

More than
15,000 APS
worldwide
in service
on railways

Auxiliary Converter with SiC technology

Modular design and optimized power density
[siemens.com/auxiliary-power-supply](https://www.siemens.com/auxiliary-power-supply)

SiC based converter technology

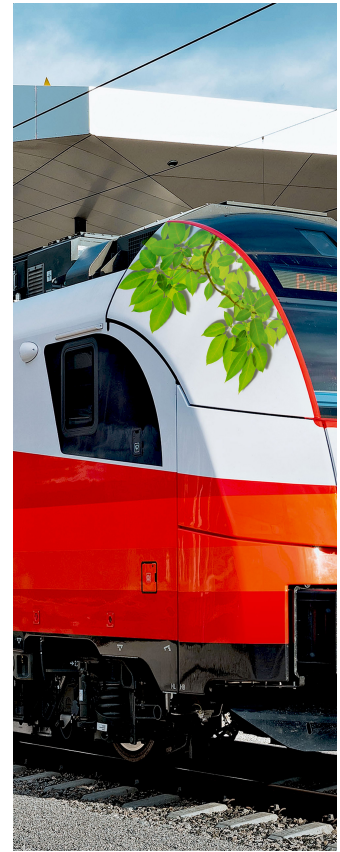
Silicon carbide (SiC)-based power electronics enable the development of smaller, lighter, more robust, and more energy-efficient systems for auxiliary converters, input converters DC-DC, power inverters, and battery chargers.

Improved SiC-based power electronics systems can make an important contribution to the ongoing development of mass-transit and long-distance transport systems.

Last but not least, it will help customers reduce their CO₂ footprint.

Your advantages

- + Lower weight
- + Higher power density
- + Nearly cableless design
- + Higher efficiency
- + Smaller footprint due to compact components
- + Lower noise level (passenger comfort)
- + Higher availability
- + Service-friendly design



With the ongoing development of rail vehicles, electric and hybrid buses, passenger comfort and information are becoming increasingly important. This highlights the key role of the power supply for onboard electrical consumers. Our auxiliary converters are the crucial link between these consumers and the vehicle's power supply.

The technical solution

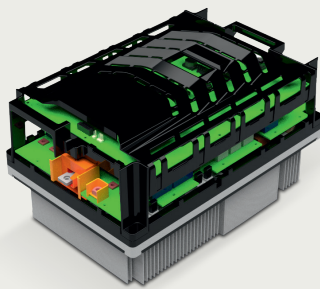
Thanks to its standardized module concept, the SiC-based system creates entirely new potentials in the design of auxiliary converters with a platform concept for metro, commuter, and high-speed rail.

Siemens is consistently pursuing the path to more power in a smaller space, with the concept already providing installation space for the addition of more options. The modular cuts project time and reduces the costs of standard equipment. The SiC-based platform also decreases energy consumption and operating and lifecycle costs, while passenger comfort is increased thanks to quieter operation. SiC APS contains all components needed to supply the onboard power system load, including a battery charger. It's housed in a forced air-cooled container intended for underfloor or roof installation.

Performance made-to-order

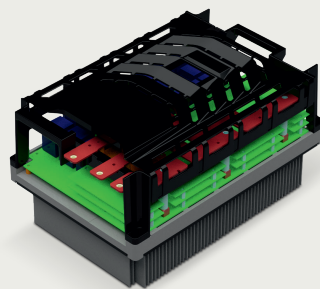
Our range of APS with SiC technology can be used at different input voltages (750 V or 1,500 V DC), with AC power outputs ranging from 60 kVA up to 240 kVA, and DC output power of up to 40 kW.

Integrating SiC modules saves space in the container and meets customer requirements while drastically reducing development time compared to the use of conventional modules.



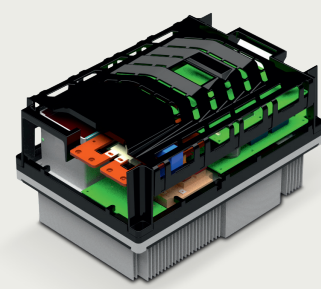
Input converter DC-DC

- Weight: < 37 kg
- Dimensions B x H x T:
300 mm x 253 mm x 450 mm
- Power ratings from
75 kW up to 120 kW
in one frame size
- Suitable for 750 V and 1,500 V DC
using a parallel and/or series
connection



Power inverter

- Weight: < 20 kg
(without control unit)
- Dimensions B x H x T:
300 mm x 284 mm x 450 mm
- Power ratings from
60 kVA up to 200 kVA
- Allows higher power
using parallel connection
- Integration of the central control



Battery charger

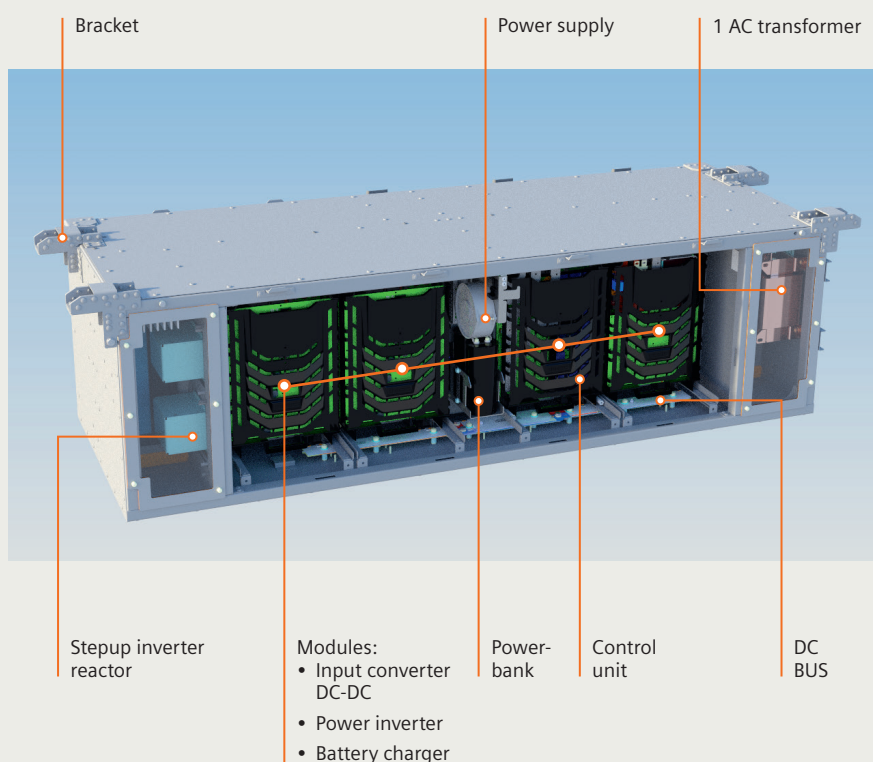
- Weight: < 39 kg
- Dimensions B x H x T:
300 mm x 253 mm x 450 mm
- Power ratings from 16 kW
up to 40 kW at 110 V
or 15 kW at 24 V
in one frame size

APS power electronics*	Standard inverter using IGBT technology	Inverter using latest SiC MOSFET technology
Power-weight ratio kW/kg	0.64	1.25
Power-weight ratio %	100% → x2 →	195%
Efficiency % @ 80 % nominal load, 750/1,500 V DC	93.5 % (measured) → -50%** →	96.7 % (measured)

* Includes all the components for the DC-DC, power inverter, and battery charger functions.

** Reduces losses in the power electronic components by half

Components integrated in the metro platform



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