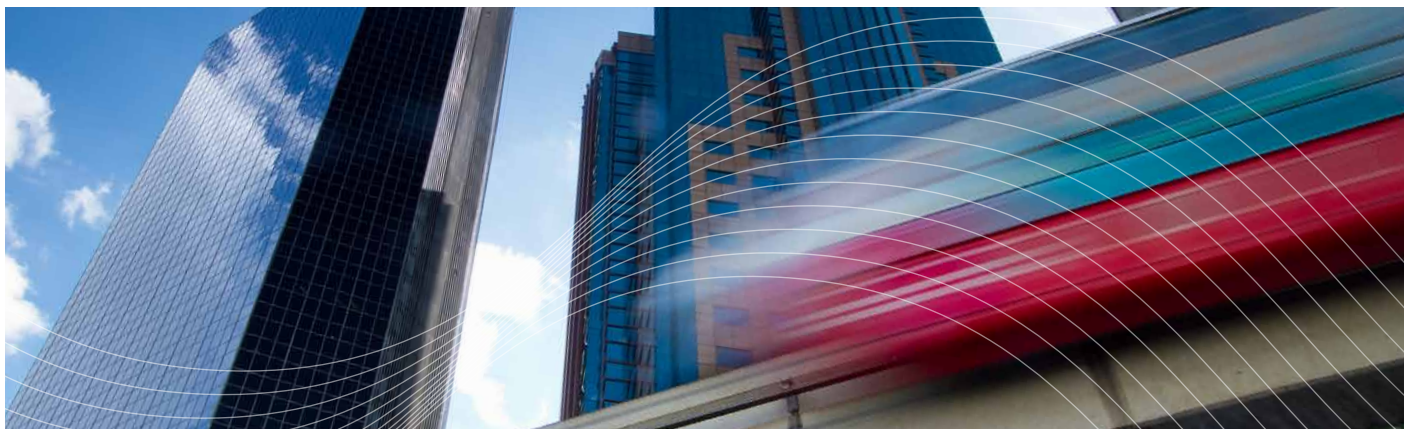




The Future is Made of Ideas.

Power Converters Included.

Electricity is our DNA. Energy is our Agenda.



PCS develops, designs, manufactures and tests power converters and electrical equipment: for rail vehicles, wind turbines and industrial applications – including project management and service.

Power converters keep things moving in the fields of energy, industry and transportation. It is reassuring to know that PCS has been supporting these sectors for over 140 years, whether rail vehicles or wind turbines, industrial applications or test benches. With the flexibility of a medium-sized company and decades of experience, we add momentum to businesses. We will gladly do the same for yours.

Experience plus Curiosity Equals Competency

In 1896, our company began delivering complex systems for rail vehicles; fifty years later, we also started to develop, test and produce electrical components. Since 1948 we have produced electrical rail equipment for over 70,000 rail vehicles. This wealth of experience has proven invaluable when it comes to developing new products and business fields today. Now an independent company based in the Tegel district of Berlin, PCS Power Converter Solutions GmbH is continuing to write its success story.

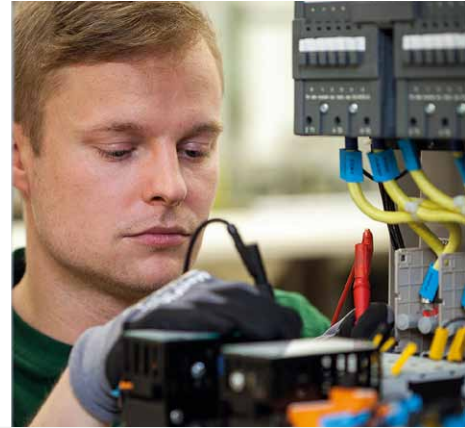
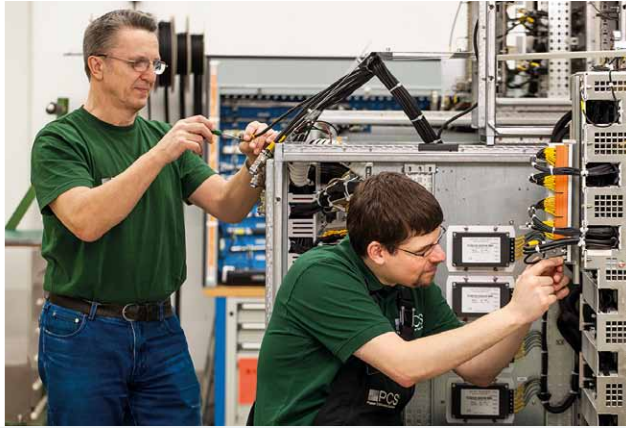
Optimally Positioned in all Business Areas

Railways are experiencing a global renaissance as an environmentally friendly means of transportation – using electrical components made by PCS, of course. Wind turbines call for a new generation of power converters and PCS is there to provide it. The industry requires highly specific power converters for all kinds of applications – PCS produces and services them. Every area requires a competent service partner: our new PCS After Sales business field offers training, commissioning and installation assistance all over the world, as well as the standard comprehensive service and support.

