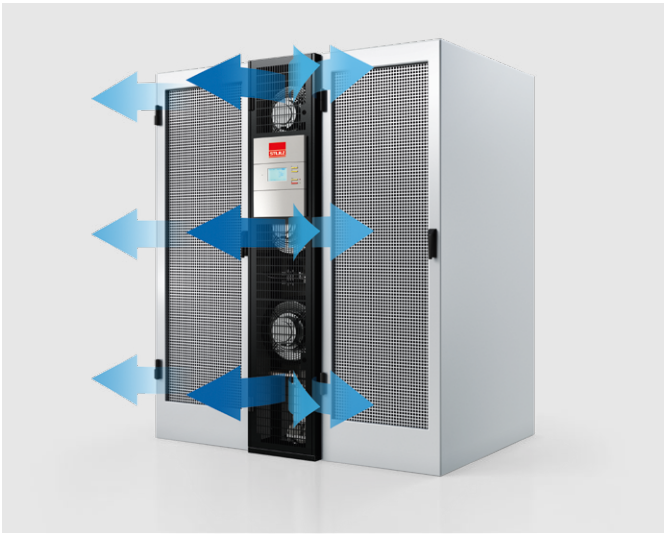
STULZ

CLIMATE. CUSTOMIZED.



CyberRow

Intelligent air conduction – For more efficient rack cooling

The complete range of air conditioning technology – from one source.

For over 40 years, the STULZ family-run company has been synonymous with precision air conditioning at the highest level.

Our solutions for the air conditioning of business-critical applications and sensitive systems have made us a leading company in our industry.

Whether for data centers, industry or communication technology, the STULZ portfolio has a tailor-made cooling solution to suit your requirements.

We guarantee adherence to our uncompromisingly high requirements and quality standards both at our factory in Hamburg and all our production sites around the globe. Moreover, we work hard not only to satisfy our customers' individual wishes, but also to make sure our air conditioning solutions offer maximum energy efficiency and a minimal CO_2 footprint.

Our portfolio extends from traditional room cooling and High Density Cooling to chillers, air handling units and container modules, all the way to micro data centers, service, and our self-developed monitoring software. An all-embracing quality assurance system monitors all the details in development, production, implementation, and service.

Today, STULZ has a presence in more than 140 countries. STULZ GmbH has 21 subsidiaries and eleven production sites in Europe, India, China, and North and South America. We also have partner agreements with numerous sales and service partners on every continent. Our network of highly qualified specialists is a reliable guarantee of the highest standards.

The combined wealth of our experience, values, performance and service is what defines us and is especially valued by our customers. Air conditioning solutions – custom tailored and from one source: **ONE STULZ. ONE SOURCE.**

ONE STULZ. **ONE** SOURCE.

CyberRow – The in-line air conditioning unit with innovative air conduction.

HIGH DENSITY COOLING

Precision air conditioning units for accurate cooling of high heat loads.

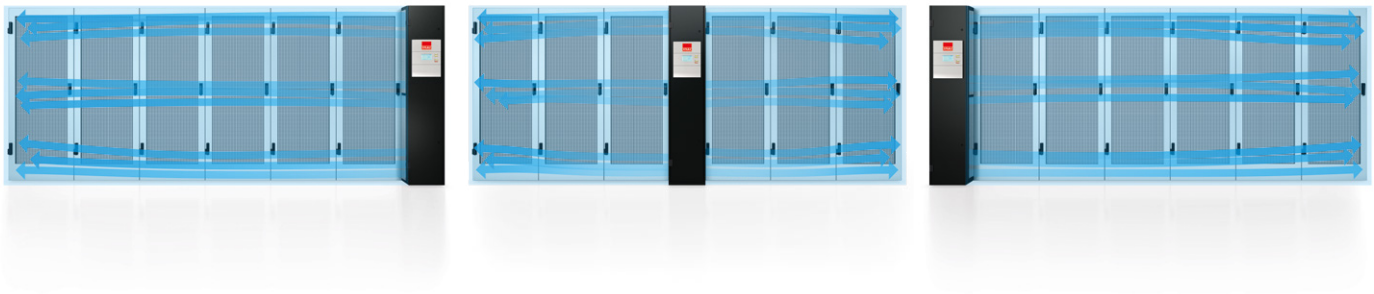
In the CyberRow, innovative horizontal air conduction has been enhanced with state-of-the-art technology that works with power, flexibility and efficiency – directly at the rack. Fluctuating server rack loads, space restrictions, lack of a raised floor, existing high-density server technology – these are exactly the cases from practice for which CyberRow was developed. The air conditioning unit is positioned directly between the racks. The resulting short air conduction routes contribute to the high efficiency of these units. Moreover, the option of Indirect Dynamic Free Cooling offers the greatest potential savings worldwide.

