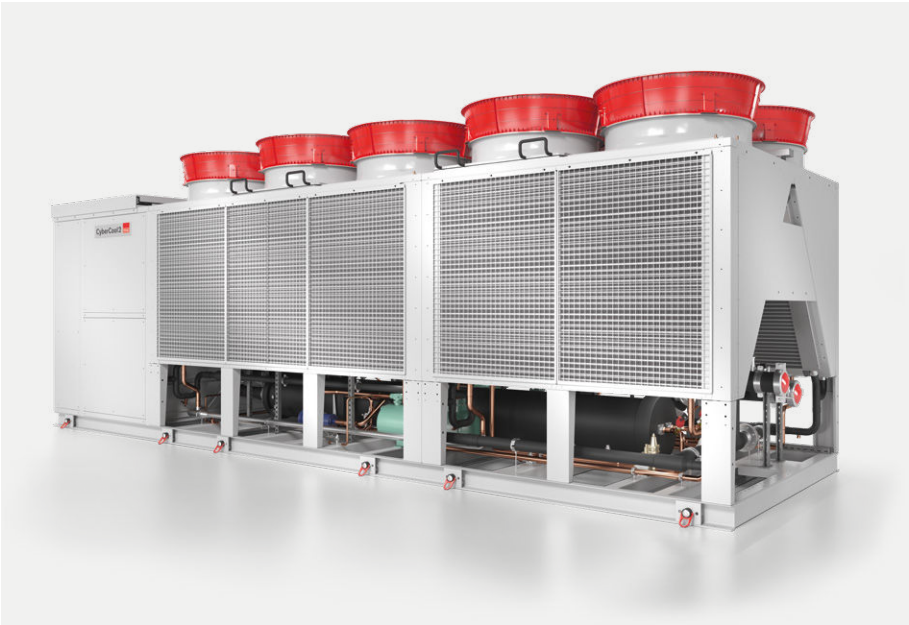
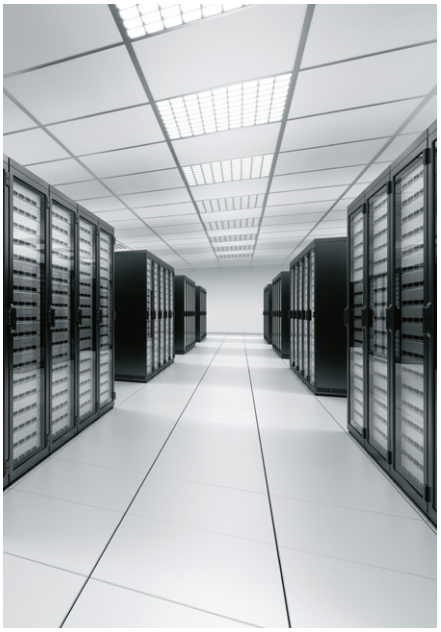
STULZ

CLIMATE. CUSTOMIZED.





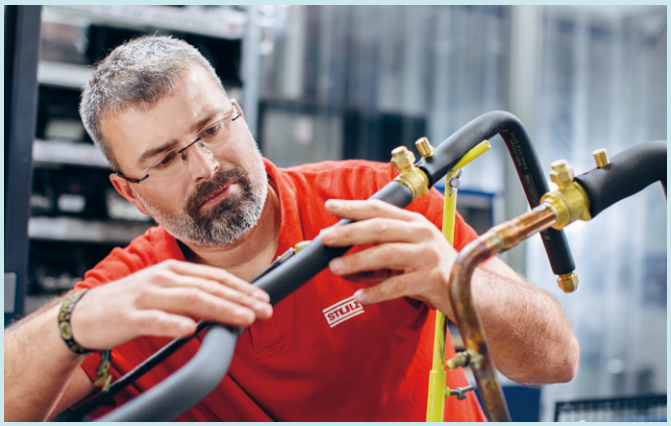
CyberCool 2

The quietest, most efficient and most reliable chiller in its class.
Made as required. Made in Germany.

STULZ air conditioning systems for mission-critical applications – around the globe

For over 40 years we have been one of the world's leading manufacturers of air conditioning solutions for mission-critical applications. For our customers, we develop and produce air conditioning systems and chillers, plan individual air conditioning solutions, implement the systems and keep them up and running with our own Service.

Our headquarters are in Hamburg. With 19 subsidiaries, 10 production sites, and sales and service partners in more than 140 countries, we make sure we are close to our customers wherever they are in the world.



Technical peak performance from Germany
It is the combination of decades of experience and a continuous innovative spirit that makes STULZ unique. From engineers to customer advisers, we work in closely intertwined teams, which jointly develop and continually optimize our air conditioning and chiller systems throughout all stages of development. So it should come as no surprise that our systems are extremely reliable and durable, and set the benchmark for energy efficiency around the globe.

Service 24/7, 365 days a year
In Germany, 140 highly qualified service engineers at 10 sites guarantee fast, expert solutions to your problems – around the clock. For 40 years, our customers have placed their trust in STULZ Service's technical expertise, comprehensive resources and seamless availability.

Maximum energy efficiency. Minimum noise emissions. Optimum reliability.

Maximum energy efficiency and optimum reliability for complex, sophisticated chiller solutions without compromise – this is what our CyberCool 2 chillers stand for. And for a completely novel overall concept, whereby all the components of the CyberCool 2 are perfectly harmonized to ensure both high energy efficiency and low noise emissions.

In the spotlight: The best individual cooling solution for customers
Every CyberCool 2 is configured precisely for the customer's needs. Whether it's size, cooling capacity, compressors, the electrics or refrigerant:
with the CyberCool 2, we will find the optimum cooling solution for you. As well as taking individual wishes for modularity and additional options into consideration, we also answer to international standards and country-specific challenges.

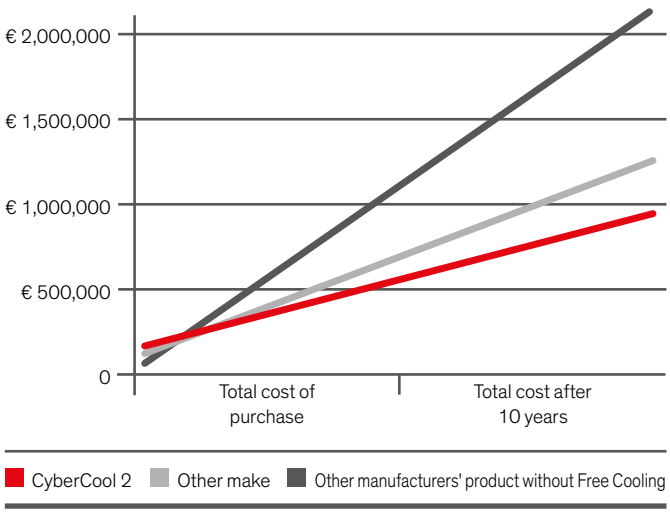
Efficient and reliable. And quiet.
Energy savings at the expense of availability? Less noise to the detriment of energy efficiency? There's no compromise with STULZ chiller solutions. With the CyberCool 2, all performance values are optimized in perfect balance to suit customers' wishes: more efficiency and availability, lower noise.

CyberCool 2

Our TCO promise
The CyberCool 2 has been consistently developed to become the TCO leader in the cooling market – in other words, the cooling system with the lowest total cost of ownership throughout its life, in all operating conditions.

Our customers make sensible investment decisions. Because they know that investing in the quality, reliability and efficiency of STULZ chiller solutions pays off during operation after just a short time, due to energy savings and operational reliability.

The purchase cost of the CyberCool 2 can be offset after a very short time



CyberCool 2 – Energy efficiency at a glance

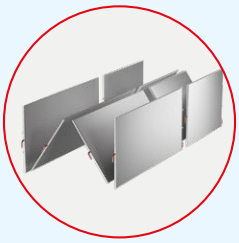
Maximum size components ensure low energy consumption.