PCS in Facts and Figures

Location	Berlin, Germany Global sales network
Turnover	EUR 63 million (2011)
Employees	240 (2011)
Qualification	35% hold a university or technical college degree, 65% hold a vocational degree
History	1843 – Founded by Julius Pintsch 1949 – FAGA Fahrzeugausrüstung Berlin 1998 – Bombardier Transportation 2010 – PCS Power Converter Solutions GmbH
References	Represented in over 50 countries around the globe
Area	15,000 m ² for development, production, testing and logistics

Development, production and service from a single source



»We want to continue growing in size and strength«

Interview with Günter Mayer, CEO of PCS Power Converter Solutions GmbH

Mr. Mayer, do you spend more time on a plane or at your desk?

You're probably asking because PCS is currently more active abroad than ever before. You're absolutely right. It's great to see how our extensive activities are developing in the USA, or how well our Green Line 1000 model is performing in China's largest test wind farm. We are even present on the Australian market with our rail products. I don't always have to be there in person, however I seize every opportunity to make international contacts on-location where possible. So I spend more time at my desk, but also on a plane if I can.

PCS has received an interesting contract from Siemens for rail vehicles. What is so special about this project?

The location, first of all. The Skytrain in Bangkok's city transport system requires 35 additional passenger cars so that the trains are able to handle a higher volume of passengers in the future. Given our experience working with high temperatures and humidity from when we equipped the Singapore subway, Siemens chose to call upon our expertise in Bangkok for the underfloor converter units. We are of course delighted at the opportunity.

The PCS Green Line product range is constantly being expanded. What advantages does this offer the user?

Wind turbine operators favour an integrated solution for generating electricity; from the converter and the generator all the way to the transformer. The benefits of this kind of system concept are self-evident. Thanks to our partnerships with leading manufacturers, we have now reached a new quality level as a systems supplier. It is not surprising that this concentration of expertise is resulting in interesting synergies; the duration of the test phases, for example, has been significantly reduced.

Hybrid concepts are more in demand in the field of automotive development than ever before. You must be pleased about this, too.

We are. Asian manufacturers in particular are currently investing heavily in test benches, including a number of complex solutions for four wheel and hybrid drives. One special solution by PCS comprises 15 electrical cabinets connected to four wheel test benches and two drive test benches. This is our first converter unit with this many electrical cabinets. So you can see how we are growing as a company in both size and strength and we are doing everything to ensure that we continue to grow in the future.



Günter Mayer, CEO

Reliable Power.

PCS Rail Puts Progress on Track.



PCS Rail is the leading brand for energy supply and distribution in rail vehicles: our products travel reliably and quickly on rail tracks all over the world.

PCS Rail – Plenty of Energy on Board

Lightweight, reliable, small and economical – PCS Rail develops and produces integrated, individual onboard power supply systems for rail vehicles of all types. Whether commuter or long-distance transit, tram or high-speed train: in each rail solution, the specific requirements are implemented with the latest energy-efficient technology in a sophisticated overall design. PCS stands out when it comes to energy distribution in the vehicle thanks to our individual service packages for pre-assembled electrical components including switchgear, electrical cabinets, and a number of other systems.

Success Story: Double-decker Coach

With over 2,000 delivered models since 1997, the auxiliary power supply unit for double-decker coaches has proven to be one of the most successful power electronic products from PCS. With orders for the “Do 2010” double-decker coaches for the Deutsche Bahn, double-decker coaches for the Israeli national rail service and the new double-decker multiple unit train TWINDEXX for the Swiss rail service SBB, the success story is to be continued.

PCS Rail AU 500 Family

Successful standard devices for use in passenger transit systems – from trams, light rail vehicles to underground trains.

PCS Rail AU 1000 Family

The ideal solution for regional and long-distance rail service – from multiple units to passenger coaches, all the way up to high-speed trains.

