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a schunk company

Precision Air-Conditioning Units Vindur® CoolMaster DX iFC

with indirect free cooling

www.weiss-technik.com

Giving your equipment a deep breath.

Whether it's a small server room, average telecommunication station or large data centre: when it comes to IT cooling everything has to be coordinated optimally. We'll support you!

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Frequent calculators need a cool head.
IT technology is playing an outstanding role in today's increasingly digital world. The challenges that come with it are topics like energy efficiency and space usage. However, guaranteeing adaptive air conditioning is also indispensable for the functioning of data centres. With optimal planning, based on a scalable platform, you can save high investment costs especially at the start.

Indirect cooling is more efficient.
We present Vindur® CoolMaster DX iFC – our new room-based Precision Air-Conditioning Unit that is extremely energy efficient thanks to indirect free cooling. The intelligent combination with water-cooled direct evaporation ensures the highest level of your servers' safety and performance. Possible disruptive factors from ambient air are completely excluded at the same time. And the best part: thanks to easy extendability they will always be exceptionally flexible.

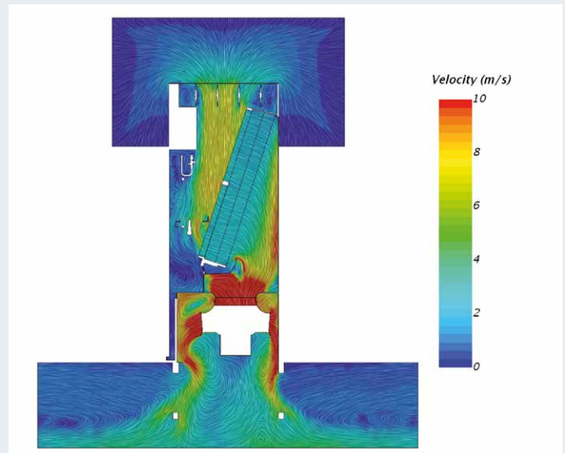
Compact, flexible and energy-efficient.

Precision Air-Conditioning Units Vindur® CoolMaster DX iFC with indirect free cooling.

Reliable climate solution for all cases.
Vindur® CoolMaster DX iFC is your efficient all-in-one solution for various requirements, such as the installation in a basement or in rooms with no exterior wall. It consists of a compact unit set up in the server room with integrated cooling device and an external dry cooler with closed cold water circuit. The controls are implemented via the fully linkable, intuitivly to use control system **in**telli.**4**®.

Flexible operating modes for all temperatures.
Vindur® CoolMaster DX iFC functions with indirect free cooling operation up to the maximum ambient temperature corresponding with one of the operating parameters. Should the ambient temperature or thermal load increase, the compressor (DX) automatically connects performance-controlled. If free cooling cannot be used at all due to high ambient temperatures, the unit switches fully to mechanical cooling. Thereby the system always independently selects the optimal operating mode.

Compact and easy integration.
Vindur® CoolMaster DX iFC with indirect free cooling is suitable for installation in new server rooms, as an easy-to-install substitute for existing air-conditioning systems or as an extension of existing cooling systems. The Precision Air-Conditioning Unit is the ideal solution when the efficiency benefits of free cooling are required despite contaminated ambient air. In addition, it can be freely scalable and is easy to handle thanks to the close refrigerant circuit. It is available for you in three sizes.



Our highlights:

- 50 % less annual energy consumption compared to pure split devices
- Dynamic control of free and mechanical cooling
- Flexibly scalable system, also suitable for larger server rooms
- Compact design, easy installation

More equipment, right from the start.

Basic equipment setting standards.

Interior

- **Cooling more efficiently**
  The free-cooling heat exchanger (iFC) is designed as large as possible. The continuously controlled 2-way valve and highly efficient EC radial fans ensure optimal usage of free cooling.

- **Safe and economic**
  The mechanical cooling (DX) is automatically switched on and takes on the full cooling function when ambient temperatures rise or exhaust heat increases. Safe and economic operation of your system is guaranteed at all times thanks to the large-area evaporator, performance-controlled scroll compressor, plate condensor and electronic expansion valve.

- **Clean performance**
  A G4 filter is installed before the heat exchanger (Coarse 90 %). This prevents performance loss due to contamination and reduces your cleaning and maintenance expenditures.

