

STULZ

CLIMATE. CUSTOMIZED.



STULZ Shelter Cooling

**Ideal cooling solutions for modular buildings,
edge and telecommunications applications**

YOUR CLIMATE. OUR MISSION.

For over 50 years, STULZ has been setting standards in the field of cooling solutions. As a family-run company with a global footprint, we deliver innovative solutions for business-critical applications and sensitive systems. This unique combination of long-standing expertise, customer focus and engineering excellence has made STULZ a globally recognized leader in the cooling industry.

Across hyperscale, Colo and Cloud data centers, telecom and enterprise infrastructure, our energy-efficient cooling solutions ensure reliable climate control while supporting long-term sustainability. From Room Cooling and High-Density Cooling to Chillers, Liquid Cooling solutions, Air Handling Units, Container Modules and Micro Data Centers, STULZ offers a comprehensive portfolio backed by expert Services and intelligent Monitoring software. Every solution is designed and delivered to provide the reliability, efficiency and performance your business demands.



EXPERTISE

Ongoing R&D keeps our products and systems the benchmark for energy efficiency and future-proof sustainability.



PROFITABILITY

Our products are made to the highest standards. ROI: CAPEX and OPEX demonstrate that quality pays off in the long run.



SERVICE

We offer tailor-made service for round-the-clock safety. We ensure the seamless operation of your data center.



GLOBAL

Close to you – all over the world. STULZ operates in 140+ countries and delivers from 11 production sites worldwide.

STULZ Shelter Cooling – for autonomous use and maximum potential savings



Sturdy precision air conditioning units with integrated Free Cooling for self-sufficient use in modular buildings, containers, air conditioning receiver and transmitter base stations and outdoor cabinets

STULZ supplies different systems, custom tailored to your individual requirements, which come with the option of Free Cooling, saving on the cost of energy for your air conditioning.

Compact, sturdy and economical to run, these systems ensure reliable cooling around the clock for many years. The units are plug & play and therefore immediately ready for connection and use. They enable very long maintenance intervals and also remote monitoring.

Thanks to the vast range of options available, they can be configured precisely to customers' specific needs and requirements.

+ All advantages at a glance

- Reliable and efficient operation all year round
- Free Cooling cuts energy consumption by over 90 %
- Fast and simple start-up
- Low CO₂ emissions
- Long maintenance intervals
- Customized adaptations and special solutions for every application
- Connectivity: Monitoring and remote access available for all units via a web interface
- Backup operation (Free Cooling and backup cooling) on failure of the main power supply
- Automatic restart after power failure
- Worldwide service



The right solution for your application – wherever you need us

Every application has unique requirements. Our broad portfolio offers maximum flexibility with different installation concepts, airflow directions, and Free Cooling options.

Advantages of plug & play

- All products in the Shelter Cooling series are factory tested, filled with refrigerant and ready for connection and operation right from the start
- Reduced installation time and costs
- Speedier start-up

STULZ
Shelter Cooling

DX mode Mixed mode Free Cooling 48 V DC backup operation Max. kW

		DX mode	Mixed mode	Free Cooling	48 V DC backup operation	Max. kW
Indoor installation	TelAir 	•	•	•	•	17
	ShelterAir FC FCL-IN 			•	•	15
Outdoor installation	WallAir 	•	•	•	•	17
	SplitAir 	•	•	•	•	16
	ShelterAir FC FCL 			•	•	6

Optimum operational reliability for your application



Connectivity for maximum availability

All units can be monitored and remotely diagnosed via a web interface. This enables rapid intervention and therefore immediate troubleshooting in all situations. In addition, our units support numerous communication protocols for integration in building services management systems.