✚ Advantages at a glance

- Suitable for data centers with or without raised floor
- Can be used with racks from any manufacturer
- Targeted cooling of high-density racks
- Each unit can cool up to six server cabinets
- Optimized cooling air pattern creates a virtual containment
- Indirect Dynamic Free Cooling for maximum potential savings
- Innovative technology and high-quality components keep energy consumption to a minimum
- Two mutually independent setpoints ensure precise temperature control
- Up to five independent, variable-speed EC fans for need based cooling in three horizontal zones
- Variable-speed EC compressor for precise cooling capacity and integrated soft start
- Easy maintenance thanks to access from the front and rear of the unit

Flexible and efficient – with and without containment.

With the CyberRow, STULZ offers an efficient air conditioning solution that is positioned directly between the racks in the server room. Thanks to the innovative horizontal air conduction, the supply air is directed to the server racks and forms a cold air curtain in front of them. There is no air turbulence, which means that up to six server racks can be cooled simultaneously. The units are especially easy to integrate and enable hot and cold aisle containments – as well as virtual containments – to be achieved extremely quickly.

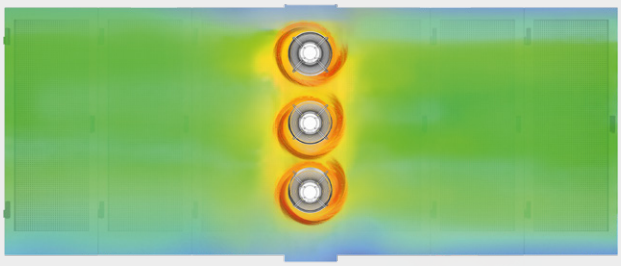


Virtual containment with our unique air conduction.

Virtual containment

The high efficiency of the CyberRow units is possible due to their proximity to the server rack: their unique air conduction prevents hot and cold air from mixing. This air conduction is like a virtual containment, dispensing with the need to build actual containments.

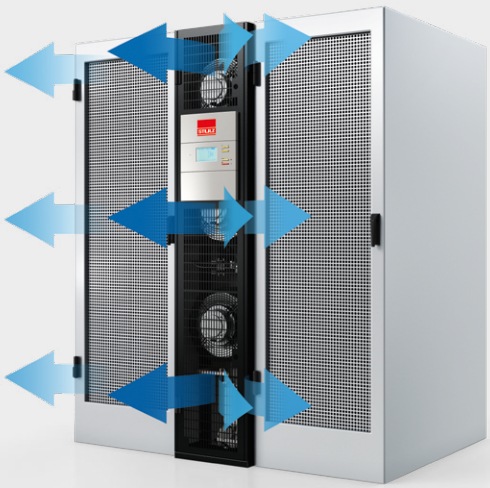
The virtual containment can be clearly seen in this picture. The air flow virtually sticks to the server racks and there is no air turbulence. The cold air takes a direct route to the front of the server racks.



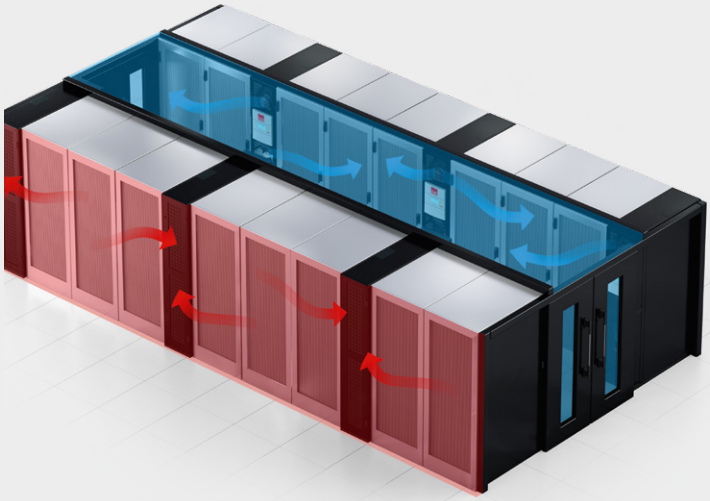
The red areas – around the EC fans – show that the fans emit the cold air at a very high speed (approx. 9-11 m/s) at the outlets. However, this is only the case as long as the air is in the housing. The partitions installed between the EC fans channel the air flow and the air baffles at the outlet ensure uniform distribution across the entire height of the racks.