PCS Rail BC Family

The powerful direct current supply for more than just vehicle batteries and for every kind of rail vehicle.

PCS Rail Pre-assembled Components

Individual service packages for pre-assembled electrical components such as switchgear, electrical cabinets, control panels and driver desks.

AU 1000 electrical cabinet application
AU 500 roof application

PCS Rail CU
Battery charger



Pre-assembled component: Driver desk



A Fresh Breeze for Wind Energy.

PCS Green Line Sets New Standards.



PCS Green Line is our modular and flexible full power converter family that is designed to meet the specific requirements of generating power from wind energy. It sets new standards of reliability and flexibility.

The PCS Green Line Family of power converters has become the new standard for wind turbines with electrical and permanent magnet synchronous generators. A combination of extremely high reliability, modular product design, and our specific expertise in the area of grid codes ensure optimal grid integration and maximum yield.

Technical Excellence

The PCS Green Line relies on IGBT-based 4-quadrant converters. The 3-phase power module with integrated IGBTs at the core of the converters ensures maximum performance. A compact DCU (Drive Control Unit) is responsible for control, protection and supply. By providing reactive power, along with additional measures, the PCS Green Line ensures that the system remains on the grid, even in the case of extreme frequency fluctuations.

Full power converter PCS Green Line 1522



Expandable to a Complete System

A modular setup, standardized design, and the option to scale the output open up a range of expansion opportunities – for instance through parallel switching. With PCS Green Line Systems you can expect converters, generators and transformers that are perfectly attuned to one another, resulting in an integrated power generation system of the highest possible quality.

PCS Green Line

Output can be scaled from 1000 kW to 7000 kW

Liquid cooled

Individual set-up arrangements in tower and nacelle

IGBT-based four-quadrant power converters

Variable grid and generator connection possibilities

EMC-compliant enclosures for minimal occurrence and emission of interference fields

IP 54 protection against environmental influences such as water, dirt and salt

Conforms to technical directives and grid connection requirements

Fault ride-through capability

CE conformity

Customer-oriented service: training, commissioning, spare parts management, customer-specific service agreements

PCS Green Line 1000 / 2500
LVRT reactive current solution



Simulate your Future Success.

PCS Blue Line for Highly Dynamic Customers.



Highly dynamic test systems are used to ensure that industrial systems can withstand future stress. PCS Blue Line converters increase the power and efficiency of these test benches.

PCS Blue Line represents the high end in mains and drive converters designed for highly dynamic motor and gear test benches, special applications such as transformer test benches, as well as active grid compensation in a nominal output range from 100 kVA to 6000 kVA. The use of intelligent power modules, the compact design, the minimal number of components, and the forced air and water cooling define our state-of-the-art technology. This explains why virtually all Formula 1 racing teams use PCS Blue Line power converters in their test benches.

Faster, More Economical Product Development

PCS Blue Line facilitates the complete simulation of technological processes. This helps to lower development costs substantially and dramatically speeds up development times. Our engineers handle the performance electronics and thermal design, and create the software application, including the control of the mains and motor converter for highly dynamic drives.

PCS Blue Line

For asynchronous and permanent magnet synchronous motors

Highly flexible thanks to modular design

High torque and speed dynamics

High-level precision in torque, speed, and compensation

Easy adjustment to new requirements

User-friendly service software

Quick customer service when maintenance is required

Implementation of individual needs

A team of young yet experienced engineers

Test bench technology that has been proven to meet the highest requirements

Highly dynamic converters for a four wheel test bench



Personalized Service.

PCS After Sales.



Each PCS solution can be combined with a comprehensive package of qualified service and support services: PCS After Sales provides individualized service and extensive support across the globe.

For wind turbines, motor test benches, or rail vehicles: personalized agreements will optimise our PCS After Sales services according to your needs – from commissioning to 24/7 availability, from the procurement of spare parts to the organization of a complete consignment warehouse.



Service and replacement parts from a single source

Technical Service

We ensure that your technology remains in perfect and reliable working order. Our highly qualified team of specialists come directly to your premises to install, inspect, and commission your PCS systems as required.

Spare Parts Supply

From generating quotes and customer communication to spare parts delivery and warehouse management: we take everything into account in order to provide the best possible customer service. We want you to be happy with our service, since satisfied customers will become return customers.

