

Tecoras

Outdoor

3.13 to 3.18



Tecoras Thermal Management Strong points



TEC00087

The permanent increase of heat dissipation in electronic components and the higher packaging density of the equipment caused special requirements for thermal management in our enclosures. Knürr established a climate competence center to propose our customer the best solutions in thermal management.

1 Modularity

- Adjustment to various temperature conditions through the mechanical and electrical compatibility of heat exchangers and cooling devices
- Interface for alarm monitoring and external sensors

2 Complete Product Range

- Complete product range ist the best condition to to fulfill all customer specification
- K-HEX, Knürr Heat Exchanger
 - HEC, Heat Exchanger Cabinet
 - ACUR, Air Conditioning Unit
 - Filter Fan
 - Heater
 - Controller Board
 - Membrane Filter

3 Climatic chamber

- Inter size: 3,0x3,0x3,0 m³
- Door size: 1,15x2,45 m²
- Temperature -45 ... +60°C range:
- Humidity range: 10 ... 95% (at 10 ... 40°C)
- Access for forklift truck



1 TEC00006



3 TEC00279

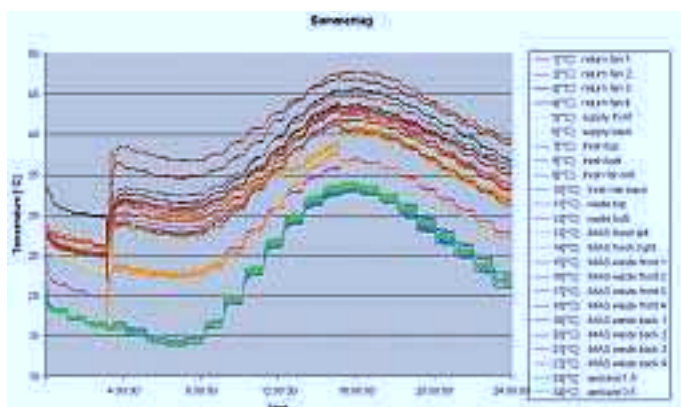
4 Measurement instruments/ documentation

- Data logger up to 80 chanel:
- Temperature
 - Voltage
 - Current
 - Revolutions

Measurement instruments:

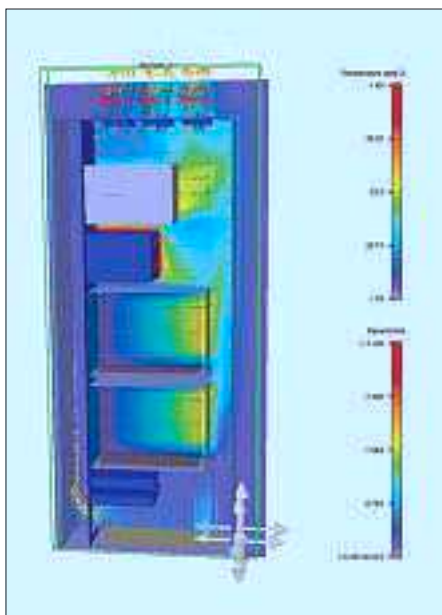
- Relative humidity
- Velocity
- Pressure

Data export in all usually formats



4 TEC20081

Tecoras Thermal Management Strong points



5 TEC20080



6 TEC20072



7 TEC20073



8 TEC80001

5 Thermal design/CFD

Knürr used several calculation tool to design the right thermal solution.

The most powerful software is the Computational Fluid Dynamics (CFD) program to calculate temperature profiles and air flow velocities before prototyping.

As a service Knürr offers simulation reports and designed the thermal solution exact according the specification.

6 Smoke Test

Smoke visualize air flow.

Zones with low air flow become visible. These zones have risks of hot spot. To avoid hot spots a modification of the configuration are proposed.

7 Acoustic noise emission

In house semi-anechoic test floor

Acoustic-Measurement of airborne noise according ISO 7779

Thermal chamber and acoustic test floor are next to each other. Knürr adjust the contrary specification requirements of low airborne noise and high cooling performance on an optimum way.

8 Acoustic noise absorber

Knürr cabinets achieve very low levels of airborne noise emission.

Knürr used special designed noise absorber for low acoustic noise cabinets. This allows to operate cabinets in areas with special acoustic noise limits.



TEC20062

Tecoras Air-to-air heat exchanger (K-HEX)

- **High-capacity, compact air-to-air heat exchanger for door installation in TECORAS outdoor cabinets**
- **Degree of protection**
 - IP 55
- **Approvals**
 - CE
 - UL approval
 - EN 60 950
- **Principle**
 - Air-to-air heat exchanger with freely programmable micro processor control
 - Countercurrent heat exchanger of epoxy coated aluminium with extruded surface
 - Direct mounting on the inside of the door, identical mounting principle and uniform screwing conditions for all thermal components
 - IP 55 interface between heat exchanger and Tecoras door registered for patent
 - Air outlet grills, 90° oriented, no thermal short circuit in the external air
 - From 163 mm installation depth, extrusion frame design and screw-free cover
 - Internal temperature-dependent fan speed control guarantees optimal internal cabinet temperature, maximum lifecycle and minimum noise emission
 - Filterless system, consequently, simple cleaning is possible
 - Hidden cable entry on hinge side, no cable and plug in the useful space of the cabinet
 - One variant for left and right door
 - Fan exchange in the internal and external circuit without dismounting the heat exchanger from the door
 - Individual fuse protection for each fan on the control board, prefusing required
 - Customer-specific adaptations possible with platform design
- **Technical data**
 - Supply voltage, 48 VDC (optional 24 VDC)
 - Protection rating, IP 55 internal circuit / external circuit
 - Sound pressure level. 55 dB (A) at a distance of 1 m in accordance with ISO 7779, in the built-in cabinet up to 85 W/K
- **Material**
 - Enclosure of aluminium, 1.5 mm, partially with extruded aluminium
 - Heat exchanger of 0.25 mm aluminium
 - Silicon-free seals
- **Supply schedule**
 - 1 Heat exchanger
 - 1 Operating instructions
- **How supplied**
 - Fully assembled