Cold aisle containment

CyberRow units with frontal air outlets are used for the cold aisle containment. Here, the air conditioning units no longer supply air to the neighboring racks, but to the entire cold aisle. To ensure an optimum supply of cold air, the units are positioned at an offset to one another. The containment completely stops the airflows from mixing, ensuring efficient operation.



Frontal
air outlet



Hot aisle containment

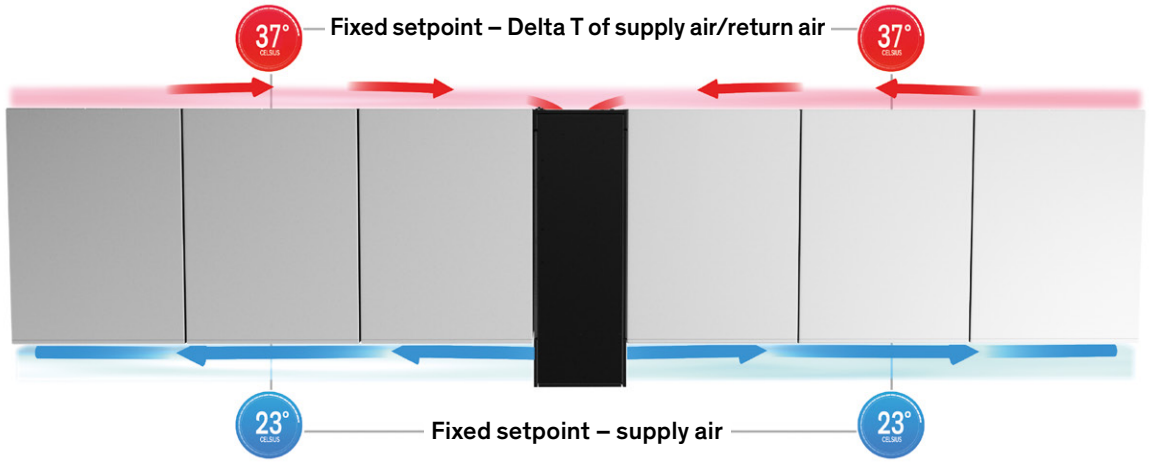
For a hot aisle containment, CyberRow units with side air conduction are used. Expelling the cold air sideways ensures uniform distribution along the whole length of the aisle, while the containment effectively separates the hot and cold air. The airflows are completely prevented from mixing, further enhancing efficiency.

Precise cooling based on actual heat loads.

The combination of variable-speed components with fixed setpoints for the supply air and return air temperature enables precise, individual cooling in three horizontal zones. This ensures efficient and reliable cooling even during fluctuating server loads.

