POWER SUPPLY AND AC MODULE WEK4

The **self-sufficient power supply and air conditioning module WEK4** is a combined power supply system and intended to install in technical rooms of containers.

Power supply and AC module

It has two main functions:

- electric power supply (400/230V 50Hz a/c) to the electric consumer in the container.
- air conditioning the inside temperature of the container at varying outside temperatures to a degree safe for the built-in equipment. The difference between outside and inside temperature should not exceed 15K.

Power supply mode

The cabin supply by the **WEK4** is done via integrated interstage transformers, which are connected to an electrical mains.

Balance of performance

Technical data:

temperature difference rating absolute	22.00 kW
temperature difference rating sensitive	22.00 kW
compressor power	approx. 16.50 kW
re-circulating air fan	approx. 3 x 0.37 kW
condenser fan	approx. 5.50 kW
fresh air fan	approx. 0.37 kW

cabin supply	12.5 kW
electric heating	(3 x 6 kW) 18.0 kW

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Mains infeed case 1 (CEE 63A 5Ph)	Voltage	cooling mode	heating mode
power compressor	400V a/c	16.50 kW	0.00 kW
condenser fan	400V a/c	5.50 kW	0.00 kW
magnetic clutch	24V d/c	0.06 kW	0.00 kW
2 x circulating air fan transformer module	230V a/c	0.87 kW	0.87 kW
total		**22.93 kW**	**0.87 kW**

Mains infeed case 2 (CEE 32A 5Ph)	Voltage	cooling mode	heating mode
cabin supply interstage transformer 1	400V a/c	12.50 kW	12.50 kW
heating fresh air module	230V a/c	0.00 kW	6.00 kW
circulating air fan	24V d/c	0.24 kW	0.24 kW
fresh air/circulating air fan fresh air module	24V d/c	0.50 kW	0.50 kW
total		**13.24 kW**	**19.24 kW**

Mains infeed case 3 (CEE 32A 5Ph)	Voltage	cooling mode	heating mode
cabin supply interstage transformer 2	400V a/c	12.50 kW	12.50 kW
heating circulating air module 1	230V a/c	0.00 kW	6.00 kW
circulating air fan	24V d/c	0.24 kW	0.24 kW
total		**12.74 kW**	**18.74 kW**

Mains infeed case 4 (CEE 32A 5Ph)	Voltage	cooling mode	heating mode
cabin supply interstage transformer 3	400V a/c	12.50 kW	12.50 kW
heating circulating air module 2	230V a/c	0.00 kW	6.00 kW
circulating air fan	24V d/c	0.24 kW	0.24 kW
total		**12.74 kW**	**18.74 kW**

Performance

Capacity: The unit supplies these performance parameters at the stated ambient conditions:

AC power	22 kW sensitive = absolute
ambient temperature	-32°C to +49°C
sea level	< 3000m MSL
air humidity	< 90%

Heating period: The temperature variation when heated starting at -32°C to + 5°C is approx. 1 hour (depending on volume of installation)

Cooling period: The temperature variation when cooled down starting at 49°C when Δ t = 15K is approx. 1.5 hours (depending on volume of installation)

Technical description

The **WEK4** mainly consists of these components:

1. Air conditioning power module

Casing of the power module:
The air conditioning power module is covered by two Perspex plates. On the one hand it serves to guide the air through the power module and on the other hand to cover turning and hot parts.

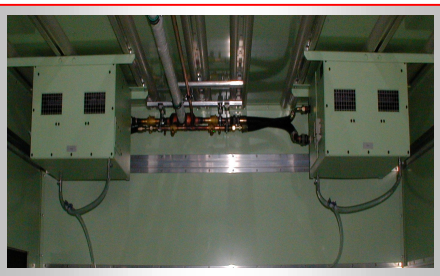
2. Fresh air module

The fresh air module draws the air from inside the container, cools it down and, if necessary, adds fresh air (e.g. when persons are in the container).

fresh air module

3. Circulating air modules

The circulating air modules are installed in the container and connected to the power unit via rigid and flexible coolant hoses.



circulating air module

4. Interstage transformers

Three times three interstage transformers take over the power supply from the electrical mains to the **WEK4**. They also guarantee a safe electric separation for the cabin supply according to EN 60950.

The necessary electrical components for the use of the air conditioning, electric engines, fan and electric heating are protectively insulated, which makes direct supply from an external mains acceptable according to EN 60950. For the electrical consumer in the container a potential-free mains (TNS-network) is built up via an interstage transformer box with 6 kV test voltage.

transformer case

A further module of the **WEK4** is the compressor, which provides cooling power of up to 22 kW for the compensation of the heat available/arising in the container. An electric heating of 6 kW is implemented in both the fresh air module and in every circulating air module.

Further modules of the **WEK4** are the mains infeed cases for the supply of power from an external mains.

Controls

The controls form the interface between the modules and sub-modules of the **WEK4**.

The controls consist of 4 sub-modules:

1. The **mains infeed cases** with socket for an external mains and lightning and over-voltage protection are situated on the side of the container under the hinged lids. They contain the lead for the air conditioning power module and the distribution of the supply to the 3 interstage transformers.

2. The **AC controls** are situated inside the technical room in the control box on the wall.

3. The **engine controls** are also built in the AC controls.

4. The **interstage transformers** are situated in a separate casing under the unit and make sure the container is safely separated from the mains supply. Via a electronic monitoring system on the primary side the current back interfering on the supplying mains is kept to a minimum. Temperature contacts are integrated in the transformers. The contacts switch off the supply voltage in the controls of the AC module in case of over-temperature (overload).

The „operating, monitoring and control unit“ BUS corresponds with the AC controls via a CAN Bus.

All unit-specific changes can be made on the BUS, and it shows errors and general operating modes.