

# Cegelec Alvaux

## New line of auxiliary converters



photo: Stadler

Smaller, lighter, more economical, and with low life cycle costs. That is a brief description of the new Cegelec Alvaux auxiliary converter line for the use in trams, trolleybuses, Stadtbahn, and subway. The new auxiliary converters use resonant technology based on SiC (Silicon Carbide) MOSFET transistors instead of traditional IGBT transistors. The SiC technology provides increased switching frequency and higher power density. The resistance and thereby losses are significantly reduced. Thus, efficiencies of 95 % and higher can be achieved. The cooling can be handled entirely naturally, without the need for fans, which increases reliability, eliminates noise level, and significantly cuts down on preventive maintenance requirements.

The Cegelec Alvaux converters are very compact in size. Comparing the converter with the total output power of 27 kW with the older generation with an equivalent power, the dimensions have been cut by 50 % and the total weight by 50 % as well.

Great attention was also paid to an easy accessibility in case of a service intervention. The converter's design allows an easy disassembly of the single blocks and their replacement. The auxiliary converters of the new generation are offered in power variants from 9 kW to 63 kW, with the power of the individual outputs (24 V DC, 3x 230/400 V AC 50 Hz, 110 V DC) tailored to specific customer requirements.

An example of the new Cegelec Alvaux converter is the SMTK 27JKK model made for the J/JK Berlin subway line according to the requirements of the Stadler company.

- Auxiliary converter for the power supply of on-board network of 110 V DC and 400 V 50 Hz AC;
- Parallel operation of up to 4 converters in a common network;
- Optional power supply of DC on-board network from a common AC train network (backup power supply);
- Optional power supply of DC on-board network from a 400 V industrial socket in depot.

Selected technical parameters of the SMTK 27 converter		
<b>DC traction voltage</b>		
Input voltage (traction system)	nominal	750 V
	operating range (EN 50163)	525–1000 V
<b>Standby AC input (external plug-in)</b>		
Voltage	nominal	3 AC 400V 50Hz
Input current	current limit for charging (per phase)	16 A
<b>DC battery / on-board output</b>		
Battery charging output voltage	voltage setting (U-I characteristic)	115–135 V
	voltage ripple	±1V
Battery charging output current	current limit setting (U-I char)	24–110 A
Total output current $I_{batt} + I_{board}$	maximal @ $U_{batt} = 137.5V, U_{in} \geq 700V$	90 A
	maximal @ $U_{batt} = 110V, U_{in} \geq 700V$	115 A
Total output power	nominal	12 kW
<b>Three-phase AC output</b>		
Voltage / frequency (EN 50533)	nominal	3AC 400V 50Hz
Output power	Continuous output current	22 A
	Continuous output power	15 kW
	Current limit at motor start (rated for 5 s)	65 A
<b>Dimensions and weight</b>		
Dimensions	converter body L x W x H (mm)	1100 x 600 x 450
Weight		171 kg
Class of the protection		IP67