- Data recording
- Remote configuration
- Firmware updates
- Alarm relaying



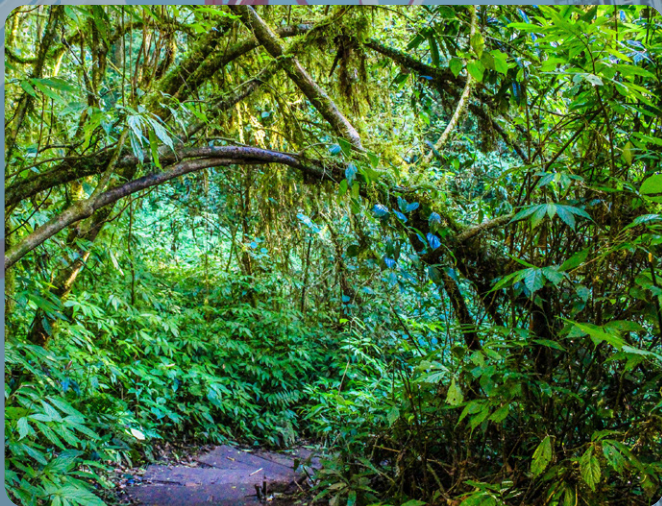
Backup operation for maximum reliability

In telecommunications, in particular, high reliability is vital to prevent network downtime. Backup operation with Free Cooling is possible, thanks to the additional 48 V DC power source. If the main power supply fails, the Shelter Cooling units continue to provide backup cooling to keep your system running reliably.



RELIABLE OPERATION IN ANY WEATHER CONDITIONS

Whether your business-critical system is working in temperatures of up to 55 °C, in ambient air contaminated by particles, in temperatures as low as -40 °C, or in a permanently humid environment – you can always rely on systems from STULZ.



Free Cooling – always giving you the best advantage

In many base stations and small data centers, comfort air conditioning units without Free Cooling mode are still used for air conditioning today, with high energy consumption as the result. Units from STULZ's Shelter Cooling series exploit the potential of Free Cooling, dramatically lowering your energy costs.

Free Cooling

At low outside temperatures, outside air is used directly for cooling. The outside air is conveyed into the interior when the air damper is open. Energy-intensive compressor cooling is not needed when outside temperatures are low. This way, Free Cooling brings you huge potential savings.

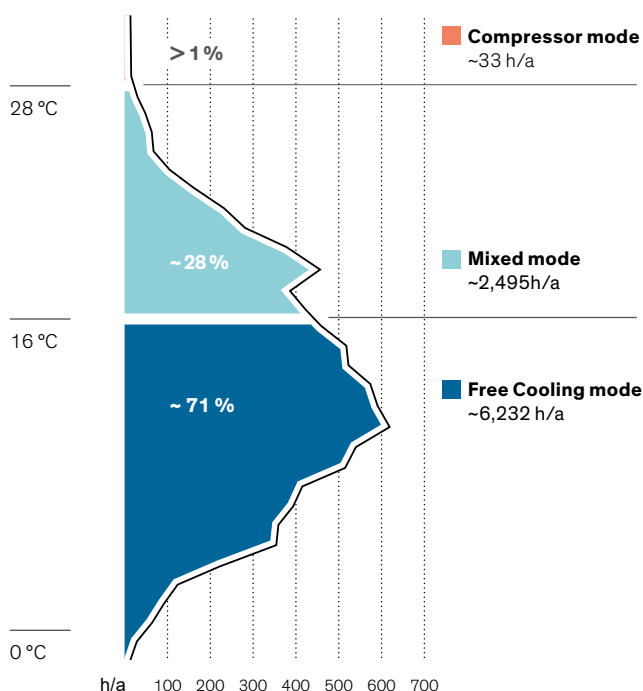
Mixed mode

If Free Cooling is not sufficiently available due to the outside temperature, the unit can still use the outside air to some extent. The result is a combination of compressor cooling and Free Cooling.

Compressor mode (DX)

If outside temperatures are so high that the outside air would no longer help to cool the inside, all cooling is generated using the compressor. Even in this mode, the perfectly harmonized components we use keep STULZ air conditioning units working reliably and efficiently.

Savings with Free Cooling



TelAir	With Free Cooling	Without Free Cooling
Energy consumption	7,420 kWh	46,282 kWh
Energy costs	€ 2,300.20	€ 14,347.42
Savings per year	€ 12,047.22	



Efficient air conduction and intelligent control of operating modes enable savings up to 90 % to be achieved.

