Innovative Static Converters for Rolling Stock
SMA Railway Technology GmbH has been your dependable partner, providing innovative and high energy solutions for railway vehicles, for more than 20 years.

Behind the SMA Railway Technology GmbH is a highly motivated team with many years’ of extensive experience in the field of railway technology; developing high tech products with a high degree of innovation that meet your specific demands - quickly and reliably.

The product portfolio ranges from individual devices such as battery chargers or climate control inverters to complete auxiliary power supplies for railway coaches and multiple units. The latest innovative technology and outstanding durability ensure the systems’ high reliability.

Local and long distance rail-based transport systems are equipped with our technologically outstanding power electronic components and systems. Whether you think of the Venice Simplon-Orient-Express, the TGV or the São Paulo metro. Today more than 4,000 railway vehicles in operation worldwide use systems from SMA.
Do you want high quality customized solutions - and this all from one single source? With our modular product platform and an experienced research and development team, we are happy to take up the challenge. With the aid of modern tools, we can plan the power supply of railway carriages and whole trains virtually and then configure customized innovative solutions. Naturally enough, close coordination and communication with our customers are an integral part of our partner projects.

SMA Railway Technology GmbH grew out of the Railway Technology Division of SMA Solar Technology AG, and it has been operating as a wholly owned subsidiary since June 2008. The parent company, with eight international branch offices on four continents, develops and distributes solar inverters and currently employs more than 2,500 people.

SMA is particularly proud of its many national and international awards for outstanding corporate management. The high level of employee satisfaction is reflected in the extraordinary quality of SMA products - both in the field of solar technology, as well as railway technology!
SMA Railway Technology GmbH not only has a highly qualified R&D department, it also has its own production facility with a testing laboratory and test field. From circuit board assembly to final assembly and testing, we provide everything from one single source. This is the only way we can provide you with excellent quality and high flexibility at the same time.

Our experienced staff guarantee you professional project planning for the deployment of our static converters. If required, we will also handle the installation, commissioning and maintenance of our devices in your vehicle. Make use of our wide-ranging expertise and decide in which processes you wish to involve us: from the concept phase to commissioning in the vehicle. If required, we would be happy to handle the project for you, in part or as a whole - no matter whether this involves the implementation of an individual solution or the commissioning of a standard product.

We serve the international market with our products, which are “Made in Germany”. With branches and representatives all around the world, we guarantee you reliable and uncomplicated on-site service.

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Extremely lightweight MEE-NT<sup>SD</sup> auxiliary power supplies for updating Netherlands Railway’s ICM trainsets. The underfloor mounted systems weigh only around 850 kg. They are designed for an input voltage of 1,500 V DC with a rated power of 155 kVA.

Source: Leen Dortwegt
Research & Development

Power Electronics
SMA has been developing auxiliary power supplies for railway applications for more than 20 years. From the very beginning we have considered ourselves as technology leader. We break new ground with our solutions in order to provide attractive and future-proof products. Our products range from battery converters to train-wide power supply systems.

Simulation and Design
With state-of-the-art tools, our engineers meet your requirements, reliably and quickly, thus ensuring low error margin and short development times. In the concept phase, models are created and virtually tested with computer programs. In this way, customer-specific modifications and extensions can be planned and tested at an early stage of the development process.

Test Engineering
Besides virtual testing, we also have a substantial test field where almost all relevant input voltages can be simulated; from 24 V to 15 kV, from DC to 16.7 Hz through to 400 Hz, from a few hundred watts to several hundred kW.

Mechanics
Our mechanics department develops and manufactures containers for power supply systems in lightweight constructions for roof and underfloor mounting. Powerful design tools reduce project runtimes and simplify customer-specific adjustments.
Lightweight and compact MEE-NT® battery chargers designed for use in TGV traction units. The reliable battery chargers with a nominal power of 9 kW are designed for natural cooling. Additional easy-to-replace exterior fans ensure the functioning of the charger even under extreme ambient temperatures.

Battery Chargers for TGV
Technologies not only for Long-Distance Traffic

SMA has a modern and proven platform for long-distance rail traffic applications in the MEE-NT multi-voltage auxiliary power supply. This existing modular system was consistently enhanced and adjusted to the specific requirements of regional and long-distance rail traffic. Thus, the technological advantages of the MEE-NT are now available for other applications as well.

- The electric separation in the input converter with HF transformers permits a compact and lightweight design of the auxiliary energy supply.
- Resonant power units reduce losses in electronics and allow partial load capability without forced ventilation.
- Three-phase inverters with a neutral conductor ensure grid-quality output voltages with a load-tolerant neutral conductor without an additional transformer.
- A digital control unit increases the power factor, minimizes grid interferences and optimizes the output voltage quality.
- Our modern diagnosis system makes for simple maintenance, failure analysis and repair.

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Extremely lightweight MEE-NT\textsuperscript{SD} auxiliary power supply for the entire train with multi-level, active redundancy for the new Coradia Nordic vehicles. Systems are mounted in roof enclosures and feature two power modules, which always run in parallel without a synchronization line, increasing vehicle availability.