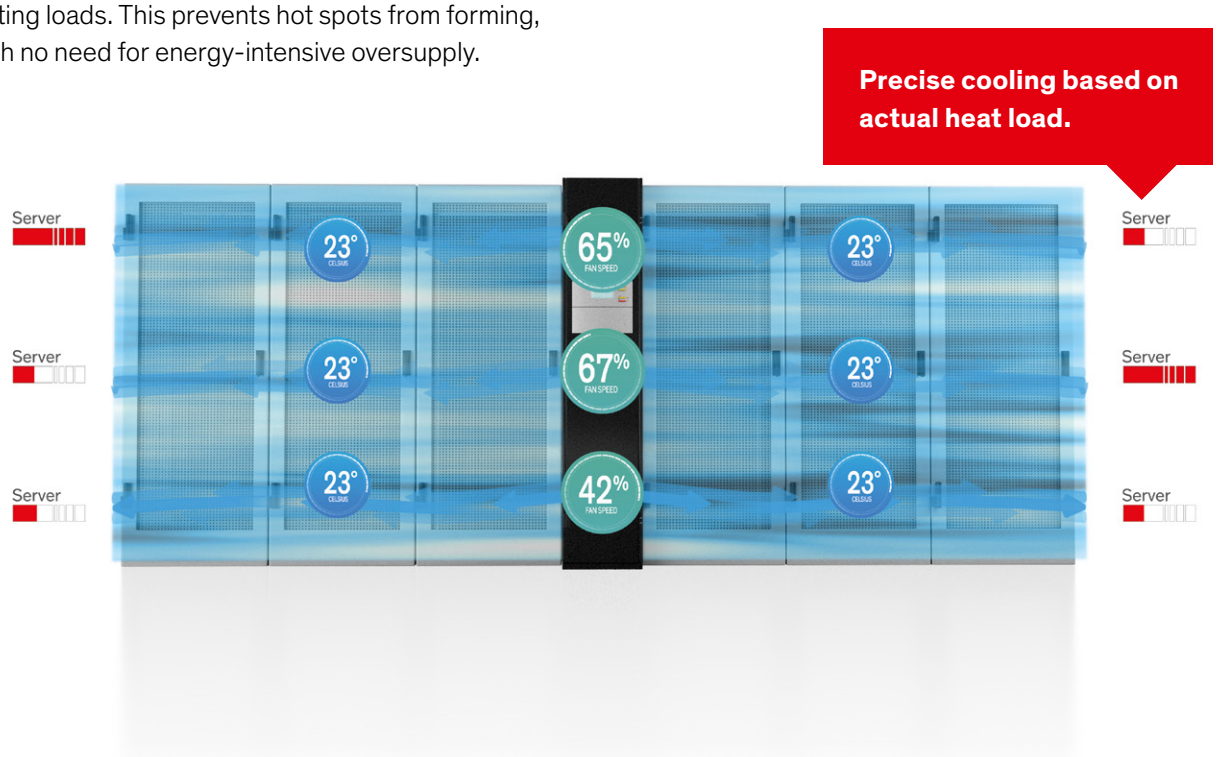
Fixed setpoints for maximum efficiency

Three temperature sensors on the front and three on the back of the unit, plus up to five fans, ensure precise measurement and regulation of the desired Delta T.



Individual supply air boost in three zones

Cooling capacity in each zone is individually adapted to the cooling needs of the servers. So by increasing the airflow rate, the individually required cooling capacity is delivered and perfect operation guaranteed, even with fluctuating loads. This prevents hot spots from forming, and with no need for energy-intensive oversupply.



Minimal footprint for more white space in the data center.

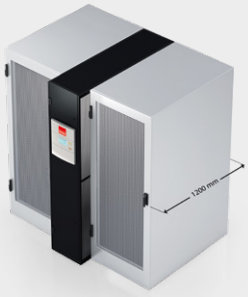
Maximum efficiency, precise cooling capacity and a small footprint – the CyberRow is available in three widths and two depths and ensures cost-effective and reliable operation in all situations. The individual units are positioned directly between the racks, and their compact design leaves even more space free for your IT equipment. The units are suitable for racks from any manufacturer, and are available in different depths which enables easy maintenance access from the front and rear at any rack depth.

300 mm

400 mm

600 mm

1,000 mm



1,200 mm

Control and monitoring.

- Self-developed STULZ controller for regulating and monitoring the air conditioning system
- Six temperature sensors for precisely controlling Delta T and supply air
- Controls the operating modes of the hybrid Free Cooling system
- If a fan fails, the remaining fans speed up
- Monitoring and reports for all faults
- Standard RS-485 serial port for connection to BMS using Modbus and STULZ protocols
- Optional humidity sensor
- Optional heater
- Optional humidifier

The right system for your requirements.

Energy efficiency, capital investment, operating costs, room size, noise protection, redundancy, local climate – every project has its own specific requirements when it comes to precise air conditioning. That's why STULZ offers you the opportunity to have the units precisely adapted to your project's individual requirements. The right air conditioning system is a crucial factor here. The CyberRow is available in four different cooling systems, to help you achieve the ideal balance between investment, operating costs and energy efficiency.

Air-cooled system based on the direct evaporator principle (A/AS)

Heat is extracted from the room air as it flows through the evaporator, and is then transferred to the refrigerant. The air conditioning unit and condenser are connected to one another by a closed refrigerant circuit. The refrigerant emits the heat to the outside air via the air-cooled condenser.

Water-cooled system based on the direct evaporator principle (GS)

Our water-cooled system works like the air-cooled system, with one difference: the heat from the refrigerant circuit is transferred to a cooling water circuit via a brazed plate condenser integrated in the air conditioning unit. This way, the amount of refrigerant required is low. The heat in the cooling water circuit is then discharged into the outside air via an external dry cooler.

