensioned as required - and can be extended at any time.

The „room in room“ principle

The CoolW@ll modular is a system solution for data centres in almost any size. It is an individual "room in room", consisting of a basic self-contained module. This basic module can be flexibly extended by one or more add-on units.

As an upgradeable "room in room" the CoolW@ll modular is able to grow architecturally depending on the required space and cooling so that it is always as big as necessary and as small as possible. So the housing offers a unit air-conditioning instead of a room air-conditioning exactly as required.

CoolW@ll modular - Advantages at a glance

- Flexible adaptation to the room architecture
- Minimum space requirement
- Maximum operating and investment security
- High cooling capacity
- Low energy consumption
- Fast and easy installation
- Extendable at any time
- Secure long-term investment
- Highest Quality as per VDI 6022

Extra space with a system

On the basis of its intelligent modular system the CoolW@ll modular adapts in every respect to the architectural local conditions.

The heat exchanger is no space limitation or part of a space limitation but is an integral part of the modular system. By that, the housing can be installed at any place in the room and is thus completely independent from the spatial geometry. So the CoolW@ll modular can be positioned even in narrow spaces.

The housing of the basic module consists of the floor and the ceiling element as well as the bulkhead element and the housing door. In case of expansion the bulkhead element and the housing door can be put back even if they had been built once. The dimensions of the partition walls resp. fore-closures are firmly defined each, so they must not be adjusted individually neither with the basic module nor with the add-on unit.

The basic module has a width of 189 cm, a depth of 154,5 cm, a height of 245 cm and is matched to the raised floor grid. Each add-on unit has a width of 94,5 cm and a height of 245 cm. Theoretically, any number of add-on units can be flanged breadthways.



Fitted in seconds!

The installation of the CoolW@ll modular is very simple. Its function is according to the plug and play system, the individual elements are simply screwed.

An accomplishment!

The CoolW@ll modular is a surface cooling system with large heat-transfer surface resp. cooling surface completely used. By this, it achieves nearly 50 % more power than usual circulating air units over the same surface.

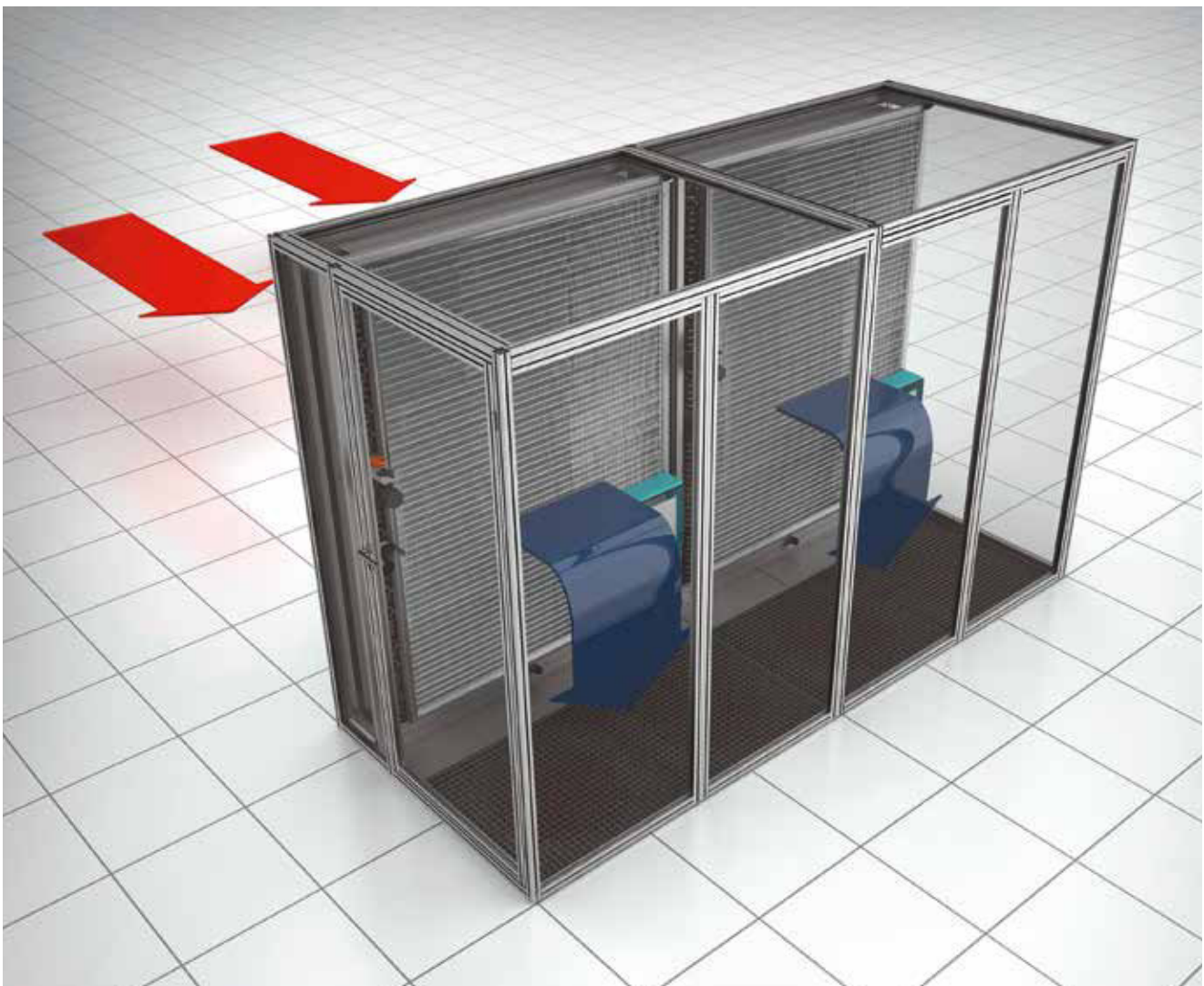
The basis is a large-surface high-efficiency heat exchanger with optimum flow conditions. Advanced fans in the false floor are used air generation. They lead heated air to the room again over the complete surface via the cooling system and through the false floor.