1. **Maximized Free Cooling coils**
   - Reduced compressor runtime thanks to early switchover to efficient Mixed and Free Cooling mode
   - Minimized pump energy consumption thanks to low hydraulic pressure drops
   - Designed with copper and aluminum coils

2. **Large microchannel condensers**
   - Low fan energy consumption due to minimized air resistance
   - Low condensing temperature in DX mode for low energy consumption
   - Improved heat transfer combined with reduced quantities of refrigerant

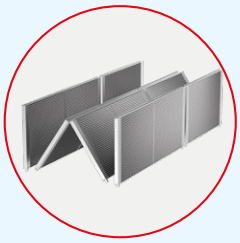
3. **EC fans with reduced speed**
   - Lower nominal current and noise emissions, as the fans always run in partial load mode
   - Optimized for continuous operation

4. **Evaporators with a large surface area for high evaporation temperatures**
   - Low pressure drops and optimized heat transfer ensure especially high evaporation temperatures



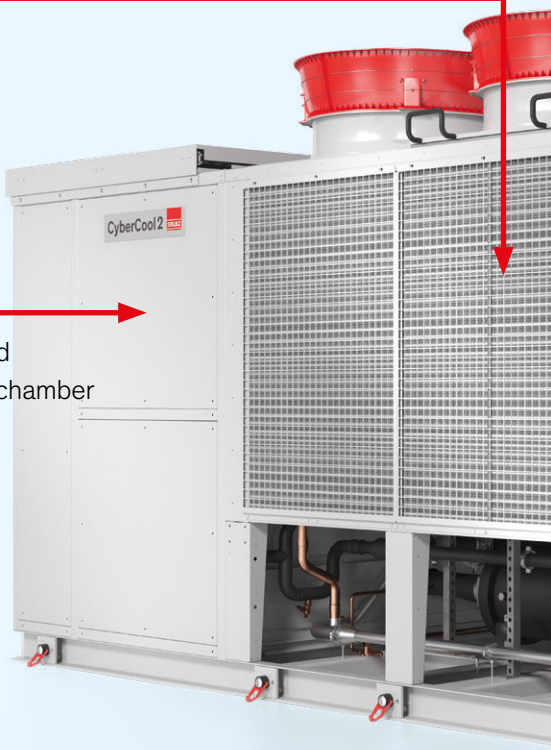
Maximum size condensers

EER↑

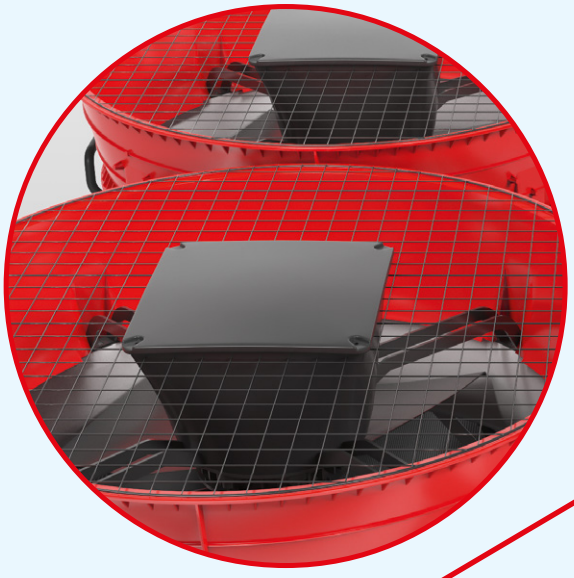


Free Cooling coils with large surface area

EER↑

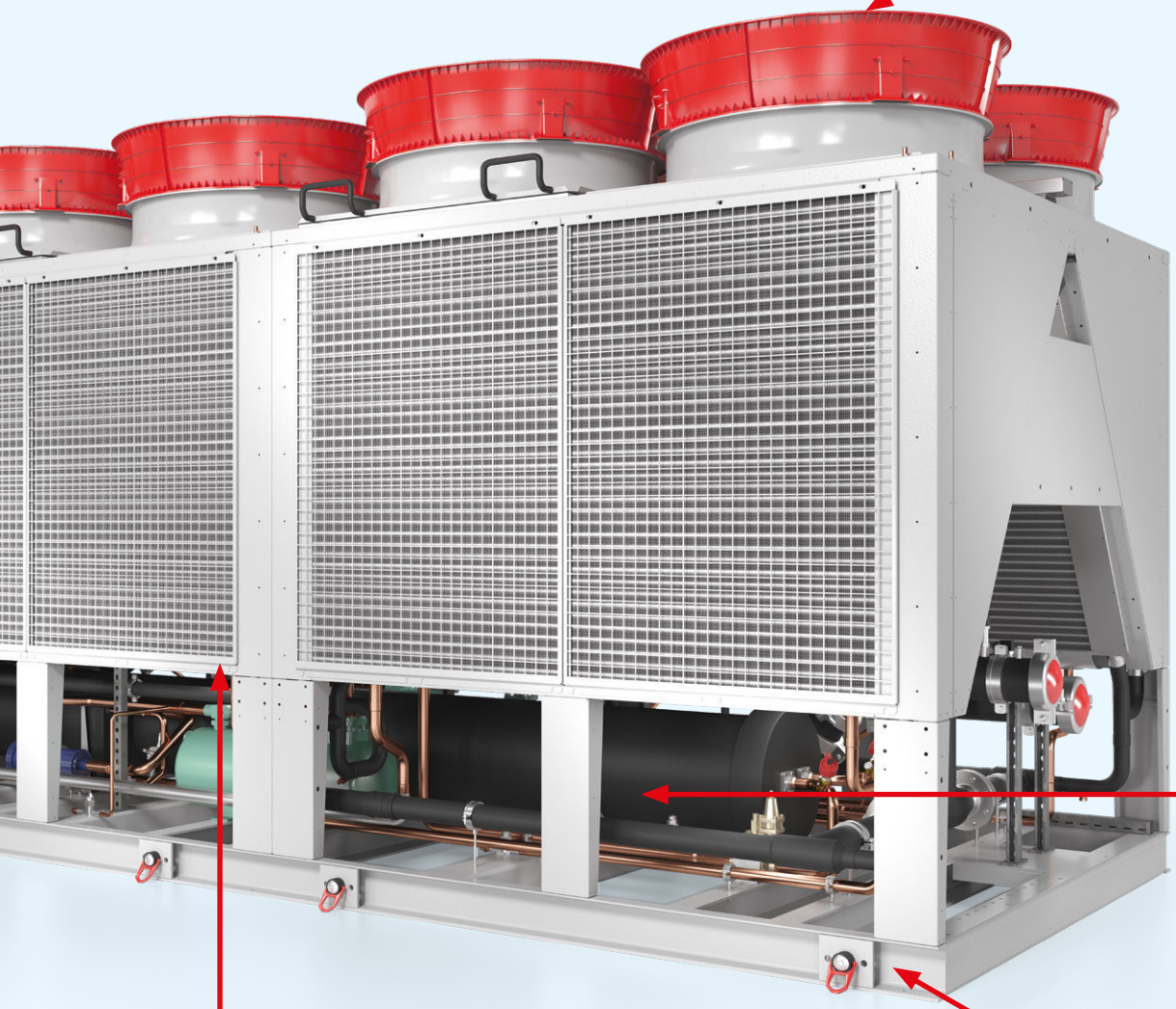


Encapsulated compressor chamber



EER↑

EC fans with
large surface area (Ø 910 mm)