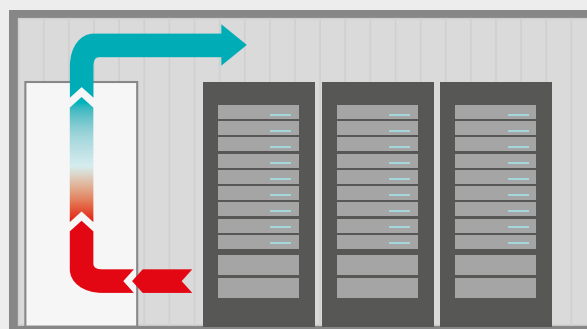
Energy consumption using the example of a TelAir TFGA6 unit at a return air temperature of 30 °C, based on the temperature profile of the city of London, 0.31 €/kWh

Air conduction with maximum flexibility

With different air conduction options, these units offer greater flexibility for individual customer solutions. With or without raised floor, with or without displacement, STULZ designs precisely the right solution for your particular case.

Upflow

Upflow units draw the return air out of the room through the lower front of the air conditioning unit and expel the cooled supply air upward.



Displacement

Displacement units enable cold supply air to flow close to the floor at a low speed. The resulting “pool” of cold air on the floor prevents hot and cold air from mixing. This technique increases the number of operating hours with Free Cooling, achieving maximum potential savings.



Downflow

Downflow units draw the return air out of the room from above and expel the cooled supply air down into the raised floor. Through the raised floor, the supply air gets to precisely those spots in the room that need cooling, preventing hot and cold air from mixing and increasing efficiency.



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

From standard units to fully customized solutions – the ability to offer such a wide range to customers is the embodiment of our philosophy, “**Climate. Customized.**”.

#1 Climate. Customized. Standard units

For its standard units, STULZ offers a huge selection of accessories and options, enabling a high level of flexibility and customization.



#2 Climate. Customized. Standard units with special options

Above and beyond our standard units, STULZ designers provide customized options to create highly individualized standard units.

#3 Climate. Customized. Custom-made air conditioning solutions

STULZ has the solution! In collaboration with the customer and tailored to suit requirements, we plan, implement and provide continuous support for your perfect air conditioning solution.

This way, we develop individual air conditioning solutions with performance features that are all perfectly harmonized from the outset.

Variable-speed components for quiet and efficient operation

Units from the STULZ Shelter Cooling series are available with fan speed control and optional variable-speed EC compressor.

The fans we use not only ensure maximum potential savings, but quiet operation as well. Fan speed control and the units' optimized design combine to ensure low noise levels, enabling our units to be used in residential areas as well.

The EC compressor we use is especially energy efficient in partial load mode, and guarantees a constant supply temperature. The integrated compressor soft start and stepless control without compressor on/off cycles guarantee a long service life in continuous operation.



STULZ control systems

To be able to cool IT systems efficiently and reliably, air conditioning units and their control systems must work in perfect harmony. That is why here at STULZ, we design both – air conditioning units and controllers – under one roof. And because of this, we can guarantee maximum reliability and efficiency for STULZ hardware and software – to your lasting advantage.

STULZ in-house controller for WallAir, TelAir and SplitAir

The integrated control system, with an optional operator terminal, manages all functions of STULZ Shelter Cooling products. The operator terminal, consisting of a keypad and LCD, displays the most important operating states and alerts.

Sequencing

- Up to ten units can be configured in one air conditioning system. If an individual unit drops out or the heat load rises, the standby unit is activated for additional support.
- The operating times of all connected air conditioning units are compared to make sure each one is used to an equal extent.

Night mode

- Time-controlled limitation of the condenser and evaporator fan speed ensures quiet operation.

Energy-saving mode

- The (adjustable) fan speed is automatically reduced at times when neither heating nor cooling is required.