Source: Alstom 2005
Transborder Traffic
Railway coaches used for international long-distance traffic have to be specially equipped for this task. This includes, among other things, an auxiliary power supply that automatically adjusts the various common European voltage systems to the electrical loads. The MEE-NTLD multi-voltage, modular auxiliary power supply is available as a modular system for this application.

System Modules
State-of-the-art technologies combined with our long-standing experience result in compact, lightweight and reliable systems. The consistent design allows the modular system to be easily and cost-effectively adjusted to your requirements. The modularity guarantees low maintenance service costs during daily operation.

More than 400 Systems Delivered
Up until now, more than 400 coaches have been equipped with the MEE-NTLD and successfully deployed throughout Europe. And the number continues to grow ...
CityNightLine sleeper cars equipped with SMA MEE-NT\textsuperscript{LD} multi-voltage static converters

Introduced in the winter of 2005, the MEE-NT\textsuperscript{LD} multi-voltage auxiliary power supply has made the famous Venice Simplon-Orient-Express even more comfortable. The power supplies, which are each installed in two separate compact underfloor enclosures, are extremely reliable and quiet.

MEE-NT\textsuperscript{LD} for VSOE

Source: CNL AG
Regional Rail Traffic Application

Small, Lightweight, Cost-Effective
Similar to our MEE-NT LD multi-voltage capable auxiliary power supply, SMA Railway Technology GmbH now also offers auxiliary power supply systems or static converters for regional rail vehicles in standardized power classes. The systems always consist of an input converter and virtually any number of various output converters. The input converter ensures the adjustment and the electric separation of the input voltage, while the output converter performs the adjustment to the loads.

Versatility
The numerous variation options of the platform components enable their use in both subway trains and commuter rail networks as well as metro vehicles, classic regional vehicles and even in buses.

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Lightweight auxiliary power supply for Alstom’s RegioCitadis platform. The systems are equipped with an exceptionally powerful DC output, operate under partial load with convection cooling and can be switched to "silent mode" on request.
Individual Devices

Completed Product Portfolio
In addition to complete auxiliary power supplies, SMA also develops and manufactures individual devices, such as battery chargers, DC/DC converters or inverters. These inverters are used in air-conditioning systems or air supply units for example.

Naturally these individual devices are also based on the proven product platform and also exploit their advantages in very specific applications. An excellent level of reliability is achieved through the consistent use of tried and tested hardware and software modules.

Tailored Solutions
Individual devices are available in various designs. Regardless of whether you require an open module for integration into a switch cabinet or equipped with a high degree of protection for underfloor or roof mounting, we have just the right solution for your project. Naturally we can also optimize any device to meet your requirements. A wide variety of interfaces makes simple integration into any vehicle possible. It goes without saying that every individual device is also equipped with the well-known diagnostics tools of the auxiliary power supply systems.

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The air conditioning converter for the refurbishment of the ET420 was designed based on customer requirements to be especially compact and lightweight for installation in air conditioning units. Through the use of the vehicle’s traction coil and the omission of a separate container, an especially cost-efficient solution was found.
Special Solutions

SMA Railway Technology GmbH is a technology-oriented company. Nearly 20% of our employees are engineers and technicians. Extensive technological competence along with high-level vertical integration predestines SMA to be your partner for special purpose solutions.

Available Resources
Take advantage of the resources available at SMA in power electronics, project planning, hardware and software development and mechanics. Our engineers and technicians can draw upon many years of experience and a vast range of knowhow.

Therefore the challenges can cover a very broad spectrum. We will prepare feasibility studies and compare concepts for you. We will draft and construct prototypes and test vehicles for you. Naturally, we will also manufacture these devices in series.

From Prototype to Series Production
You can rely on SMA’s unique service for prototypes, test racks and small series production. Allow us to support, maintain, repair and service these systems just like series products.
Customer-tailored IGBT power assemblies replace older modules of a traction converter in the VTA trains of AKN. The new power modules are compatible in terms of form and function. All other components, such as housings, cooling systems, filters, software and control units remain unaffected.
Services

Your Satisfaction is our Success
We have developed a comprehensive service concept from our many years of experience in developing and manufacturing auxiliary power supplies for rolling stock that ensures our customers are provided with a fast and proven solution.

Easy Replacement
All components of an SMA auxiliary power supply are designed modularly and can be quickly and easily replaced. This reduces unnecessary delays and keeps the resulting costs to a minimum.

Contact Always Welcome
Intensive cooperation with our customers in a true partnership is the key to success. This allows you to incorporate your ideas and specific needs into our products right from the very first development phase.

If your SMA auxiliary power supply fails, we will solve the problem for you. SMA will provide you with a replacement system or carry out the necessary repairs within 24 hours.

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Assistance Assured
Our experienced development and service team will happily provide you with on-site advice and support during the commissioning or maintenance of your vehicles.

Naturally, we also offer a comprehensive training concept for our power supply systems that is especially tailored to meet your requirements.

We offer:
• 24 hour service for exchange units
• Qualified training programs
• Consulting and support
• On-site commissioning
Application examples

Metro Athens
Metro Kaohsiung
BLS AG
Coradia Lirex
Combino Budapest
ICM
RegioCitadis Kassel
MTRC Hong Kong
TGV POS
Berlin-Warsaw-Express
VTA of AKN
Guangzhou Movia Metro

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