EER↑

Maximum size
evaporator

Base frame of welded steel

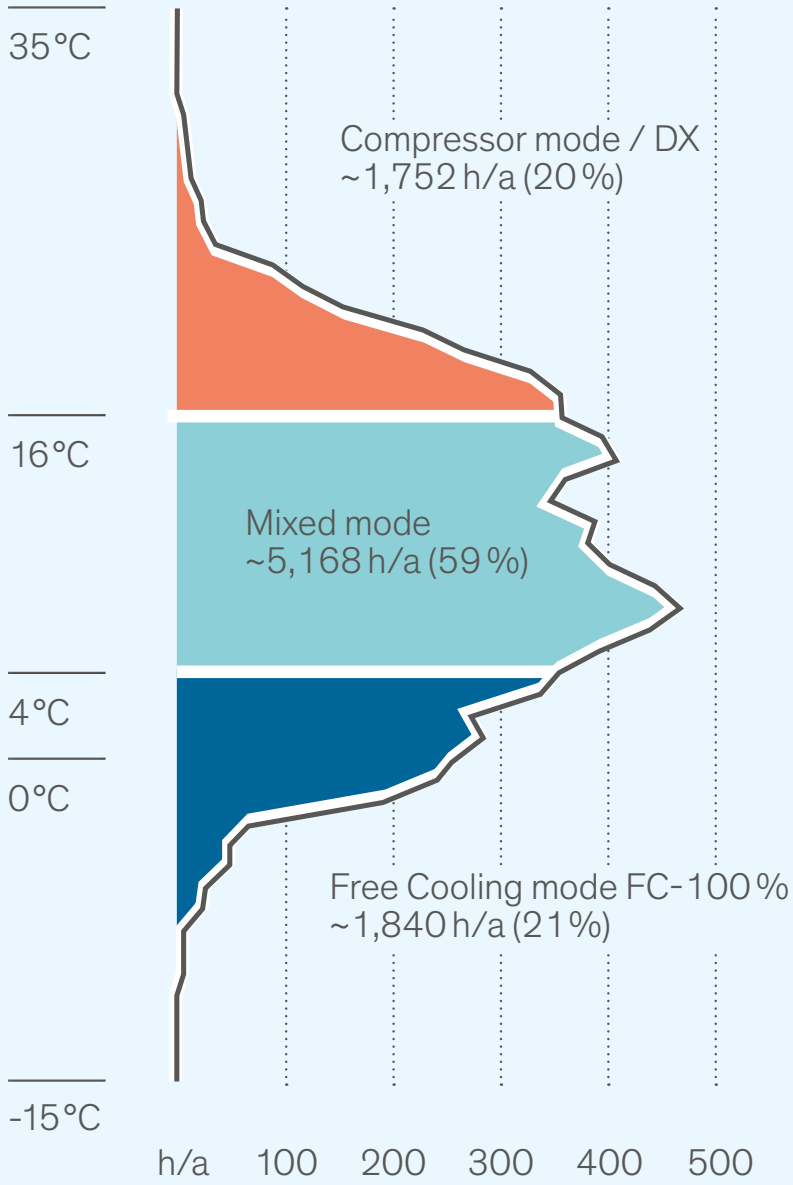
Low condenser line

EER↑

Free Cooling.
Maximum possible efficiency.

Mixed mode

Hamburg



Basis for calculation: 30 % ethylene

The Free Cooling of the CyberCool 2 uses the outside temperature, which offers the greatest potential savings of all, especially in cold and temperate climates.

When outside temperatures are low, Free Cooling can completely replace energy-intensive compressor cooling. In temperate climates, the CyberCool 2 runs in energy-efficient Mixed mode for most of the year, i.e. with a mixture of Free Cooling and compressor cooling.

CyberCool 2 – Top of the class in energy:

- Early switchover to Free Cooling
- Maximum use of Free Cooling coils between compressor mode and Free Cooling
- Coils designed to allow the maximum surface area

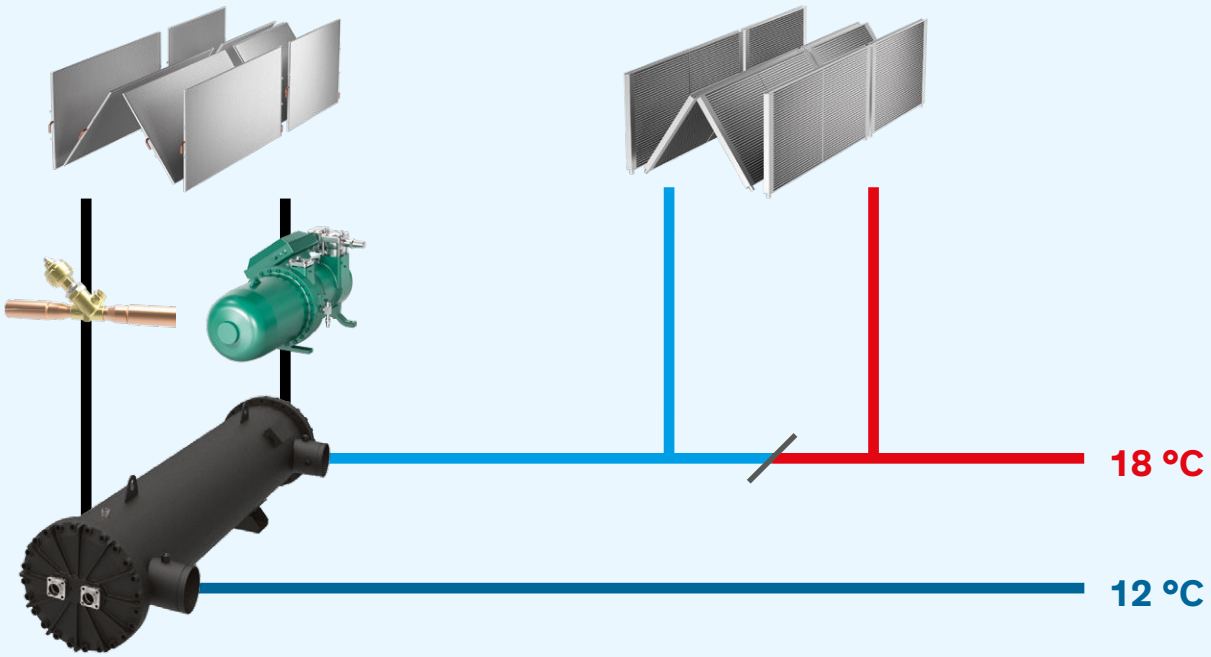
* Cold water inlet / outlet: 18 °C/12 °C
External air: 35 °C

No efficiency without "Mix Mode Boost"

In temperate zones, chillers with Free Cooling run in Mixed mode most of the year. Therefore, the greatest potential savings, by some margin, can be achieved by optimizing Mixed mode.

In Mixed mode, the outstanding performance values of the CyberCool 2 have maximum impact: it efficiently utilizes the condensation pressure control in Mixed mode to cut the energy consumption of the compressors to a minimum.

Innovation: Unlike conventional chiller solutions, with "Mix Mode Boost" the CyberCool 2 makes 100 % use of the surfaces of the DX coils without having to regulate the fan speed. This dramatically enhances energy efficiency and slashes operating costs.

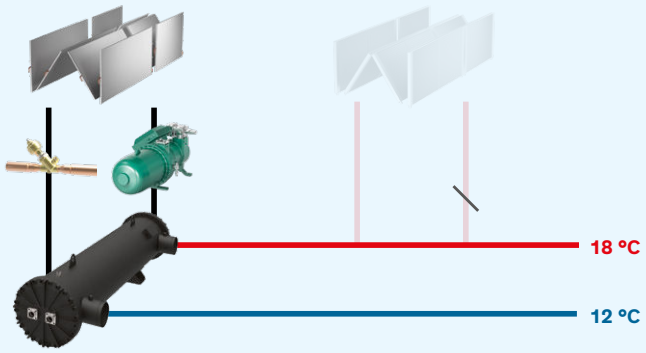


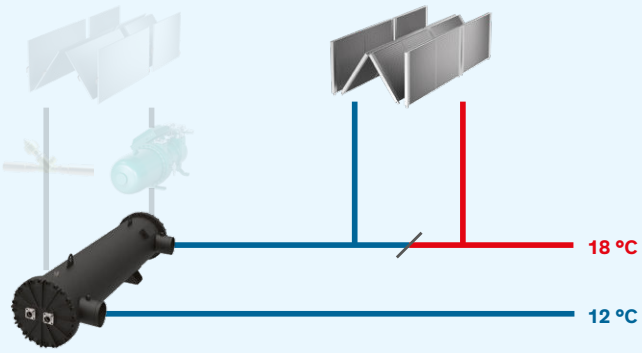
DX mode

The CyberCool 2 cuts operating costs to a minimum in every operating mode, even in relatively energy-intensive DX mode: in DX mode, the CyberCool 2 achieves the best efficiency values in mission-critical applications compared with competing systems – every time.

Free Cooling

At low outside temperatures, the water is cooled solely with the aid of these temperatures. Energy consumption is reduced to an absolute minimum thanks to the maximized Free Cooling coils and early, infinite switchover points.





Noise-optimized for all applications

There are many projects where the noise emissions of the chillers have to be factored in. For installation near an office building or in a hospital, in particular, low noise values are essential.

When designing the CyberCool 2 chiller, STULZ focused on optimizing noise without neglecting energy efficiency.