Multi-step configuration menu via operator terminal (password-protected)

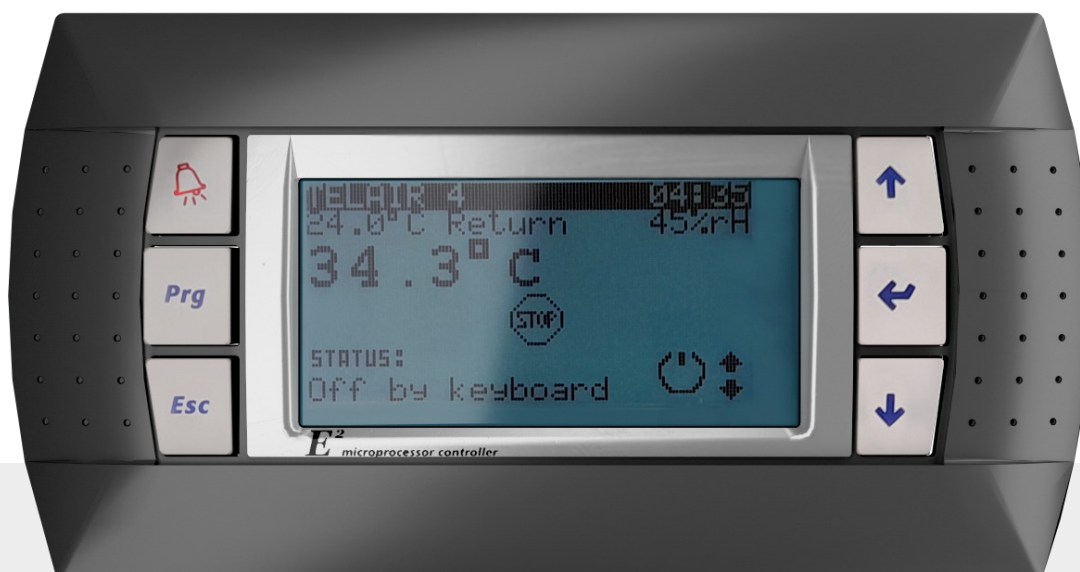
- Plant operator
- Service

Multilingual display

- The operator terminal offers a choice of seven languages for displaying the general menu, alarms and setpoints.

Monitoring and alarm relaying

- Via BMS systems (ModBus onboard, further protocols via Ethernet)
- Via dry contacts (nine contacts are available): A high or low priority can be assigned to alarms.



Operator terminal for WallAir and TelAir units

Controlling the various operating modes

- Free Cooling function dependent on temperature and enthalpy
- Mixed mode management
- Compressor mode
- Backup ventilation on failure of the main power supply
- Heating
- Dehumidification

Simple configuration and software updates

- Central configuration of units from a laptop
- Hardware key/USB stick for uploading and downloading software without a laptop and/or for copying the configuration to other units.

High-pressure alarm management

- High-pressure alarms can be automatically canceled the first three times, to prevent unnecessary service callouts. If a further alarm occurs within four hours, this must be canceled manually.

C102 microprocessor for ShelterAir FC

The C102 microprocessor monitors and controls the ShelterAir FC units. Comfort air conditioning units can be integrated in the existing air conditioning system and also actuated by the C102 control. Whenever the outside temperature allows, Free Cooling mode is activated and the comfort air conditioning units are switched off.

The C102 microprocessor guarantees maximum versatility

- The integrated relays allow the C102 to control and monitor up to two connected comfort air conditioning units.
- Alternatively, it can control one air conditioning unit and one external heater.
- It directly measures the energy consumption of the ShelterAir FC units and records the operating hours of the comfort air conditioning units
- It provides backup ventilation on failure of the main power supply or a fault in the comfort air conditioning units
- It monitors DC voltage and disables the unit if the battery voltage is below an admissible threshold
- A configurable filter alarm is triggered by differential pressure, or based on an adjustable fan operating time
- Service mode: Forced shutdown of a unit is possible, to enable service work to be performed at the base station. The air conditioning unit starts automatically after an adjustable time interval.
- Semi-automated start-up test to check all components.
- Monitoring: ModBus onboard, further protocols such as HTTP and SNMP via WIB 1000.

FCL
Version for outdoor installation



FCL-IN
Version for indoor installation



**Air conditioning
and Control.
Developed
for seamless
performance.**



WallAir for outdoor installation

In telecommunications containers, space is at a premium. WallAir units are installed outside the container, enabling the interior space to be exploited to the full. These compact, weather-resistant air conditioning units function using the displacement principle and are immediately ready for connection and use.