The AS, GS and GES systems are equipped with stepless variable-speed EC compressors, making our systems more efficient than ever. The compressors feature integrated soft start and phase monitoring.

Unique in-line air conditioning unit with Indirect Dynamic Free Cooling.

Hybrid Free Cooling system with dynamic switching operation and control (GES)

This system functions like the GS system, but additionally features an integrated Free Cooling coil. This way, energy-intensive compressor cooling can be wholly or partially dispensed with at low or temperate outside temperatures. The heat is transferred directly to the cooling water circuit by the integrated Free Cooling coil, and discharged into the outside air via an external dry cooler.

Indirect Dynamic Free Cooling
The GES system features dynamic switching operation and control, which guarantees reliable and efficient operation. The combination of Indirect Free Cooling and variable-speed components enables precise cooling adapted to the current heat load, and cuts overall energy consumption to a minimum.

Minimal compressor running time
Using Indirect Free Cooling, the hybrid Free Cooling system exploits the cooling potential of outside air as soon as outside temperatures allow. This enables energy-intensive compressor cooling to be partially or even wholly dispensed with.

No oversupply
The variable-speed components ensure that precisely the required cooling capacity is generated. There is therefore no energy-intensive oversupply.

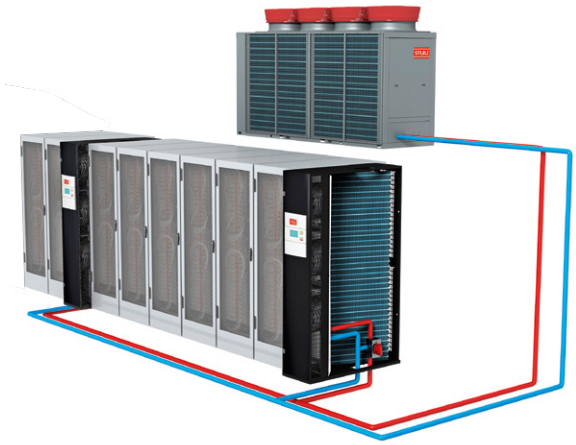
Minimal refrigerant quantities
As the hybrid Free Cooling system is water-cooled, it only needs a minimal quantity of refrigerant. The result is environmentally friendly operation with reduced greenhouse gas emissions, for a forward-looking investment in the future.

Chilled water system (CW)

The air conditioning unit manages without a refrigerant circuit of its own, but requires a separate chilled water generator. The air conditioning unit and chiller are connected to one another by a closed water-glycol circuit.

Synchronized complete systems
Air conditioning solutions from STULZ offer synchronized complete systems that work efficiently and reliably. Thanks to energy savings and operational reliability, your investment in the quality, operational reliability and efficiency of STULZ air conditioning and chilled water solutions rapidly pays off during operation.

To ensure optimum integration, STULZ offers an extensive portfolio of chillers for indoor and outdoor installation. Select the right unit for your requirements and enjoy the additional benefits of Free Cooling.



Climate. Customized. You have the challenge, we have the solution.

- Location
- Room planning
- Local climate
- Environmental protection
- Noise protection
- Generation of heat
- Peace of mind
- Integration and connectivity
- In-house engineering
- In-house software development

STULZ customers always receive solutions that are customized and are perfectly configured for the applications in question.

From standard units to fully tailor-made customer solutions – the ability to offer such a wide range to customers is the embodiment of our philosophy, “Climate. Customized.”. Our aim is to realize our customers’ wishes in the ideal way and to create sustainable, and perfectly adapted air conditioning solutions that are equally powerful, reliable and efficient.

Climate Customized #1
Standard units

For its standard units, STULZ offers a huge selection of accessories and options to permit a high level of flexibility and individualization.