Regulation & Control

- **Pretty smart**
  Each unit provides its own, self-sufficient control system **in**telli.**4**®, with intuitive user interface and various networking options.

- **A great team**
  If required, up to 16 Vindur® CoolMaster DX iFC devices can be combined – even subsequently – without a higher-level control system, share sensor values and run in redundancy network. Not only does this reduce your control expenditure, it also increases safety and offers maximum flexibility.

By the way:
In order to increase the degree of effectiveness and make fan performance more efficiently, air routing has been optimised further by means of CFD analysis.

Tailor-made cooling.

Options for individual solutions.

Exterior

- **Added security**
  In order to prevent the return flow of air in the event of the Vindur® CoolMaster DX iFC malfunctioning or switching off, a louver damper can be installed on top of the unit.

- **Cooling sustainably**
  Upon request, the units can be filled with A2L coolant with a significantly lower GWP value. Since they only require low quantities of refrigerant depending on the design, elaborate security technology in the data centre might not be required depending on room size.

- **Direct is more effective**
  When setting up on a sufficiently high double floor, the fans can also be arranged under the unit. This not only reduces the air deflection losses and energy requirement, but also effectively lowers your costs.

Regulation & Control

- **Controlling in line with demand**
  Our Precision Air-Conditioning Units are designed with the tried and tested control system **in**telli.**4**®. If required, other standard controller brands can be programed in-house.

Special wishes?
For a particular specification or set-up support, please contact us directly at any time.

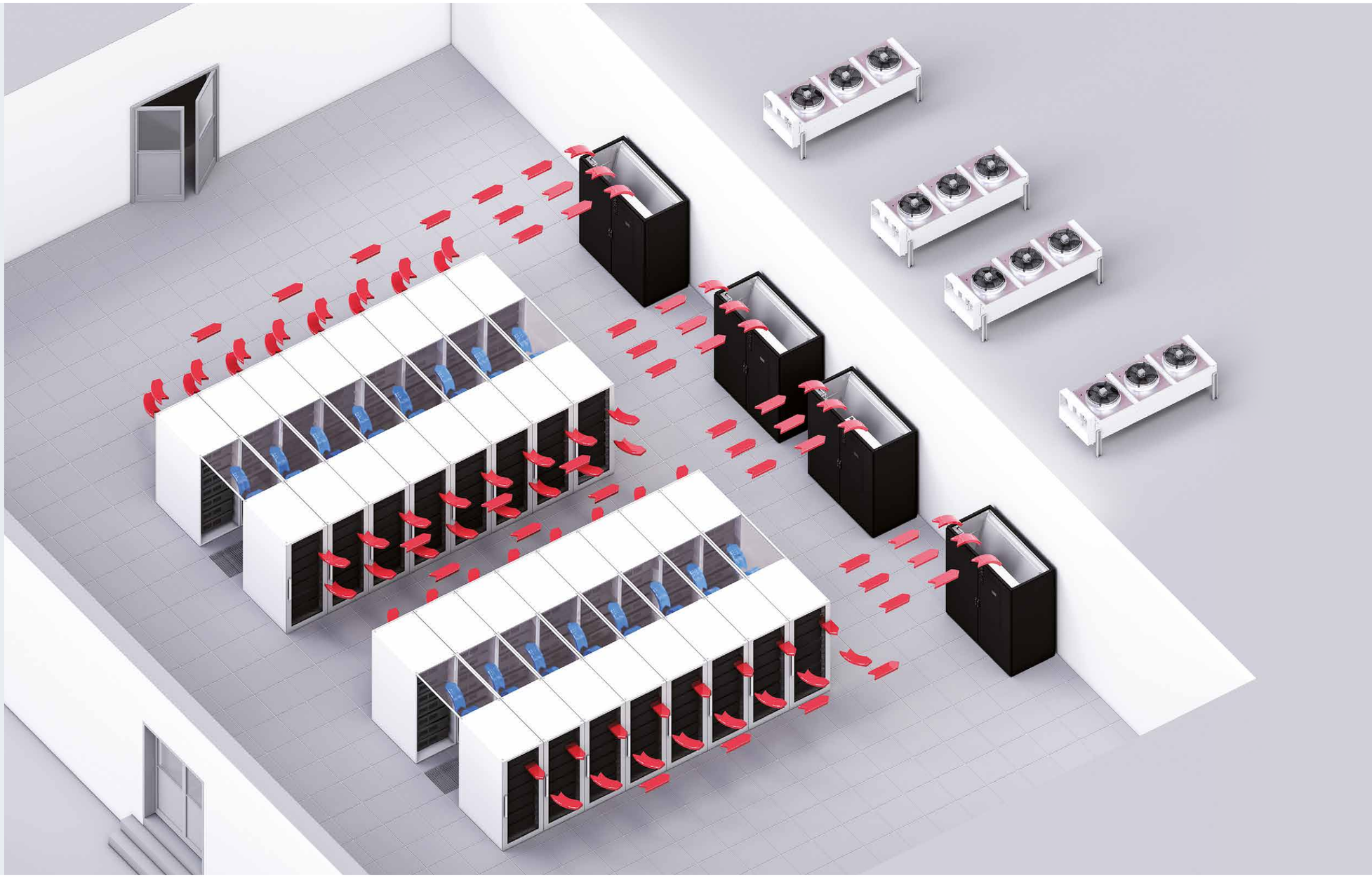
Exceptionally flexible and highly intelligent.