As well as compressor mode, these units feature Free Cooling and Mixed modes, delivering you high savings on energy costs – fully automatically.



**Up to 84 % savings on energy costs
with Mixed and Free Cooling modes**

Airflow Free Cooling mode



ADVANTAGES +

- Lower energy costs thanks to:
 - Free Cooling and Mixed modes
 - Displacement principle
 - Condensation pressure control
- Remote monitoring
- Quick connections
- Outside air conditions -20/+55 °C winter/summer
- ERP 2027-ready EC fans for evaporator and condenser
- Low refrigerant quantity thanks to small-diameter refrigerant pipes
- Hermetically sealed refrigeration circuit with a minimal number of joints
- Refrigerants: R454C (GWP: 148) as standard; optional R513A (GWP: 631) for applications outside the EU
- Refrigerant detector with two alarm levels
- Filter monitor and airflow alarm
- Inside and outside temperature sensor
- Zigzag filter class ISO 16890: ePM₁₀ 50 %
- Condenser with microchannel technology
- IP54-protected electrical box
- Compressor crankcase heater
- Power supply control for On/Off compressors
- Power supply for condensate discharge pump
- Relay for water floor sensor

OPTIONS ✓

- Winter kit down to -40 °C
- Backup operation with either 48 V DC, 230 V AC or 230 V/50 Hz/1 Ph
- External operator terminal
- Electric heater
- Humidity sensor
- Filter ePM10 55% (M5 EN779)
- Seaworthy packaging
- Special power supply (60Hz) on request

AT A GLANCE 🔍

- ✓ Free Cooling
- ✓ Mixed mode
- ✓ Displacement
- ✗ Upflow
- ✗ Downflow
- ✓ Outdoor installation

 **Plug & play**



TelAir for indoor installation

TelAir units are designed for installation in telecommunications containers, equipment rooms and server rooms. As the precision air conditioning units are installed indoors, noise is kept to a minimum and the units are protected against environmental influences and vandalism.

TelAir units are especially efficient in Free Cooling mode. With their high airflow in Free Cooling and Mixed modes, the units achieve maximum EER values.

The individual models of the TelAir series are available as Downflow and Displacement versions. In the Displacement model, the airflow can be directed horizontally or vertically entirely individually as required via adjustable fins, to ensure optimum operation of your servers.



**Up to 83 % savings on energy costs
with Mixed and Free Cooling modes**

Installing the TelAir Displacement

As they are installed indoors,
the units are protected from
vandalism and the weather.



Compressor mode
in a container



Free Cooling mode

ADVANTAGES +

- Lower energy costs thanks to:
 - Free Cooling and Mixed modes
 - Displacement principle
 - Condensation pressure control
- Remote monitoring
- Quick connections
- Outside air conditions -20/+54 °C winter/summer
- ERP 2027-ready EC fans for evaporator and condenser
- Low refrigerant quantity thanks to small-diameter refrigerant pipes
- Hermetically sealed refrigeration circuit with a minimal number of joints
- Refrigerants: R454C (GWP: 148) as standard; optional R513A (GWP: 631) for applications outside the EU
- Refrigerant detector with two alarm levels
- Filter monitor and airflow alarm
- Inside and outside temperature sensor
- Zigzag filter class ISO 16890: ePM₁₀ 50 %
- Condenser with microchannel technology
- IP54-protected electrical box
- Compressor crankcase heater
- Power supply control for On/Off compressors
- Power supply for condensate discharge pump
- Relay for water floor sensor

OPTIONS ↻

- Winter kit down to -40 °C
- Backup operation with either 48 V DC, 230 V AC or 230 V/50 Hz/1 Ph
- External operator terminal
- Electric heater
- Humidity sensor
- Filter ePM10 55% (M5 EN779)
- Seaworthy packaging
- Special power supply (60Hz) on request

AT A GLANCE 🔍

- ✓ Free Cooling
- ✓ Mixed mode
- ✓ Displacement
- ✗ Upflow
- ✓ Downflow
- ✓ Indoor installation

▶ Plug & play



SplitAir for use when space is at a premium

The SplitAir is the energy and space-saving version for reliably cooling containers and modular buildings. The unit consists of an evaporator unit and condenser unit, and features Free Cooling and Mixed modes.