Energy efficiency

The CoolW@ll modular is the most energy-efficient product of its class and impresses with exceptional economy.

As unit-based air-conditioning solution the housing adapts to the needed space of the data centre.

The existing infrastructure can be scaled in a unique way in order to match the size of the housing and the cooling capacity perfectly with the servers and its heat generation - in each dimension. The energy-saving potential is correspondingly high.

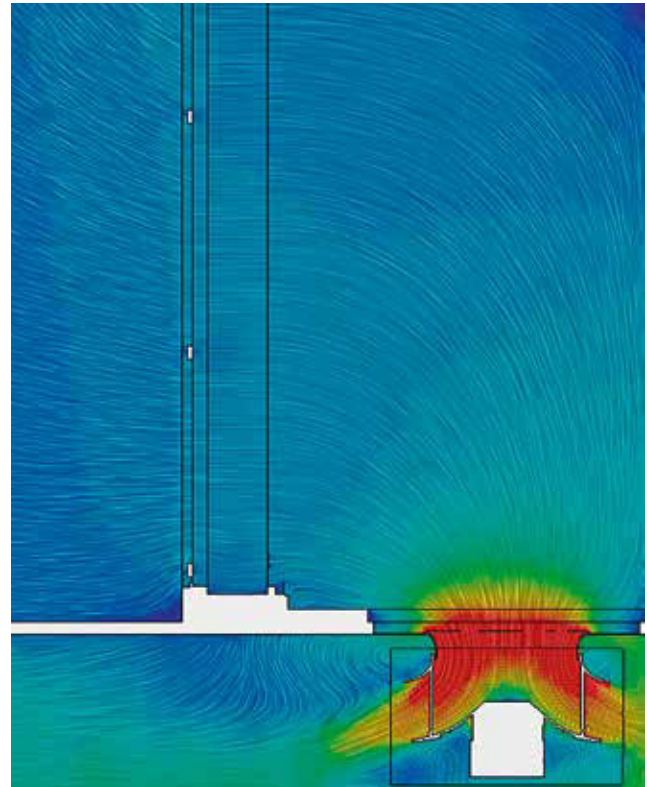


CoolW@ll modular

- CoolW@ll, (heat exchanger, filter, control unit, control valve)
- Housing
- Underfloor fan unit, consisting of prefabricated frame construction, fans, grids, false floor plates, prepared for holding of the standardized false floor supports

CoolW@ll - Advantages at a glance

- Most energy efficient product of its class
- Modular construction with matching individual elements
- Unique scalable infrastructure
- Maximum operating and investment security
- Flexible space architecture
- Minimum space requirement
- Future security by great extensibility
- Simple insertion



CFD Analysis: Flow velocities

Technical characteristics of the housing

Solution of housing

- The CoolW@ll housing is prepared for a fast and trouble-free installation.
- The basic unit is split-up into 6 preassembled elements, consisting of housing door, roof and lateral elements to be assembled to the CoolW@ll by simple screwing.
- Rubber seals guarantee a clean transition to the heat exchanger unit.
- If necessary, add-on units are mounted at the existing system, the housing door is simply displaced to the aisle end.
- The elements of the housing consist of aluminium profiles with Makrolon inserts (fire class B1).
- Optionally: Fire class A1 (sheet steel).