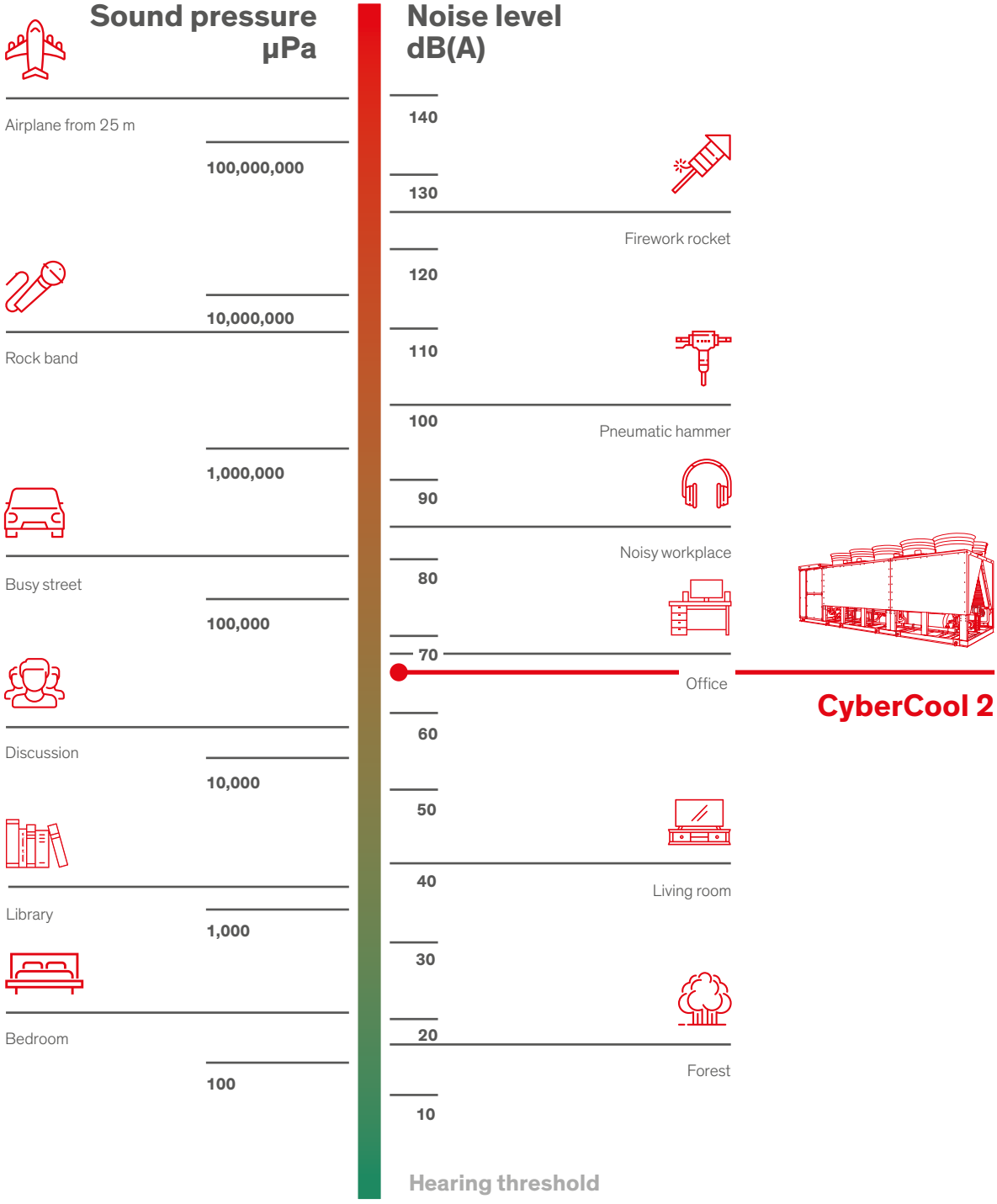
The CyberCool 2 is equipped with high-quality components that greatly minimize the noise level:

- EC fans with a large surface area (Ø 910 mm) enable operation at reduced speed
- The airflow properties ensure reduced air turbulence, resulting in low pressure drops and noise emissions
- Sound-insulated compressor chamber
- The fan diffuser attachment (optional) optimizes the airflow and therefore cuts electricity consumption by up to 20 % and noise by up to 5 dB(A)

Powerful and quiet

Where there are people, noise emissions should always be kept to a minimum. This applies in commercial and industrial zones, and even more so in the vicinity of offices, hospitals and residential areas.

The CyberCool 2 is equipped with components that lower noise emissions to a most impressive minimum. The CyberCool 2 therefore works demonstrably more quietly than the STULZ engineering teams who developed it!



Efficient. And reliable. And quiet! For applications both large …

With the CyberCool 2, the optimum operating point can be achieved for every project. Energy efficiency, noise emissions or both can be individually optimized, depending on your priorities.

The following examples demonstrate the versatility of the CyberCool 2.

Priority: Energy efficiency

The fans run at high speed.

Sound pressure (1 m)	EER	**Cooling capacity**	Airflow	Fan power consumption
74 dB(A)	3.81	**760 kW**	308,000 m³/h	1.63 kW

Priority: Noise emissions

Noise values are reduced to the minimum.

Sound pressure (1 m)	EER	**Cooling capacity**	Airflow	Fan power consumption
66 dB(A)	2.72	**625 kW**	123,200 m³/h	0.10 kW

Priority: Optimum noise emissions and energy efficiency

Lowest noise emissions with optimum efficiency.

Sound pressure (1 m)	EER	**Cooling capacity**	Airflow	Fan power consumption
70 dB(A)	3.77	**735 kW**	246,400 m³/h	0.83 kW

Comments:
Technical data of the CyberCool 2 ESO 7402 AHF
under the following conditions:
Water 18/12 °C,
outside temperature 35 °C, incl. AxiTop
Noise level (full load) at a distance of 1 m in
free-field conditions (to ISO 3744),
30 % glycol

… and small

Chillers both large and small achieve excellent values for efficiency, reliability and noise emissions.

Priority: Noise emissions

Noise values are reduced to the minimum.

Sound pressure (1 m)	EER	**Cooling capacity**	Airflow	Fan power consumption
65.5 dB(A)	3.78	**193 kW**	64,000 m³/h	1 kW

Priority: Optimum noise emissions and energy efficiency

Lowest noise emissions with optimum efficiency.

Sound pressure (1 m)	EER	**Cooling capacity**	Airflow	Fan power consumption
66 dB(A)	4.1	**200 kW**	88,000 m³/h	1.32 kW

Comments:
Technical data of the CyberCool 2 CQO 1902 ASF
under the following conditions: Water 18/12 °C, outside temperature 35 °C, incl. AxiTop
Noise level (full load) at a distance of 1 m in free-field conditions (to ISO 3744), 30 % glycol

Energy Efficiency Ratio (performance coefficient)
The energy efficiency ratio (EER) of a chiller describes the ratio of cooling capacity to electrical power consumption at a certain operating point.
EER = cooling capacity/power consumption

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

A vast range of options that leave nothing to be desired: The requirements facing air conditioning systems vary enormously depending on location and local climate, heat production, room planning, environmental and noise protection, not to mention safety.

The CyberCool 2 offers the optimum chiller solution for every requirement. Structural options and equipment versions dependent on capacity can be combined as desired. And it goes without saying that if you wish, our teams will work with you to plan and implement your application.

Application 1 "Steppe and desert climate": extremely hot, dusty sites

What makes the CyberCool 2 ideal for hot regions:

- **Active switch cabinet cooling (standard)**
  Protects the switch cabinet from overheating. A temperature of 35 °C is not exceeded, even at very high outside temperatures.

- **Compressor chamber with forced airflow (standard)**
  Protects the compressor chamber from overheating

- **Organic debris protective grill (optional)**
  Protects the coils from external influences such as dust or dirt, e.g. during a sandstorm

- **Coil protective grill (optional)**
  Protects the coils from vandalism

- **Corrosion protection (optional)**
  Protects all heat exchangers from aggressive ambient air, e.g. for installation sites near industrial facilities, by the sea, close to airports, and much more

- **Frequency: 60 Hz (optional)**

- **Weather-proofed roof (optional)**
  Protects the switch cabinet electronics from the weather, e.g. direct sunlight when the switch cabinet is open. Even when the cabinet is closed, it lessens the impact of heat from outside.

Cooling capacity	575 kW	455 kW	810 kW
Outside temperature	40 °C	55 °C	50 °C
EER	2.94	1.77	2.94
Sound pressure (1 m)	72 dB(A)	72 dB(A)	72 dB(A)
Operating point	Water: 12/7 °C	Water: 12/7 °C	Water: 26/20 °C

Technical data of the CyberCool 2 ESO 7402 AHF, which was designed for this region

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

With the CyberCool 2, our customers basically receive a custom tailored solution that has been ideally configured for their application.