Because the indoor unit can be installed either on the ceiling or wall, the SplitAir is also ideal when space is at a premium. Thanks to the low noise produced by the outdoor unit, the SplitAir can also be used without problem in residential areas.

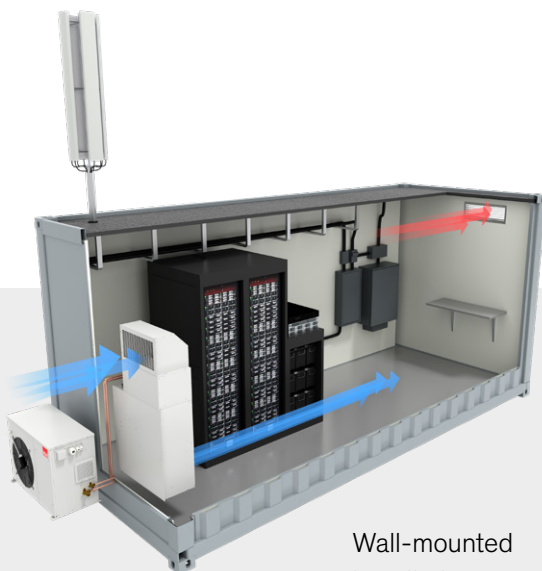
 **Up to 83 % savings on energy costs with Mixed and Free Cooling modes**



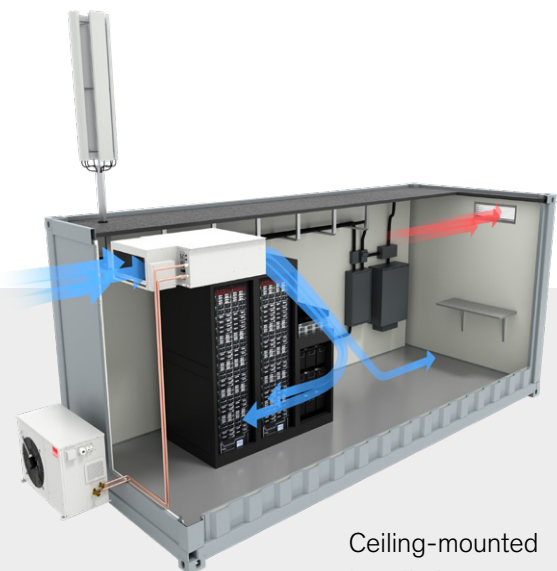
Free Cooling mode
Ceiling-mounted SplitAir

Installing the SplitAir

To save space for IT equipment, SplitAir units are mounted on the wall or ceiling, as desired.



Wall-mounted
installation



Ceiling-mounted
installation

ADVANTAGES +

- Lower energy costs thanks to:
 - Free Cooling and Mixed modes
 - Condensation pressure control
- High flexibility
 - Ceiling or wall-mounted installation
 - Variable air supply via the front or underside
 - Optionally with Free Cooling module
- Remote monitoring
- Quiet operation
- Refrigerant R410A for EC compressor
- Refrigerant R407C for On/Off compressor
- Filter class ISO 16890 ePM₁₀ 50 %
- Filter monitor
- Easy installation and maintenance
- Outside air conditions -20/+50 °C winter/summer

OPTIONS ✓

- High-temperature operation up to 55 °C with R513A
- Winter kit down to -40 °C
- Compressor soft start
- Electric heater
- Heat exchangers with corrosion-proof coating
- Installation kit for outdoor unit
- Air intake and blow-out grills
- Air duct for indoor unit

AT A GLANCE 🔍

- ✓ Free Cooling
- ✓ Mixed mode
- ✓ Displacement
- ✓ Upflow
- ✗ Downflow

 **Plug & play**



Indoor unit: Evaporator unit
with Free Cooling module



Outdoor unit:
Compressor-condenser unit

Retrofit ShelterAir FC for indoor or outdoor installation

Even today, many shelters and small data centers are still cooled by comfort air conditioning units. They therefore do not enjoy the benefits of Free Cooling, and unnecessarily large amounts of energy are used for air conditioning. To drastically cut the energy costs of base stations, they can be retrofitted with the STULZ ShelterAir FC.

