

# insider



## Powerful collaboration

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Facilitating a research project at the Lodz University in Poland

### **Oil and gas industry solutions – 16**

ABB's innovative power protection solutions for the oil and gas industry

ABB has provided a data center solution in collaboration with Thomas & Betts, to protect their data center. ABB has an extensive range of products designed to protect your data center requirements. Ranging from breakers and gensets through to UPSs. Watch the video [here](#) to see how ABB provided a complete data center solution.



# 1|14 Insider



**Amina Hamidi**  
Product Group Manager  
Power Protection

Once again, we have a packed edition of Insider and lots of news to report!

Two years ago, ABB acquired Thomas & Betts, an American electrical components maker. Integrating the new acquisition involved providing a complete ABB solution for the Thomas & Betts data center in Memphis, United States. An important part of this was one of our products - a 600 kVA PCS100 UPS-I that will back up the data center and other critical areas, including the customer service department.

Our news since the last edition of Insider continues to span the globe. In Russia, four 330 kVA, 30 percent AVCs have been installed on the incoming feeders of substations #27 and #28 for Sibur Plastic - based in Tula Region in Russia. These substations supply the main production unit, which makes styrene, and the key goal is to improve the reliability

and continuity of the power supply.

Oil and gas operations are usually carried out in remote locations where the electricity grid is often weak or non-existent. To maintain seamless and secure operations in these outlying areas, efficient, high-quality and uninterrupted power supply is of primary importance, and this is an area where we are focusing on expanding our business. One recent success was with A.P Moller-Maersk, the global shipping and energy company, where our platform-to-ship frequency converter has proved to be a success.

The PCS SFC supplies a 60 Hz floating storage and offloading vessel with electric power from a nearby 50 Hz oil and gas platform, eliminating the need for the ship to systems with its own diesel engines.

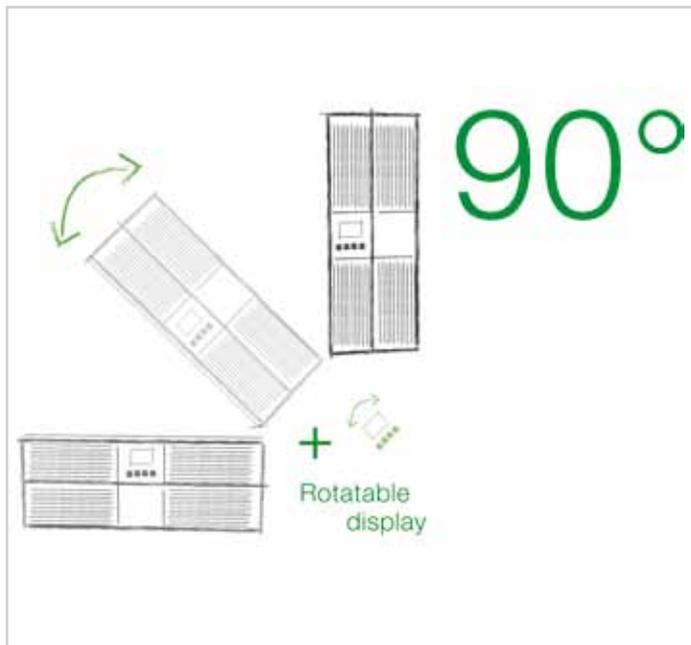
We have a new product to announce too, the PowerValue 11 RT single-phase uninterruptible power supply (UPS). This UPS is ideal for ensuring business continuity in small IT environments, like sophisticated small offices and small- to medium-sized enterprises. There are two models, one for applications up to 3kVA and one for applications above that, up to 10 kVA. Two units of the latter model can be configured in parallel for 20 kVA capacity.

I am also delighted to inform you that ABB has been selected to facilitate research at one of the UK's red-brick universities. We received a contract from the Department of Electronic and Electrical Engineering of the University of Sheffield for an energy storage power converter system (PCS) that will form

an integral part of a novel full-scale facility for academic and industrial research. The scope of supply includes two PCS units of 2 MVA and 100 kVA as well as two associated transformers. ABB will be also responsible for the engineering, installation and commissioning of the system.

The project will enable the construction of an innovative facility where research can be conducted at power levels equivalent to industrial installations. The 2 MVA part of the system will be based on Li-ion batteries whereas the 100 kVA part will incorporate second life car batteries and will interface to power converters designed and developed by Aston University.

I hope you enjoy the first edition for 2014 of Insider.