Application 2: "Trans-Siberian and tundra climate": extremely cold, dry sites

What makes the CyberCool 2 ideal for cold regions:

- **Weather-proofed roof (optional)**
  Protects the switch cabinet electronics from the weather, e.g. rain or snow when the switch cabinet is open
- **Free Cooling coils with shut-off (optional)**
- **Coil protective grill (optional)**
  Protects the coils from vandalism
- **Switch cabinet heating**
  The switch cabinet heating guarantees the optimum temperature and humidity for the electronics, and prevents condensation from forming inside.
- **Corrosion protection (optional)**
  Protects all heat exchangers from aggressive ambient air, e.g. for installation sites near industrial facilities, by the sea, close to airports, and much more
- **Organic debris protective grill (optional)**
  Protects the coils from external influences such as hail or pollen

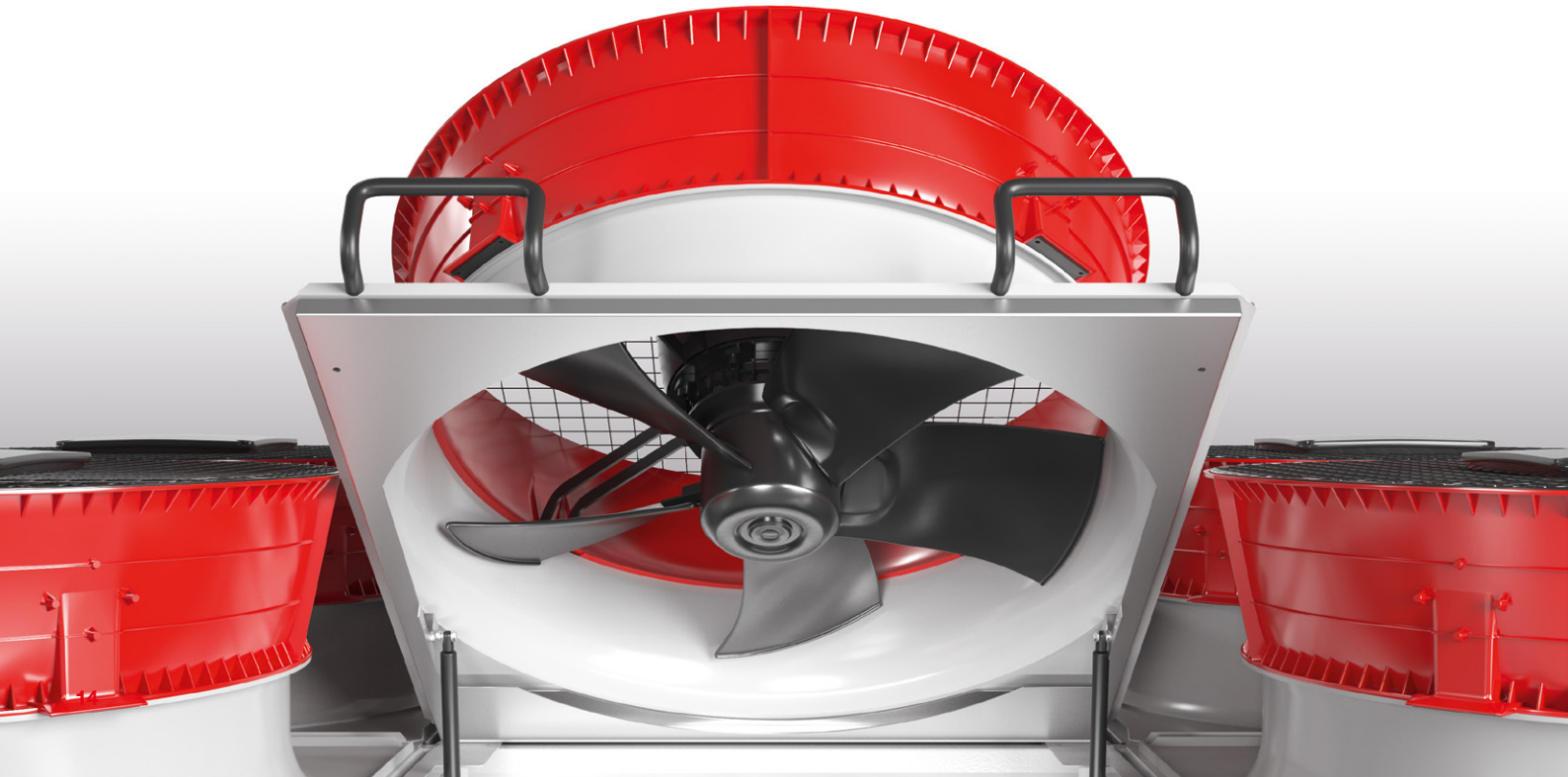
Cooling capacity	753 kW	753 kW	1000 kW
Outside temperature	35 °C	-40 °C	33 °C
EER	3.91	3763	4.64
Sound pressure (1 m)	74 dBA	≥0 dBA	74 dBA
100 % Free Cooling	2.3 °C	2.3 °C	7 °C
Operating point	Water: 18/12 °C	Water: 18/12 °C	Water: 26/20 °C

Technical data of the CyberCool 2 ESO 7402 AHF, which was designed for this region

Application 3: Efficient and economical maintenance

Maintenance of the CyberCool 2 is exceptionally efficient and economical: our customers gain peace of mind, save time and cut maintenance downtimes to a minimum.

- Fans run backwards every so often before starting, enabling easy rough cleaning of coil surfaces (standard)
- Simple spare parts concept:
  Uniform sizes and components specially adapted for industry mean spare parts are available all over the world
- Distinction between high and low voltage in the switch cabinet (standard), for easy component assignment
- Good access to main components (standard)
- Simple installation and machine connection (standard)
- Organic debris protective grill (optional)
- Fold-away fans (optional):
  Easy coil cleaning to maintain full perfomance over time
- Free Cooling coils with shut-off (optional)
- Laptop table (optional):
  Simplified laptop use during maintenance
- Light and socket in the switch cabinet (optional)
- Weather-proofed roof (optional):
  Fast and simple maintenance in all weathers



Application 4: Very long "Free Cooling" phase with separate glycol and water circuits offers huge potential savings

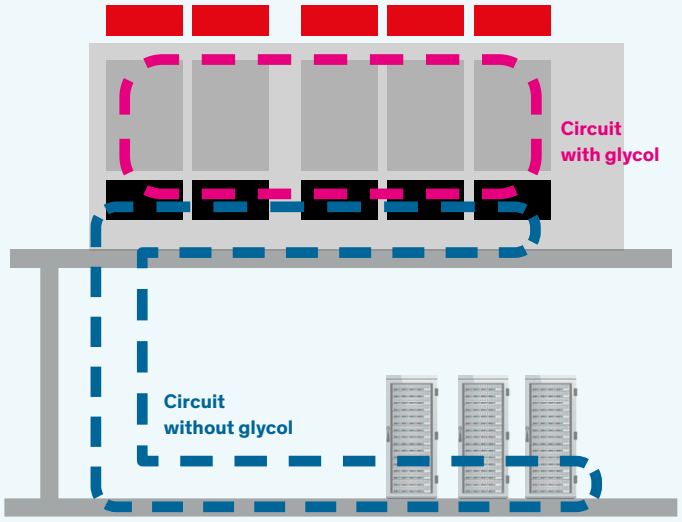
There are some buildings where glycol cannot be used. With the "**Non-glycol²** option", glycol is only used in the Free Cooling circuit. This option provides the benefits of Free Cooling while refraining from the use of glycol in the building.

However, by separating the Free Cooling and chilled water circuits with an additional brazed plate heat exchanger, the switchover points to Free Cooling and Mixed mode do shift by a few degrees Celsius. To be energy-efficient, the chiller must run in Mixed and Free Cooling mode as early as possible.

This unique STULZ solution keeps efficiency losses to a minimum.

