TEBECHOP 4000

Convection cooled rectifier systems for use under adverse environmental conditions

BENNING
World Class Power Solutions

Excellent Technology, Efficiency and Quality

Convection cooling, no fans required

19" rectifier module TEBECHOP 4000

Essential characteristics of the TEBECHOP 4000 rectifier system:

- Module MTBF approximately 120,000 hours
- Cost savings due to convection cooling: less maintenance, no fan replacements
- Low volume and weight
- Reliable, modular, hot-plug technology
- Easily scalable output performance
- Low output ripple
- Good dynamic performance
- High energy efficiency
- Sinusoidal input current
- Flexible operation (Battery or direct operation)
- System monitoring with MCU 2500
- Remote monitoring via modem, HTML or SNMP, Modbus or Profibus

Modular rectifier system with 4 TEBECHOP 4000 rectifiers

TEBECHOP 4000 rectifier systems

The new TEBECHOP 4000 rectifier range from BENNING, the leading global power supply manufacturer, provides a robust, modular rectifier system that is specifically designed for use under harsh environmental conditions (eg dust, acid, etc.).
The convection cooling employed by these modules ideally suits the adverse conditions found in industrial environments, such as the petrochemical industry, energy distribution, automation technology and highways.

The TEBECHOP 4000 rectifier offers reduced operating costs due to its very low heat dissipation enabled by the high efficiency (even under partial load conditions) module design. (Fig. 1)

Scalability of the output power as well as redundant system configurations (such as n +1 redundancy) are possible.

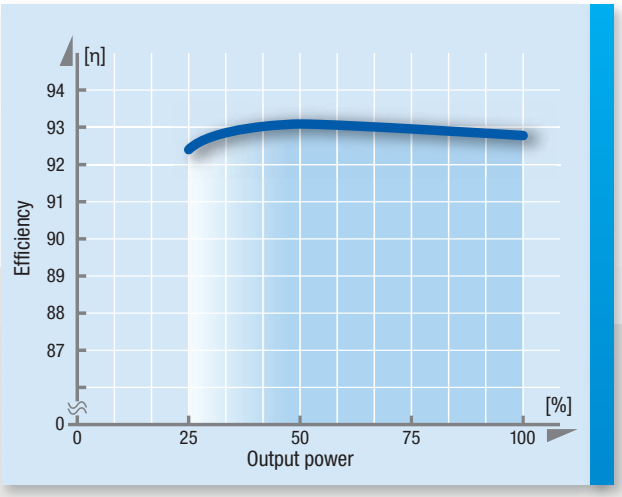


Fig. 1: TEBECHOP 4000, efficiency vs. output power

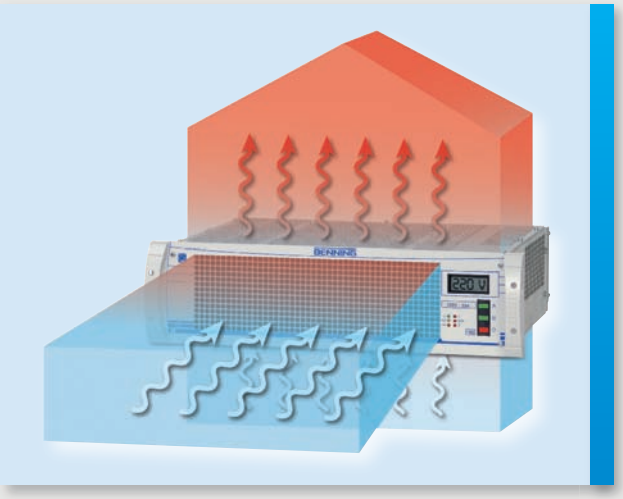


Fig. 2: Schematic illustration of the convection cooling

Benefits of Convection cooling

The convection cooling of the TEBECHOP 4000 rectifier makes conventional cooling fans unnecessary. Since contaminated particles are not drawn into the rectifier module by the cooling fan, these rectifier systems are very well suited for use at sites with adverse environmental conditions.

As internal contamination is avoided, the reliability of the system is enhanced. The costs for operation, maintenance and periodic replacement of the cooling fan are also minimised.

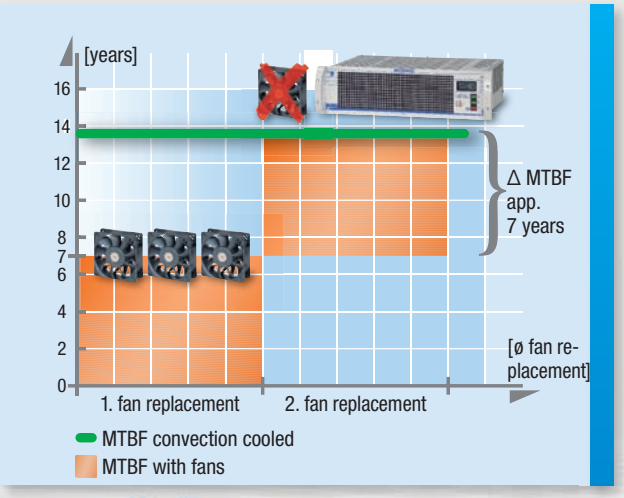
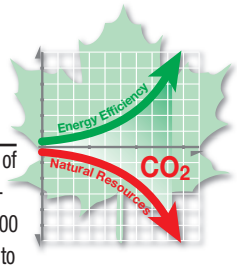


Fig. 3: The advantages of convection cooling the TEBECHOP 4000

High energy efficiency even at partial loads



The new TEBECHOP 4000 rectifier systems are not only characterized by the use of modern components and an attractive design, they also contribute to climate protection due to their excellent energy efficiency. The efficiency of the TEBECHOP 4000 can exceed 93 % with only a slight reduction in the partial load range. This leads to a lower power dissipation (see Figure 1). This high energy efficiency reduces the TCO (Total Cost of Ownership), since the energy and operating costs are significantly reduced. This in turn accelerates the return on investment.

Technical data: TEBECHOP 4000 module

Output power	[W]	4000				
Qty of modules		1				
Input voltage range	[V]	1 x 185 - 264				
Input current (@ 1 x 230 V)	[A]	15				
Frequency	[Hz]	47 – 63				
Power factor	[A]	0.99				
Output current @	[V]	24	48	60	110	220
	[A]	70	50	40	30	15
Characteristic		IU				
Output voltage						
boost	[V/C]	2.4				
float	[V/C]	2.23				
Voltage tolerance						
static	[V/C]	± 1 (typical ± 0.5 %)				
dynamic	[V/C]	± 5 (load Δ 10 % - 90 % - 10 %)				
Response time	[ms]	< 2 (load Δ 10 % - 90 % - 10 %)				
Efficiency	[%]	≥ 93				
Ripple	[%]	< 1				
EMC		class B in acc. EN 55022				
Protection class		1 in acc. VDE 0804 and IEC 60950				
Protection		IP 20				
Ambient temperature	[°C]	0 – 50				
Installation height	[m]	up to max. 2000 ASL				
Humidity class		F in acc. DIN 40040				
Cooling		convection				
Voltage - current display		LCD-display on front panel				
Indicators (LED)						
mains		yellow				
DC over voltage		red				
operation		green				
common alarm		red				
fuse		red				
over temperature		red				
Pot.-free common alarm		available				
Dimensions full 19" plug in						
Height (front panel)	[mm]	133				
Width (front panel)	[mm]	483				
Depth	[mm]	400				
Weight	[kg]	16				

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