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A complete data center solution by ABB

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ABB introduces its new PowerValue single-phase UPS series

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The Power converters and inverters playlist can now be found on the ABB YouTube channel.

Click [here](#) to watch the latest videos.

## Latest Videos

[A data center solution provided by ABB](#)



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PCS Grid interconnection  
PCS Energy storage and grid stabilization

[www.abb.com/UPS](http://www.abb.com/UPS)

**FOR** UPS and Power Conditioning



# Data center power

Increasing the power protection for Thomas & Betts data center.

Data centers all around the world are forever requiring super critical power protection, so daily operations can run smoothly without any voltage disturbances. In the United States, Thomas & Betts, a recently acquired company by ABB, in Memphis, Tennessee, needed long-term autonomy of greater than 30 minutes against extended outages on the utility, with absolutely no downtime. ABB provided a solution consisting of a PCS100 industrial UPS (UPS-I), a diesel generator, breakers, and surge suppressors to ensure the data center and additional critical areas were not put at risk of complete power failure.



The Baldor diesel generator is providing power to the entire facility



600 kVA PCS100 UPS-I bridges the time between the utility failing and the generator starting

The data center at Thomas & Betts (T&B) headquarters in Memphis, has been protected by a UPS and diesel generator for many years. Although it has served them well, T&B had come to a point where their daily business requirements had outgrown the capabilities of the existing setup. Because of this, and the desire to future proof their infrastructure, it was very apparent that T&B needed to address their power protection solution.

James Holcomb, Director-iTeam Infrastructure for T&B commented on the solution chosen to replace the existing products that were used. "In late 2011, we began discussion about replacement of a couple of major pieces of equipment in the Memphis office including our building generator and the UPS."

#### The power of collaboration

Holcomb, in partnership with John Fouts, Director of Real Estate for T&B, and Mark Buchanan, the Memphis Facility Manager, specified the capabilities and coverage they needed and made a recommendation to upgrade the requirements. The new building generator, a Baldor 2000 kW generator, would provide power to the entire facility in the event of a power loss rather than just the critical area coverage provided by the current unit. The existing UPS only provided back-up to the data center and selected critical areas of the building. The new unit, ABB's 600 kVA PCS100 UPS-I, will back up the data center and additional critical areas including the customer service department.

#### Advanced technology

Short duration power quality events such as voltage dips and swells are taken care of by the PCS100 UPS-I without need for the generator to start. If confronted with an extended event, ABB's PCS100 UPS-I bridges the time between the utility failing and the generator starting. The unit also handles synchronizing with the generator and the synchronizing and reconnection to load the utility when the utility voltage has returned to a normal condition.

Dave Sterlace (1), T&B's Data Center Market Development Manager further highlighted the benefits of ABB's PCS100 UPS-I. "ABB's PCS100 UPS-I allowed us to meet the efficiency targets without any compromise in system reliability or performance. The PCS100 UPS-I exceeded all my expectations and I am very impressed with the modular design which offers added security through integrated redundancy. An additional bonus of this design I've found that it encompasses easy serviceability."

#### The complete solution

As a responsible corporation, T&B wanted to minimize their carbon foot print, and one of the most effective ways to do this was with energy efficient solutions. Being a data center, reliability is a non negotiable requirement. Their selection criteria, in order of importance to T&B were, high reliability, high efficiency, and smallest possible footprint. They were surprised that while they almost doubled the capacity of their power protection solution, the overall footprint for the PCS100 UPS-I remained the same as the old UPS solution. With this solution in place, a true, no-break supply in the event of a power failure was achieved.

As well as providing a complete data center solution, ABB provided service such as installation and commissioning, recently completing the commissioning in February this year.

"This was a real win-win for all parties," said Holcomb. "We were able to take advantage of the best in class product offerings and technical capabilities of other businesses inside our new company. We have also offered to be a showcase – a place where the sales teams can bring customers and potential customers to show them a live installation of products and solutions from across the ABB family."

ABB's PCS100 UPS-I has been successfully installed in many data center applications. This year, the power protection team are expanding their portfolio into the MV power range, and will launch the **PCS100 MV UPS**. This has been designed specifically to provide clean, reliable and efficient power in industry and in large data centers who have sensitive or critical loads.

(1) Watch the T&B data center project [here](#), featuring an interview with Dave Sterlace (Data Center Market Development Manager).