Always adjust your cooling.

The Precision Air-Conditioning Units Vindur® CoolMaster DX iFC are flexibly arrangeable and also suitable for rooms without an exterior wall, for instance in basements or within building structures. They are also freely scalable. That means, the cooling solution can grow with at any time. In this case, every Precision Air-Conditioning Unit is assigned to an exterior device. Thanks to intelligent controls the devices can be linked and operated in master/slave mode. Vindur® CoolMaster DX iFC is available in three sizes and performance classes.

Particularly suited for these applications:

- Efficient cooling solution for rooms without an exterior wall
- Simple substitute for existing equipment
- Flexible combined solution for contaminated ambient air



The operating principle.

Get a clear picture of Vindur® CoolMaster DX iFC.

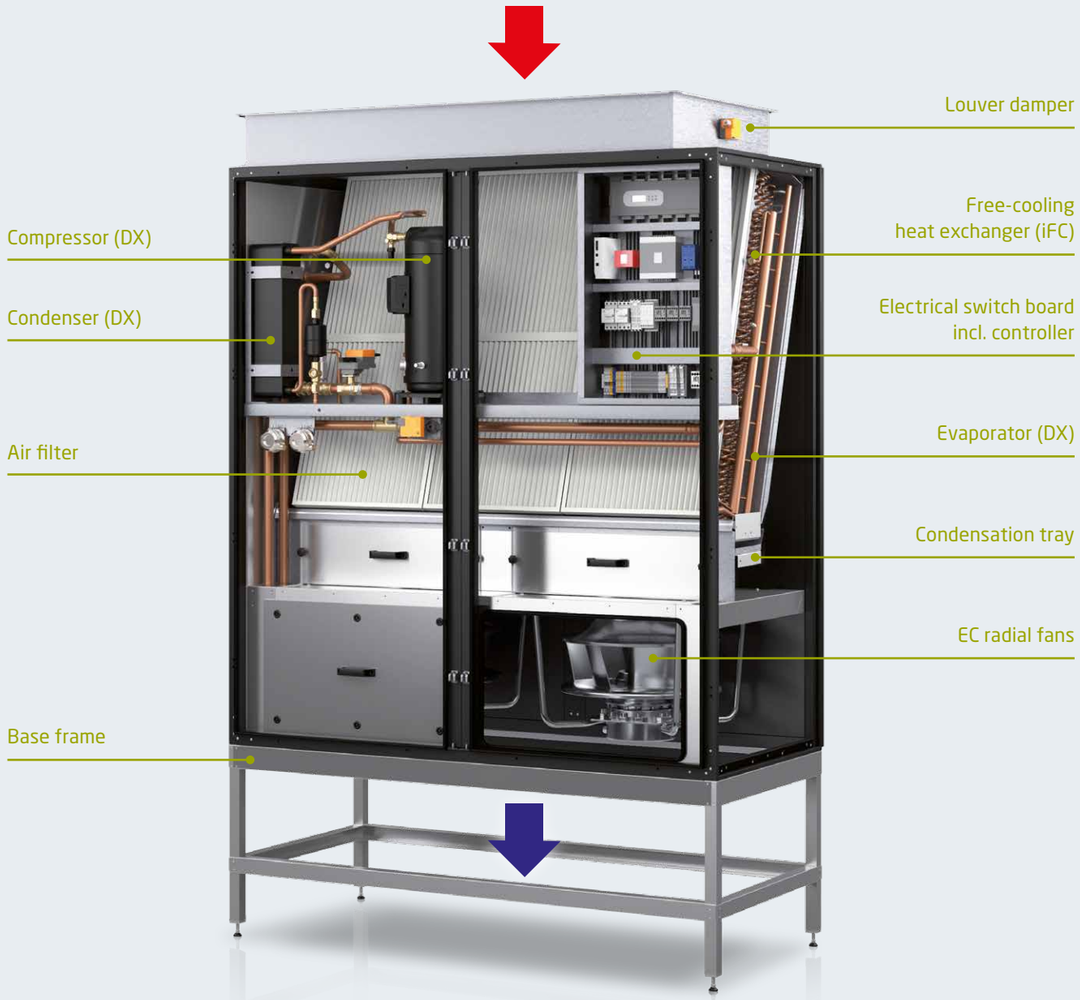
This is how the Precision Air-Conditioning Unit works.