Outstanding Service Competency

Service contract: from commissioning to 24/7 availability

Commissioning & installation: including verification with a certificate of completion

Maintenance & repair: availability, security and economic efficiency

Diagnosis: analysis, remote analysis and troubleshooting in case of failure

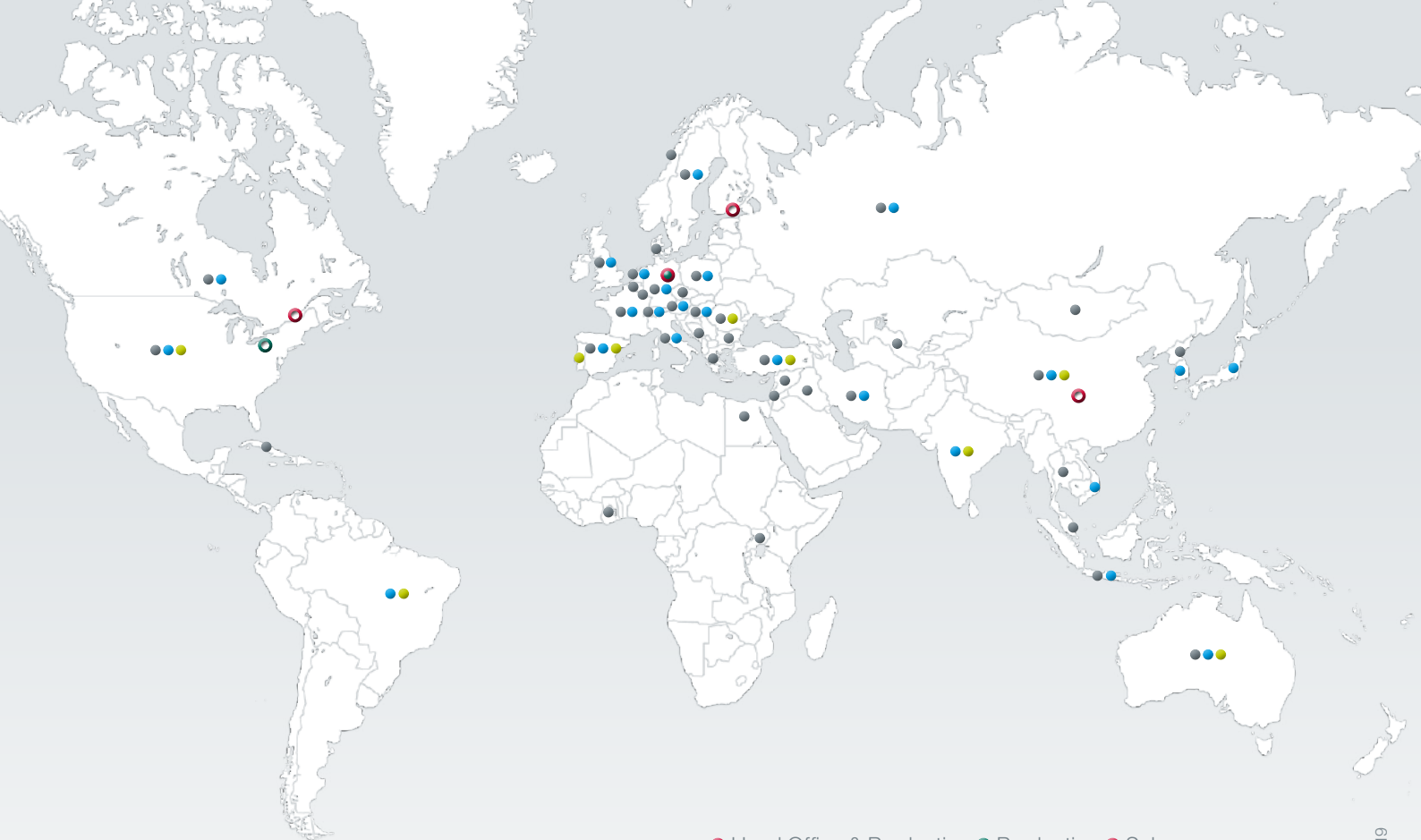
Spare parts management & logistics: fast reaction times

Upgrading & modernization: rail vehicles and power supplies

Repair: on-location or in-house at PCS

Retrofitting: expansion, optimization, modification and modernisation

Training: basic principles and user knowledge for PCS converters



● Head Office & Production ● Production ● Sales
 PCS Products are implemented worldwide:
● PCS Rail ● PCS Green Line ● PCS Blue Line

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