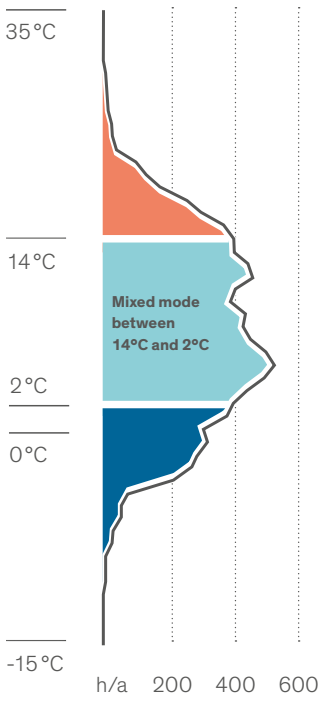
- Brazed plate heat exchanger with minimized pressure drops
- This permits the use of a "small" Free Cooling pump with low energy consumption (must run continuously in Mixed and Free Cooling mode)
- High quality, meticulously selected components

Free Cooling even without glycol in the building

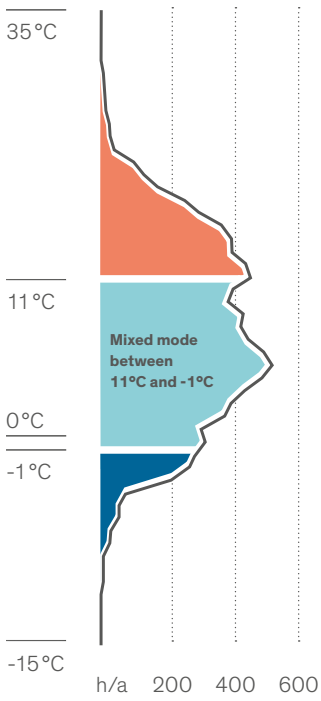


Optimum switchover points save energy – especially with separate glycol and water circuits

CyberCool 2 ESO 7402 AHG



Other manufacturers' non-glycol product



	Make	
Measurements p. a.	CyberCool 2	Other make
No. of hours MIX+FC	6,239 h	5,137 h
in %	71 %	59 %
Operating costs	€ 88,866.00	103,474.00 €
Savings per year	€ 14,608	

CyberCool 2 chiller based on calculations:

ESO 7402 AHG at 18/12 °C, 35 °C outside temperature, weather profile Hamburg, € 0.12/kWh
For chillers without glycol, the Free Cooling pump was included in the calculation, which drastically increases operating costs.

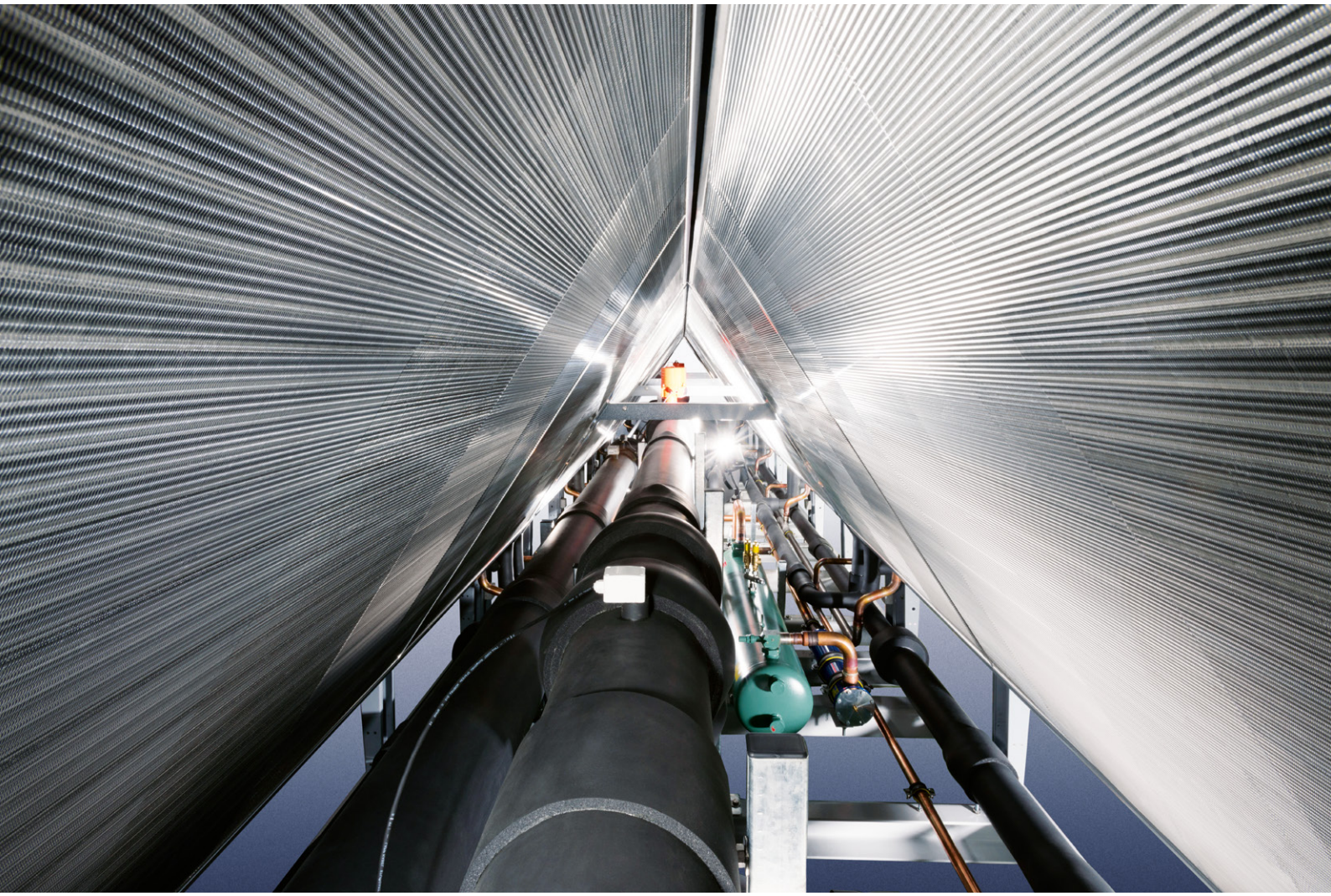
STULZ blog: Glycol-free CW systems

Compressor mode Mixed mode Free Cooling mode

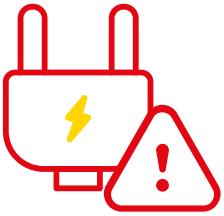
Reliability – Made in Germany

All system components of the CyberCool 2 have been perfectly harmonized and designed for dependable, continuous operation 24/7, 365 days a year, with maximum operational reliability.

- Emergency mode:
  If necessary, the fan speed can be raised to maximum capacity at any time
- Standardized and commonly available system components ensure availability and a constant spare parts supply
- Function and pressure tests of all mechanical and electrical components ensure quality control
- Continuously available operational and system concept thanks to two symmetrical refrigerant circuits with identical system components
- Corrosion protection (optional) of all heat exchangers against aggressive ambient air, e.g. for installation sites near industrial facilities, by the sea, close to airports, and much more
- Immediate start after power failure
- Logically consistent separation of airflow through individual coil sets
- Quality management from development to start-up, through certification to ISO 9001 and ISO 14001
- and a great deal more