Both the ShelterAir FC and existing comfort units are monitored and controlled by a STULZ in-house controller. Whenever the outside temperature allows, Free Cooling mode is activated and the comfort air conditioning units are switched off. The ShelterAir FC enables you to transform your existing system into an energy-efficient solution at low cost.

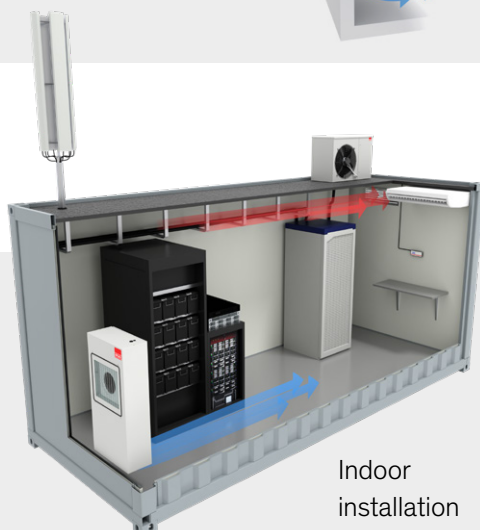
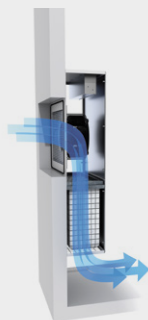
The return on investment for this retrofit is achieved especially quickly in situations where comfort air conditioning units are running 24 hours a day. The units are available in two versions for maximum versatility – FCL-IN for indoor installation and FCL for outdoor installation.

 **Up to 96 % savings on energy costs with Free Cooling mode**

Installing the FCL-IN

The FCL-IN is installed indoors, for when maximum protection against vandalism and adverse weather conditions is your priority.

Free Cooling mode
FCL-IN

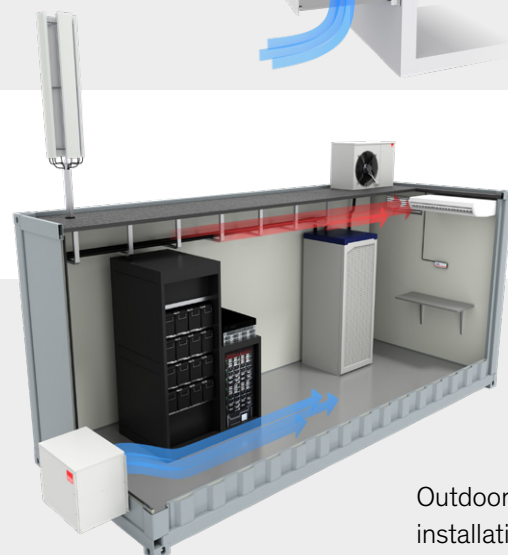
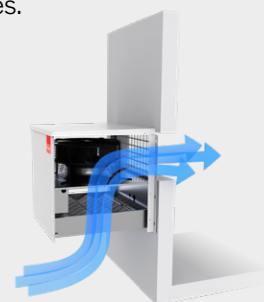


Indoor
installation

Installing the FCL

The FCL is installed outside the container, so that the whole of the interior can be used for IT equipment. Full access from outside for maintenance purposes.