View ABB's data center solutions [brochure here](#)

To find out more about ABB's PCS100 power protection range, please visit: [www.abb.com/pcs100-power-converters](http://www.abb.com/pcs100-power-converters) or visit [www.abb.com/datacenters](http://www.abb.com/datacenters) for a complete ABB data center product offering.





# Efficiency in the field

PowerValue 11 RT UPS – for those who value their power.

# A reliable, flexible and convenient UPS for IT infrastructures up to 10 kVA.

## ABB's new single-phase PowerValue 11 RT brings high-end UPS sophistication to the 1 – 20 kVA segment

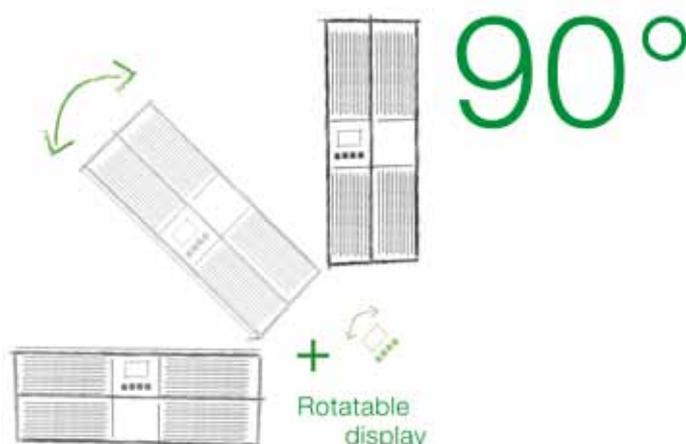
An uninterruptible power supply (UPS) has become an indispensable piece of equipment for the home and for small businesses. Single-phase UPSs are a sensible and economical option for these simpler, more modest applications and, traditionally, such UPSs have fulfilled only very basic power backup needs. Now, with its new PowerValue 11 RT, ABB has made available to this market segment many sophisticated and convincing features.

### Reliable power

ABB's PowerValue 11 RT is a true double-conversion online UPS that guarantees up to 10 kVA of clean, reliable power for critical single-phase applications. As well as maintaining power to servers, point-of-sale terminals, workstation clusters, routers, switches, hubs and sensitive electronic equipment, the PowerValue 11 RT will also condition incoming power to eliminate spikes, swells, sags, noise and harmonics. This feature is becoming ever more important as more renewable power generation sources are brought online. Double-conversion imposes tight voltage and frequency regulation and zero transfer time for reactive loads (machinery, lab equipment, etc.).

PowerValue comes in five different models from 1 to 10 kVA. The units of the higher-power model (6 and 10 kVA) can be configured in parallel to provide redundancy or to increase the system's total capacity to 20 kVA.

Because space in business premises can be at a premium, the PowerValue 11 RT has been designed to be extremely compact. It can be delivered in tower or rack versions, to suit existing infrastructure.



The PowerValue 11 RT can be delivered in tower or rack versions

### Wide visibility

The monitoring solutions provided with the PowerValue 11 RT give excellent visibility of the system status and allow remote supervision of the power grid, the battery bank and the UPS.

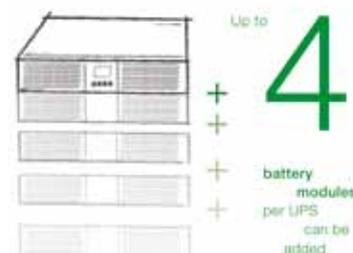
### Low cost of ownership

The PowerValue 11 RT was designed to deliver a low total cost of ownership: Its high efficiency means not only that it is cheap to run but that the resulting lower cooling costs also keep the power bills low. An energy-saving ECO-Mode configuration is also available. Easy set-up and maintenance delivers lower operating and maintenance costs, too.

A very wide input voltage window minimizes battery usage. Output voltage regulation is extremely tight and there is very low harmonic distortion (THDi < 5%). Further, an excellent power factor and unique technical features that minimize battery usage and prolong lifetime mean the PowerValue 11 RT is easy on the pocket all round.

### Flexibility

The PowerValue 11 RT has a large integrated charger. This not only gives more flexibility in extending the runtime of the units but it also shortens battery recharge time, thus increasing system availability and reliability, the two most critical parameters of any UPS. Further, the battery packs can easily be replaced and can be added to scale up the backup time. Also, battery cabinets can be added to scale up the backup time. The PowerValue 11 RT may even be used as a frequency converter.