Depending on the ambient temperature the Vindur® CoolMaster DX iFC has a hybrid structure and works with indirect free cooling (iFC), water-cooled direct evaporation (DX) or a combination of both. During indirect free cooling the coolant (water/glycol) is conducted from the exterior unit to the free-cooling heat exchanger, where the warm air emitted by the servers is cooled. Then the cooled supply air is blown into the raised floor of the server room. In operation with mechanical cooling (DX) the compressor and condenser generate the required cold and the air is cooled via the evaporator.

The coolant is cooled by the ambient air in the heat exchanger and guided to the Precision Air-Conditioning Unit via a pump. The advantage: potential contamination of the ambient air from exhaust gases, pollen or dust does not get into the server room.

In compact Precision Air-Conditioning Units the cold circuit is integrated with the evaporator, the free-cooling heat exchanger and all controls. Thanks to the special arrangement the particularly large heat exchanger area ensures maximum free cooling performance on the smallest floor area. In addition, the large filter areas reduce pressure losses.

Structure of Precision Air-Conditioning Unit



Convincing technology. Reliable results.

The performance data at a glance:

Precision Air-Conditioning Unit Vindur® CoolMaster DX iFC				
Size		**65.5 DX iFC**	**100.5 DX iFC**	**135.5 DX iFC**
Nominal volume flow				
Air volume	**m^3/h**	6500	10000	13500
External pressure loss	**Pa**	50	50	50
Cooling CW – cold water/glycol mixture 10/15 °C and air inlet 27 °C/40 % RH				
Glycol percentage	**%**	30	30	30
Cooling performance (overall/sensitive)	**kW**	21.8/21.8	33.1/33.1	45.3/45.3
SHR (Sensible Heat Ratio)		1.0	1.0	1.0
Media volume flow	**m^3/h**	4.2	6.3	8.6
Cooler pressure loss	**kPa**	38.0	22.3	23.7
Valve pressure loss	**kPa**	17.6	15.5	11.8
Connection	**mm**	35	42	42
Cooling CW – cold water/glycol mixture 15/20 °C and air inlet 32 °C/30 % RH				
Glycol percentage	**%**	30	30	30
Cooling performance (overall/sensitive)	**kW**	22.4/22.4	34.4/34.4	47.0/47.0
SHR (Sensible Heat Ratio)		1.0	1.0	1.0
Media volume flow	**m^3/h**	4.3	6.6	9.0
Cooler pressure loss	**kPa**	38.1	22.8	24.0
Valve pressure loss	**kPa**	18.5	17.0	13.0
Connection	**mm**	35	42	42
Cooling DX – R410A, condensation temperature 50 °C and air inlet 27 °C/40 % RH				
Construction type			Scroll compressor	
Number of compressors		1	1	1
Cooling performance (overall/sensitive)	**kW**	22.6/22.6	34.9/34.9	46.3/46.3
SHR (Sensible Heat Ratio)		1.0	1.0	1.0
Power consumption compressor	**kW**	6.5	9.7	12.9
Max. operating current compressor	**A**	16.2	25.0	34.0
Condenser, installed				
Construction type			Plate heat exchanger	
Cooling medium			Water/glycol mixture 30 %	
Cooling medium flow/return temperature	**°C**	40/46	40/46	40/46
Media volume flow	**m^3/h**	4.6	7.4	9.5
Condenser pressure loss	**kPa**	15	16	26