Free Cooling mode
FCL



Outdoor
installation

ADVANTAGES +

- Simple integration of existing comfort air conditioning units
- Set the outside temperature figure for Free Cooling just as you wish
- The entire system including comfort air conditioning units is controlled by a STULZ in-house controller
- Remote monitoring
- Full access from the front for maintenance
- Air filter class ISO 16890 ePM₁₀ 50 %:
The larger filter area reduces pressure drops and extends maintenance intervals.
- Insulated, powder-coated housing of galvanized sheet steel
- The filter alarm can be triggered either by differential pressure or based on a manually adjustable fan operating time

OPTIONS ✓

- Aluminum or stainless steel housing
- Humidity sensor
- Weather-proofed pressure relief damper
- User-friendly LCD operator terminal for operation, installation and service
- External operator terminal with 3 × 7-segment display
- Protective grill for fitting to the air intake, keeps out dust and leaves
- Support frame for secure mounting on thin walls
- Supply air grill with adjustable fins
- Metal prefilter
- WIB 1000 interface

AT A GLANCE 🔍

- ✓ Free Cooling
- ✗ Mixed mode
- ✗ Displacement
- ✗ Upflow
- ✗ Downflow

 **Plug & play**



FCL
Version for outdoor installation



FCL-IN
Version for indoor installation

Technical data

WallAir

Model		WFF60	WVF80	WFF80	WFFA2	WVFA6	WFFA6
Cooling capacity ¹	kW	6.6	8.1	8.3	12.5	16.0	16.9
Size		1	1	1	2	2	2

Dimensions

Size		1	2
Width × height × depth	mm	900 × 2,195 × 676	1,010 × 2,270 × 807

Nomenclature

WF F 80

WallAir
WF = On/Off compressor
WV = EC compressor

Direction of airflow
F = Displacement

Nominal cooling capacity:
60 = 6 kW 80 = 8 kW A2 = 12 kW A6 = 16 kW

TelAir

Model		TFF/TFD/TFG 60	TFF/TFD/TFG 80	TVF/TFD/TFG 80	TFF/TFD/TFG A2	TVF/TFD/TFG A6	TFF/TFD/TFG A6
Cooling capacity ¹	kW	6.2	8.0	8.1	12.3	16.1	16.9
Size		1			2		

Dimensions

Size		1	2
Width × height × depth	mm	650 × 2,050 × 650	900 × 2,050 × 750

Nomenclature

TF F A6

TelAir
TF = On/Off compressor
TV = EC compressor

Direction of air flow:
D = Downflow G = Displacement
F = Displacement with grilles

Nominal cooling capacity:
60 = 6 kW A2 = 12 kW
80 = 8 kW A6 = 16 kW

SplitAir

Model		SXL40	SXL60	SXL80	SXLA0	SXLA2	SXLA5	SNL80	SNLA5
Cooling capacity ¹	kW	5.4	6.7	8.4	11.4	13.5	15.7	8.1	13.0
Size		1	1	1	2	2	2	1	2

Dimensions

Size		1	2
Width × height × depth (indoor unit ²)	mm	850 × 350 × 1,160	1,040 × 410 × 1,370
Width × height × depth (indoor unit ³)	mm	850 × 350 × 885	1,040 × 410 × 1,035
Width × height × depth (outdoor unit)	mm	973 × 715 × 508	973 × 1,334 × 513

Nomenclature



ShelterAir FC

Model		FCL 35	FCL-IN 35	FCL 60	FCL-IN 60	FCL-IN 70
Cooling capacity ⁴	kW	3.5		6.0		15.0
Size		2	1	2	1	3

Dimensions

Size		1	2	3
Width × height × depth	mm	640 × 1,271 × 289	720 × 612 × 604	600 × 1,250 × 600

Nomenclature



¹ Operating conditions: Inside temperature 30 °C, relative humidity 30 %, outside temperature 35 °C

² With Free Cooling module

³ Without Free Cooling module

⁴ Operating conditions: Inside temperature 30 °C, outside temperature 20 °C

⁵ Operating conditions: Return air temperature 35 °C, outside temperature 35 °C

Refrigerants: R454C (GWP: 148); R5 13A (GWP: 631); R407C (GWP: 1,774); R4 10A (GWP: 2,088)

CLOSE TO YOU AROUND THE WORLD



STULZ Company Headquarters

STULZ GmbH

Holsteiner Chaussee 283
22457 Hamburg
Tel. +49 40 5585-0
products@stulz.de

For further information, please visit our
website at www.stulz.com or download our
STULZ Products and Services app.

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