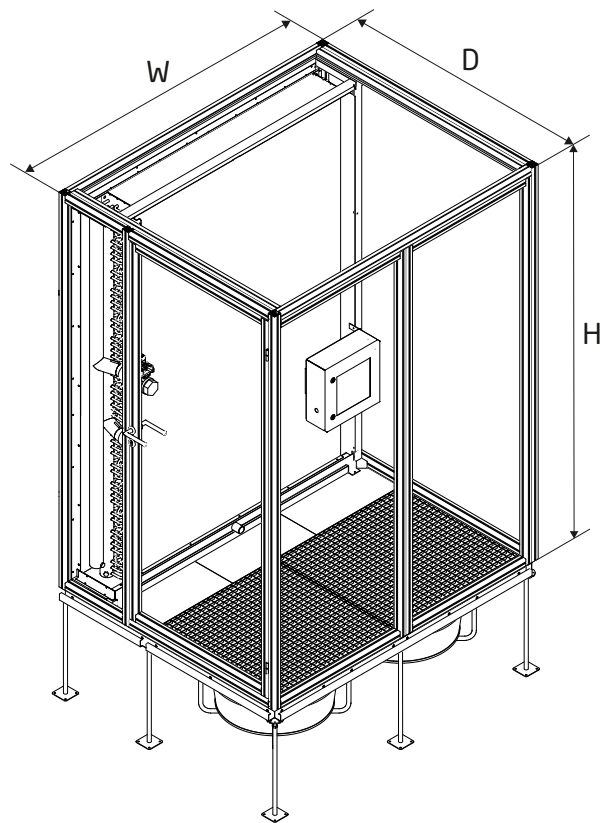
Series CoolW@ll modular		300.4 CW
Size		18.3
Nominal volume flow		
Air quantity	m ³ /h	30.000
External pressing	Pa	20
Cooling CW - Cold water 10 °C / 15 °C and air intake 26 °C / 45 % rel. humidity		
Cooling capacity, total	kW	121,1
Cooling capacity, sensible	kW	113
SHR (Sensible Heat Ratio)		0,93
Medium volume flow	m ³ /h	20,84
Cooler pressure loss	kPa	28,2
Valve pressure loss	kPa	27,1
Connection	Inch	Rp 2 1/2
Cooling CW - Cold water 12 °C / 18 °C and air intake 28 °C / 40 % rel. humidity		
Cooling capacity, total	kW	116,1
Cooling capacity, sensible	kW	116,1
SHR (Sensible Heat Ratio)		1,00
Medium volume flow	m ³ /h	16,67
Cooler pressure loss	kPa	18,7
Valve pressure loss	kPa	17,4
Connection	Inch	Rp 2 1/2
Cooling CW - Cold water 10 °C / 15 °C and air intake 30 °C / 30 % rel. humidity		
Cooling capacity, total	kW	155,8
Cooling capacity, sensible	kW	155,8
SHR (Sensible Heat Ratio)		1,00
Medium volume flow	m ³ /h	26,79
Cooler pressure loss	kPa	43,9
Valve pressure loss	kPa	44,9
Connection	Inch	Rp 2 1/2
Filter at intake		
Type	Cassette filter	
Filter class as per DIN EN 779	G4	
Fan unit - impeller 630 mm		
Type	EC motor, directly driven, free wheeling	
Number*	Qty.	2
Power consumption, total	kW	4,28
Max. current consumption	A	8,6
Weight per fan unit	kg	59
Min. double floor height	mm	550
Sound data		
Sound output level, low-pressure side	dB (A)	86
Sound output level, high-pressure side	dB (A)	91

*Number of fans can be selected.

We reserve the right to make technical improvements.

Series CoolW@ll modular		300.4 CW
Basic unit including housing		
Width	mm	1.890
Depth	mm	1.545
Height (above double floor)	mm	2.450
Footprint	m ²	2,92
Weight CoolW@ll + housing	kg	300 + 122
Connection voltage	V/Ph/Hz	400/3/50

Unit view



Series	W (width)	H (height)	D (depth)
300.4 CW	1.890	2.450	1.545

We reserve the right to make technical improvements.