W	H	D	W/K	V	A	Model	Order no.	UP
465	888	102 [118]	65	48	10	K-HEX 65	01.920.500.0	1 unit
465	1066	147 [163]	85	48	6	K-HEX 85	01.920.603.0	1 unit
565	1600	147 [163]	145	48	20	H-HEX 145	01.920.607.0	1 unit
565	1155	147 [163]	150	48	20	K-HEX 150	01.920.608.0	1 unit



See also: the current **Network Special Catalogue!**

Where you will find more products:

- 19" Rack systems
- Free-standing and wall cabinets
- TFT Drawers
- KVM Switches
- UPS Solutions
- RMS-System
- Thermal management



TEC20060

Tecoras Cooling unit (ACU R)

- High-capacity, compact cooling unit for door installation in TECORAS outdoor cabinets
 - CE
 - UL approval
- **Approvals**
 - CE
 - UL approval
- **Principle**
 - High-performance cooling unit with rotating piston compressor
 - CFC-free refrigerant, R 134a
 - Safe condensation dissipation to the outside
 - Direct mounting on the inside of the door, identical mounting principle and uniform screwing conditions for all thermal components
 - IP 55 interface between heat exchanger and Tecoras door registered for patent
 - Air outlet grills, 90° oriented, no thermal short circuit in the external air
 - Adjustable air-break panel for minimizing thermal short circuit in the internal circuit
 - Adjustable internal cabinet temperature guarantees optimal internal cabinet temperature, maximum lifecycle and minimum noise emission
 - Equipment failure alarm with adjustable alarm temperature (internal cabinet temperature)
 - Filter-free system, easy cleaning is consequently possible
 - Cable entry offset to the hinge side, no cable and plug in the useful space of the cabinet
 - Test switch on the control board
 - One variant for left and right door
 - Fan exchange in the internal and external circuit without taking the cooling unit from the door
- **Technical data**
 - Output data for cooling unit built into Tecoras cabinet, determined in accordance with DIN 3168, without moisture transport in the control cabinet
 - Supply voltage, 230 VDC / 120 VAC, 50 Hz / 60 Hz
 - Continuous use temperature up to 52°C
 - Protection rating, IP 55, internal circuit/external circuit
 - Noise pressure level, 55 dB (A) at a distance of 1 m in accordance with ISO 7779, mounted cabinet up to 1800 W
- **Material**
 - Enclosure of aluminium, 1.5 mm
- **Supply schedule**
 - 1 Cooling unit
 - 1 Connection cable for AC
 - 1 Plug for operation without door contact switch
 - 1 Operating instructions
- **How supplied**
 - In fully assembled

(W)	W	H	D	(V)	(Hz)	(A)	(A)	(W)	Model	Order no.	UP
380	466	326	114 (130)	230	50/60	1,5	3,3	320	ACU R 400 230 V/AC	01.920.912.0	
800	466	888	157 (172)	230	50/60	2,4	11,5	550	ACU R 800 230 V/AC	01.920.900.0	
800	466	888	157 (172)	120	50/60	4,8	23,0	550	ACU R 800 115 V/AC	01.920.901.0	
1200	466	1066	157 (172)	230	50/60	4,5	15,0	800	ACU R 1200 230 V/AC	01.920.904.0	
1200	466	1066	157 (172)	120	50/60	9,0	30,0	800	ACU R 1200 115 V/AC	01.920.905.0	
1800	466	1066	157 (172)	230	50/60	5,0	22,0	1200	ACU R 1800 230 V/AC	01.920.906.0	
1800	466	1066	157 (172)	120	50/60	10,0	44,0	1200	ACU R 1800 115 V/AC	01.920.907.0	
2700	566	1600	157 (172)	230	50/60	8,0	30,0	1700	ACU R 2700 230 V/AC	01.920.910.0	



TEC00335

Heating Unit

- **Technical data**
 - Supply voltage 230 VAC/50(60) Hz, Axial fan: air throughput 35 m³/h with 150 W, from 300 W 108 m³/h, 950 W 160 m³/h, Thermostat: temperature setting from 0 to 60° C
 - Heating element protection with temperature monitor in the event of fan failure
 - Protection rating IP 20
- **Supply schedule**
 - 1 Heating fan, 230 VAC/50(60) Hz
 - 1 Thermostat with contact break
 - 1 Connecting cable, 1,5 mm², 1,5 m cable length
 - 1 Mounting panel
 - 1 Mounting material
- **How supplied**
 - Fully assembled

W	H	D	W/K	V	A	Model	Order no.	UP
108	85	139				150	01.910.900.9	1 unit
135	85	182				300	01.910.901.9	1 unit
135	85	182				400	01.910.902.9	1 unit
145	85	240				600	01.910.903.9	1 unit
145	100	200				950	01.910.908.9	1 unit