Precision Air-Conditioning Unit Vindur® CoolMaster DX iFC				
Size		**65.5 DX iFC**	**100.5 DX iFC**	**135.5 DX iFC**
Filter				
Construction type			Cassette filter	
Filter class as per DIN EN ISO 16890			ISO Coarse 90 % (G4)	
Fans				
Construction type			EC motor, directly powered, free running	
Size		450	560	450
Quantity	**Unit**	1	1	2
Power consumption, overall	**kW**	1.1	1.6	2.3
Max. power consumption	**A**	4.5	6.6	9.0
Sound data				
Sound power level, suction side	**dB(A)**	69.6	70.9	73.3
Sound power level, pressure side	**dB(A)**	79.4	80.5	82.9
Dimensions				
Width	**mm**	900	1400	1800
Depth	**mm**	895	895	895
Height	**mm**	1950	1950	1950
Installation area	**m^2**	0.81	1.25	1.61
Weight	**kg**	430	500	600
Supply voltage	**V/Ph/Hz**		400/3/50	

Simply everything under control.

With our software and control packages.

Intelligent control for optimal HVAC

- Simple and easy operation
- Virtually limitless extendability of I/Os and components
- Can be linked to standard communication and fieldbus protocols of other products
- Easy scaleability of visualisation and operation
- Focus on changeability and extendability throughout the entire life cycle of the unit and systems

We measure ourselves by our service.

We think and act collaboratively service-oriented. With our service teams, we offer sustainable solutions for long-term safe system operation.

Our services – lots of good reasons:

- Global service network
- Wide selection of preventive maintenance
- Reliable spare part supply
- Special deployments available any time
- Certified proper disposal of outdated devices

Our Service Experts are always near you.

24/7-Service-Helpline: +49 1805 666 556

Expert advice
Our experienced experts are ready to support you from the first idea to after-sales service in every step of your project, by telephone or on the spot.

Maintenance and servicing
We offer different service levels and guaranteed reaction times after the receipt of the fault report. Our full maintenance service provides additional safety with calculable costs.

Spare parts management
Many spare and wearing parts are directly available in our warehouse. To further increase operational reliability, selected spare parts can additionally be stocked on site. We would be pleased to advise you further.

Instruction and training
We provide regular trainings covering the application, operation and software of the units. We also offer customer-specific workshops on request at your location.

Need a little bit more?

Air-conditioning solutions for specific requirements.

Cool minds in many IT and telecommunication companies worldwide choose the innovative air-conditioning units and systems made by **weiss**technik. Wherever there are very special climatic requirements, we develop energy-efficient, high-performance and customer-specific systems for cooling data centres and server rooms. From planning and production to assembly and maintenance. Keeping your computers cool even when things get hot. Get in touch with us!

Passionately innovative.

We work in partnership to support companies in research, development, production and quality assurance. With 22 companies in 15 countries at 40 locations.

weisstechnik
For a safe future.

Environmental Simulation

The first choice for engineers and researchers for innovative, safe environmental simulation facilities. In fast motion, our test systems can simulate all the influences in the world as well as for instance in space. In temperature, climate, corrosion, dust or combined stress tests. With a very high degree of reproducibility and precision.

Air Solutions

As the leading provider of clean rooms, climate technology and air dehumidification, we consistently ensure optimal climatic conditions for people and machines. For industrial production processes, in hospitals, mobile operation tents or in the field of information and telecommunications technology. From project planning to implementation.

Heat Technology

Experienced engineers and designers develop, plan and produce high-quality, reliable heat technology systems for a broad range of applications from heating and drying cabinets to microwave systems and industrial furnaces.

Pharmaceutical Technology

With decades of experience and know-how, we guarantee the most sophisticated clean air and containment solutions. Our comprehensive and innovative range of products includes barrier systems, laminar flow systems, safety workbenches, isolators, airlocks and stability test systems.

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Passion for Climate.