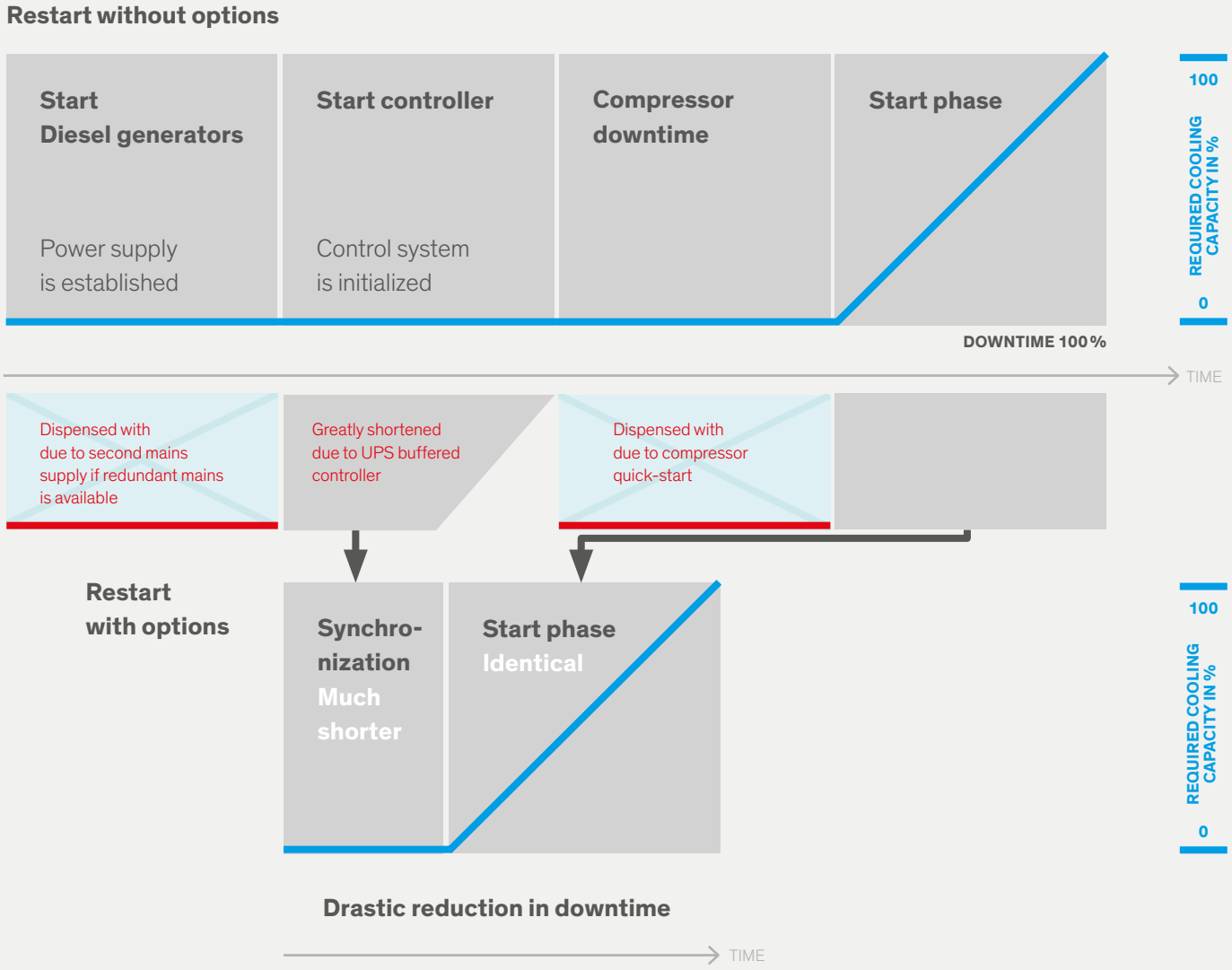
Power failure – be best prepared with the CyberCool 2



With the options available from STULZ, the CyberCool 2 reaches the required cooling capacity as quickly as possible after power failure, minimizing downtimes.

- UPS buffered controller and compressor quick-start (optional)
- Dual mains supply A-B with automatic or manual switchover (optional)
- Compressor soft start to prevent current spikes (optional)

What does restart after power failure look like with and without options?



Controller

The CyberCool 2 is ideal for integration in existing systems and can be controlled to perfection by the STULZ controller.

- Hardware and software developed in-house
- Project-specific software adaptation
- Connection to building automation systems:
  Compatible with all common BMS protocols
- Several chillers are operated in parallel
- Sequencing for runtime compensation/alarm switching
- Programming of customized emergency routines
- Sophisticated warning and alarm system

Nomenclature

CyberCool 2

ESO 9602 ASF

Installation
O = outdoor

Free Cooling
F = with FC
N = without FC
G = glycol-free

CyberCool 2
E = screw compressor
C = scroll compressor

No. of refrigerant circuits
2 = 2 circuits

Outside temperature range
S = standard
H = high

Nominal cooling capacity (kW)

Noise class
S = standard
Q = quiet

Refrigerant system
A = air cooled

Technical data

Performance data – ESO ... ASN

Model		4302	4602	4702	5102	6002	6602	6702	7102	7402	8002	8702	9602	9702	9802	10202	11102	11502	12602	13102	14102
Operating point 18 °C/12 °C [1]																					
Cooling capacity	kW	427	461	492	520	591	626	656	701	752	790	875	945	899	962	1,022	1,082	1,144	1,226	1,296	1,375
Total power consumption	kW	110	116	125	129	158	164	170	179	192	199	240	254	234	247	268	277	308	322	349	361
EER		3.88	3.96	3.95	4.03	3.75	3.82	3.86	3.92	3.92	3.97	3.64	3.73	3.84	3.90	3.82	3.91	3.72	3.81	3.71	3.81
Noise																					
Noise level at a distance of 1 m [2]	dB(A)	74		75				75		75				76		76				76	
Dimensions																					
Length	mm	6,170		7,250				8,330		9,480				10,560		11,640				12,785	
Width	mm	2,300																			
Height	mm	2,500																			
Empty weight	kg	5,426	5,454	5,852	5,937	6,544	6,633	7,013	7,068	7,761	7,903	8,740	8,884	9,241	9,356	10,288	10,467	10,505	10,688	11,129	11,131
Operating weight	kg	5,851	5,879	6,350	6,440	7,048	7,136	7,541	7,596	8,570	8,710	9,620	9,760	10,090	10,205	11,820	12,000	12,100	12,290	12,790	12,970

Performance data – ESO ... ASF

Model		4302	4602	4702	5102	6002	6602	6702	7102	7402	8002	8702	9602	9702	9802	10202	11102	11502	12602	13102	14102
Operating point 18 °C/12 °C [1]																					
Cooling capacity	kW	427	461	492	520	591	626	656	701	752	790	875	945	899	962	1,022	1,082	1,144	1,226	1,296	1,375
Total power consumption	kW	113	120	129	133	162	168	175	184	198	205	246	260	241	254	275	285	315	330	357	369
EER		3.76	3.85	3.81	3.90	3.65	3.72	3.74	3.81	3.80	3.86	3.55	3.64	3.73	3.79	3.71	3.80	3.63	3.72	3.63	3.72
Temp. 100 % Free Cooling	°C	2.7	2.0	4.2	3.7	2.5	1.9	3.6	3.0	3.3	2.8	1.7	0.8	2.4	1.7	3.3	2.7	2.1	1.3	1.5	0.8
Noise																					
Noise level at a distance of 1 m [2]	dB(A)	76		77				78		78				79		79				80	
Dimensions																					
Length	mm	6,170		7,250				8,330		9,480				10,560		11,640				12,785	
Width	mm	2,300																			
Height	mm	2,500																			
Empty weight	kg	6,197	6,225	6,848	6,934	7,540	7,629	8,167	8,222	9,203	9,344	10,182	10,326	10,960	11,074	12,114	12,292	12,331	12,514	13,262	13,444
Operating weight	kg	6,913	6,941	7,690	7,780	8,390	8,480	9,092	9,147	10,550	10,690	11,600	11,750	12,448	12,565	14,420	14,600	14,700	14,880	15,800	15,980

[1] Chilled water inlet/outlet: 18 °C/12 °C, outside air: 35 °C, ethylene glycol: 30 %
[2] Noise level at a distance of 1 m in free-field conditions (to ISO 3744)

Performance data – ESO ... AHN

Model		4302	4602	4702	5102	6002	6602	6702	7102	7402	8002	8702	9602	9702	9802	10202	11102	11502	12602	13102	14102
Operating point 18 °C/12 °C [1]																					
Cooling capacity	kW	425	463	491	522	585	636	648	708	757	814	861	945	882	958	1,014	1,088	1,134	1,236	1,295	1,389
Total power consumption	kW	113	124	128	136	158	172	176	194	199	214	234	257	230	252	266	287	303	330	342	368
EER		3.75	3.74	3.84	3.84	3.69	3.69	3.68	3.64	3.80	3.81	3.69	3.67	3.84	3.79	3.81	3.79	3.74	3.74	3.79	3.77
Noise																					
Noise level at a distance of 1 m [2]	dB(A)	74 / 62		75 / 63				75 / 64		75 / 64				76 / 65		76 / 68				76 / 66	
Dimensions																					
Length	mm	6,170		7,250				8,330		9,480				10,560		11,640				12,785	
Width	mm	2,300																			
Height	mm	2,500																			
Empty weight	kg	5,446	5,454	5,852	5,937	6,544	6,633	7,013	7,068	7,761	7,903	8,740	8,884	9,241	9,356	10,288	10,467	10,505	10,688	11,129	11,311
Operating weight	kg	5,871	5,879	6,350	6,440	7,050	7,140	7,541	7,596	8,570	8,710	9,620	9,760	10,090	10,205	11,820	12,000	12,100	12,290	12,790	12,970