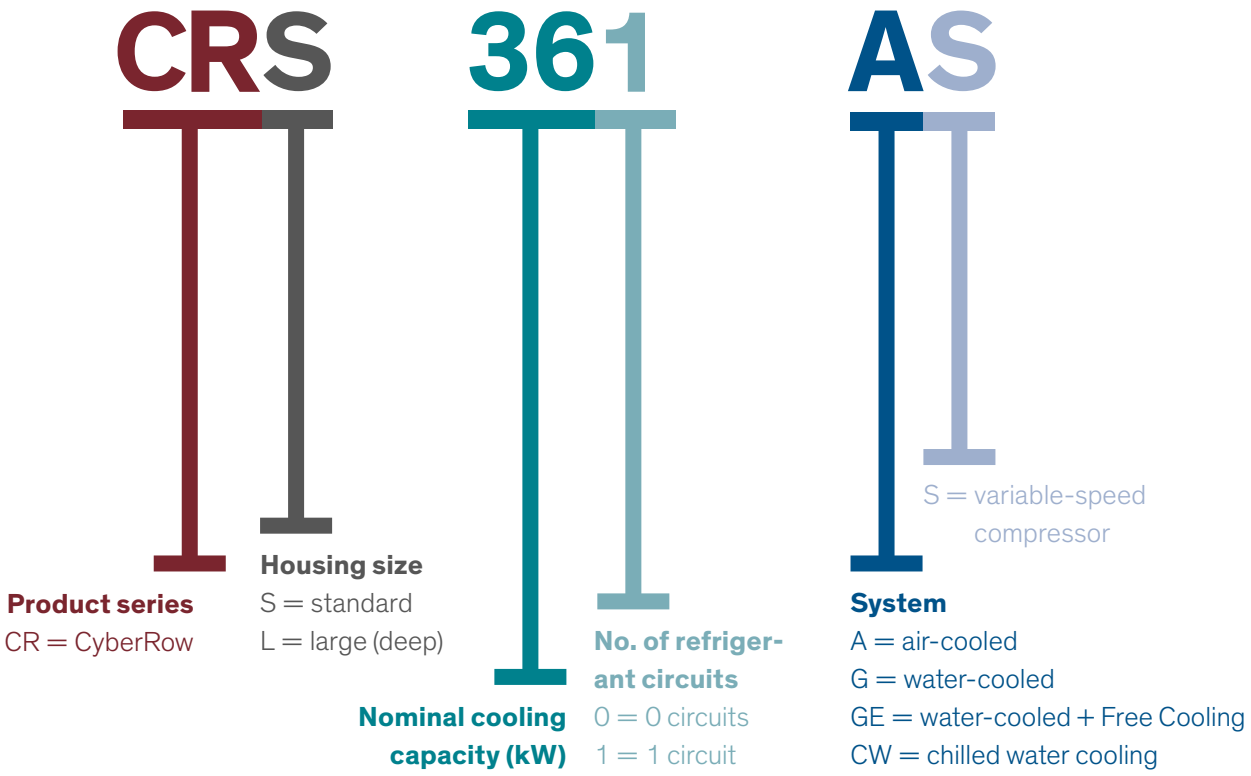
Climate Customized #2
Standard units with special options

Above and beyond the standard units, STULZ designers realize customer-specific options to individualize standard units to an enormous extent.

Climate Customized #3
Tailor-made air conditioning solutions

STULZ has the solution! In collaboration with the customer and tailored to suit requirements, we plan, implement and continuously look after the perfect air conditioning solution. This allows the development of individual air conditioning solutions with performance features which all match one another perfectly from the outset.

Nomenclature



Technical data

CyberRow		DX			GE		CW		
Model		**CRS/CRL 211 AS**	**CRS/CRL 251 AS/GS**	**CRS/CRL 361 AS/GS**	**CRS/CRL 251 GES**	**CRS/CRL 361 GES**	**CRS/CRL 210 CW**	**CRS/CRL 320 CW**	**CRS/CRL 560 CW**
Airflow rate[1]	m³/h	4,600	5,400	8,000	5,400	8,000	5,000	6,400	11,200
Cooling capacity[1]	kW	22.0	25.0	37.0	25.0	37.0	22.7	33.3	58.2
Cooling capacity, Indirect Free Cooling[2]	kW	–	–	–	21.5	30.9	–	–	–
Height	mm	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950
Width	mm	300	400	600	400	600	300	400	600
Depth	mm	1,200/1,375	1,175/1,375	1,175/1,375	1,175/1,375	1,175/1,375	1,175/1,375	1,175/1,375	1,175/1,375

[1] Return air conditions: 35 °C/25 % r. h.;
DX units: condensing temperature 45°C; CW units: water inlet 10 °C/water outlet 15 °C, glycol proportion 0 %.
[2] Return air conditions: 35 °C / 25 % r. h., water temperature 10 °C/15 °C, glycol proportion 0 %.

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Close to you around the world

With specialist, competent partners in ten German branches and in subsidiaries and exclusive sales and service agents around the world.
Our eleven production sites are situated in Europe, North America and Asia.

For further information, please visit our website at **www.stulz.com**

You can find out more on our website.