Performance data – EQO ... ASN

Model		3002	3302	3702	4002	4702	5102	6002	6602	7402	8002	8702	9602	10202	11102
Operating point 18 °C/12 °C [1]															
Cooling capacity	kW	322	337	382	401	499	525	605	637	753	790	878	945	1,001	1,064
Total power consumption	kW	74	76	92	95	119	123	150	155	186	193	234	248	266	278
EER		4.35	4.41	4.16	4.22	4.20	4.27	4.05	4.12	4.05	4.08	3.76	3.81	3.77	3.82
Noise															
Noise level at a distance of 1 m [2]	dB(A)	69				70				72				70	
Dimensions															
Length	mm	7,250				9,480				11,640				12,785	
Width	mm	2,300													
Height	mm	2,500													
Empty weight	kg	5,740	5,830	5,823	5,913	7,398	7,538	9,028	9,168	10,117	10,287	10,313	10,503	11,044	11,224
Operating weight	kg	6,140	6,230	6,220	6,310	7,910	8,050	9,580	9,720	10,990	11,150	11,260	11,450	12,650	12,830

Performance data – EQO ... ASF

Model		3002	3302	3702	4002	4702	5102	6002	6602	7402	8002	8702	9602	10202	11102
Operating point 18 °C/12 °C [1]															
Cooling capacity	kW	322	337	382	401	499	525	605	637	753	790	878	945	1,001	1,064
Total power consumption	kW	77	79	95	98	123	127	154	159	191	199	239	254	271	284
EER		4.18	4.25	4.03	4.10	4.07	4.13	3.94	4.02	3.94	3.98	3.67	3.73	3.69	3.74
Temp. 100 % Free Cooling	°C	5.9	5.6	4.6	4.1	5.0	4.6	3.3	2.8	4.1	3.7	2.6	1.8	3.2	2.5
Noise															
Noise level at a distance of 1 m [2]	dB(A)	72				73				73				75	
Dimensions															
Length	mm	7,250				9,480				11,640				12,785	
Width	mm	2,300													
Height	mm	2,500													
Empty weight	kg	6,707	6,787	6,790	6,880	8,793	8,933	10,423	10,573	11,879	12,059	12,075	12,265	13,106	13,268
Operating weight	kg	7,480	7,560	7,560	7,650	9,890	10,030	11,560	11,710	13,580	13,760	13,850	14,040	15,650	15,830

Technical data

Performance data – EQO ... AHN

Model		3002	3302	3702	4002	4702	5102	6002	6602	7402	8002	8702	9602	10202	11102
Operating point 18 °C/12 °C [1]															
Cooling capacity	kW	333	357	375	398	498	527	598	643	759	814	863	944	992	1,071
Total power consumption	kW	81	88	93	99	123	130	151	164	193	209	227	253	263	287
EER		4.09	4.08	4.01	4.01	4.05	4.06	3.95	3.92	3.94	3.91	3.79	3.73	3.77	3.73
Noise															
Noise level at a distance of 1 m[2]	dB(A)	69				70				72				70	
Dimensions															
Length	mm	7,250				9,480				11,640				12,785	
Width	mm	2,300													
Height	mm	2,500													
Empty weight	kg	5,740	5,830	5,823	5,913	7,398	7,538	9,028	9,168	10,117	10,287	10,313	10,503	11,044	11,224
Operating weight	kg	6,140	6,220	6,230	6,310	7,910	8,050	9,580	9,720	10,990	11,150	11,260	11,450	12,650	12,830

Performance data – CSO ... ASN

Model		541	621	801	1102	1302	1602	1902	2402	2802	3702	4002	4602	5002	5902
Operating point 18 °C/12 °C [1]															
Cooling capacity	kW	57	66	79	115	132	175	202	245	299	373	398	490	531	611
Total power consumption	kW	14	17	22	29	33	44	51	67	77	103	112	126	139	165
EER		4.00	3.93	3.53	4.01	3.93	3.99	3.99	3.65	3.87	3.64	3.56	3.90	3.81	3.71
Noise															
Noise level at a distance of 1 m[2]	dB(A)	66			67		70			72			74		
Dimensions															
Length	mm	2,300			4,200		3,950			5,030			7,250		
Width	mm	1,300					2,300								
Height	mm	2,350					2,500								
Empty weight	kg	821	827	833	1,592	1,612	3,303	3,318	3,333	3,589	3,973	3,835	4,908	4,828	5,130
Operating weight	kg	837	844	858	1,633	1,668	3,362	3,395	3,416	3,719	4,147	4,020	5,177	5,101	5,425

[1] Chilled water inlet/outlet: 18 °C/12 °C, outside air: 35 °C, ethylene glycol: 30 %
[2] Noise level at a distance of 1 m in free-field conditions (to ISO 3744)

Performance data – CSO ... ASF

Model		541	621	801	1102	1302	1602	1902	2402	2802	3702	4002	4602	5002	5902
Operating point 18 °C/12 °C [1]															
Cooling capacity	kW	57	66	79	115	132	175	202	245	299	373	398	490	531	611
Total power consumption	kW	15	17	23	30	34	45	52	69	80	105	114	130	144	169
EER		3.87	3.82	3.46	3.88	3.82	3.84	3.86	3.56	3.74	3.55	3.48	3.77	3.70	3.62
Temp. 100 % Free Cooling	°C	5.3	4.2	2.3	5.3	4.2	4.4	3.2	1.3	5.0	2.3	1.6	4.3	3.6	2.2
Noise															
Noise level at a distance of 1 m	dB(A)	68			69		74			76			78		
Dimensions															
Length	mm	2,300			4,200		3,950			5,030			7,250		
Width	mm	1,300					2,300								
Height	mm	2,350					2,500								
Empty weight	kg	928	934	940	1,737	1,757	3,607	3,622	3,637	4,037	4,421	4,283	5,660	5,580	5,882
Operating weight	kg	997	1,005	1,018	1,885	1,919	3,784	3,817	3,838	4,338	4,765	4,639	6,217	6,142	6,466

Performance data – CQO ... ASN

Model		541	621	802	1102	1302	1602	1902	2402	2802	3702	4002	4602	5002
Operating point 18 °C/12 °C [1]														
Cooling capacity	kW	55	62	79	110	137	169	193	250	286	352	418	471	508
Total power consumption	kW	15	18	20	30	33	44	52	65	78	107	107	127	141
EER		3.69	3.50	3.93	3.71	4.14	3.85	3.73	3.83	3.65	3.28	3.92	3.71	3.59
Noise														
Noise level at a distance of 1 m [2]	dB(A)	63		64		66			68			69		
Dimensions														
Length	mm	2,300		4,200		3,950			5,030			7,250		
Width	mm	1,300				2,300								
Height	mm	2,350				2,500								
Empty weight	kg	821	827	1,395	1,612	3,303	3,318	3,333	3,589	3,589	3,973	4,788	4,908	4,828
Operating weight	kg	837	844	1,429	1,651	3,356	3,374	3,406	3,668	3,714	4,139	4,965	5,164	5,089

Performance data – CQO ... ASF

Model		541	621	802	1102	1302	1602	1902	2402	2802	3702	4002	4602	5002
Operating point 18 °C/12 °C [1]														
Cooling capacity	kW	55	62	78	110	137	169	193	250	286	352	418	471	508
Total power consumption	kW	15	18	22	30	34	45	53	68	81	110	110	131	145
EER		3.58	3.41	3.63	3.67	3.97	3.73	3.63	3.70	3.55	3.21	3.79	3.61	3.50
Temp. 100 % Free Cooling	°C	5.2	4.0	6.4	3.7	4.7	3.0	1.6	4.1	2.8	0.4	3.8	2.6	1.8
Noise														
Noise level at a distance of 1 m [2]	dB(A)	66		65		71			71			73		
Dimensions														
Length	mm	2,300		4,200		3,950			5,030			7,250		
Width	mm	1,300		1,300		2,300								
Height	mm	2,350		2,350		2,500								
Empty weight	kg	928	934	1,576	1,752	3,607	3,622	3,637	4,037	4,037	4,421	5,540	5,660	5,580
Operating weight	kg	997	1005	1,719	1,904	3,771	3,803	3,824	4,317	4,363	4,751	6,066	6,193	6,199

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