Battery cabinets can be added to scale up the backup time

The PowerValue 11 RT changes the single-phase UPS world. A sophisticated, but affordable, true double-conversion online single-phase UPS for up to 20 kVA is here.

To see further technology information please visit: [www.abb.com/UPS](http://www.abb.com/UPS)





# White gold

Continuous production for Sibur Plastic's production workshop.

Production lines consume huge amounts of power and rely heavily on continuous processes. It is critical that a constant power supply is available at all stages of the production process. Without this assurance, production output can be at risk and vital resources compromised. ABB has installed a power protection solution that is eliminating voltage dips for Sibur Plastic's workshop, "Styrene" in Russia. This solution is increasing the reliability and continuity of the factory's power supply by 100 percent, and ensuring their resources are protected.

“After commissioning there were 15 power quality events and the production line hasn’t felt them at all, thanks to ABB.”

The polystyrene industry is rapidly increasing and is sometimes referred to as “white gold” as it produces approximately €66 billion / USD60 billion annually. Such importance is placed on continuous output to meet the growing demands for raw materials and products of the European, American, and Asian industries.

Sibur Plastic’s contribution includes the production of styrene with a capacity of up to 60,000 tons per year. For Sibur Plastic, reliability and continuity of factory’s power supply was an important factor, as they had previously experienced poor production due to short voltage dips. With such a dependence on the production of styrene globally, this issue had to be resolved immediately.

#### How ABB solved the problem

ABB provided four 330 kVA PCS100 Active Voltage Conditioner’s (AVCs), which were installed on substations that supplied power to the main workshop, “Styrene”. The highly efficient technology of the PCS100 AVC system means that, voltage sags and swells are corrected whilst providing continuous voltage regulation. This enabled the production line to operate seamlessly, even after 15 power quality events (mainly dips with different depths) were reported.

Sibur Plastic’s Chief Power Engineer Mr Formin highlighted the performance of the PCS100 AVC, “We were skeptical and had some doubts with the effectiveness of the PCS100 AVC. However, only two months after commissioning, there were 15 power quality events and the production line hasn’t felt them at all, thanks to ABB. The production line is now working without any interruptions related to the power quality issues we were often experiencing before.”

#### Securing a future for Sibur Plastic

With ABB’s power protection solution in place, Sibur Plastic will continually produce up to 60,000 tons of polystyrene per year. Among this impressive figure, Sibur Plastic will also produce expandable polystyrene with a capacity of up to 11,300 tons per year, separators and foamed plastics with a capacity of 6,380 tons per year. For Sibur, the most important aspect was on time supply to polystyrene manufacturers. This supply led to the production of a wide variety of everyday goods such as, cups and utensils to furniture and bathroom materials. Consumer electronics and durable lightweight packaging of all kinds are also produced. Investing in ABB’s technology is allowing Sibur Plastic to increase their production output and minimize waste of resources and materials. This will enable Sibur Plastic to invest in other areas of quality processes and secure future orders with their customer’s.

#### Comparing technologies

Unlike other power protection solutions on the market today, ABB’s PCS100 AVC topology is very small. This allows for situations where tight installations are required. Surprisingly, this is a common fac-



ABB’s PCS100 Active Voltage Conditioner (AVC)

tor, since many industries today do not have large amounts of floor space. The PCS100 AVC industrial design and integrated bypass means that it is highly reliable and can cope in the harshest conditions. Finally, as the PCS100 AVC draws the additional current required to make up the correction voltage from the utility supply, it requires no energy storage. This leads to lower maintenance costs and a higher efficiency of typically greater than 98 percent. To date, ABB have installed over 381 MVA PCS100 AVCs, and over 800 MVA of PCS100 power protection products for commercial and industrial applications.

View ABB’s PCS100 AVC [brochure here](#)

Watch ABB’s PCS100 AVC [video here](#)

To find out more about ABB’s PCS100 power protection range, please visit: [www.abb.com/pcs100-power-converters](http://www.abb.com/pcs100-power-converters)



# ABB's power protection portfolio – power conditioning

## PCS100 AVC (Active Voltage Conditioner)

- Protects sensitive loads from the most common disturbances in utility supplies
- Sags, surges, unbalance, flicker and poor regulation are corrected within a few milliseconds
- High power and performance inverter-based system
- Operating efficiency 97 to 99 percent (model dependent)
- Very small footprint due to no storage to operate
- Rated 150 kVA - 30 MVA. Download PCS100 AVC brochure [here](#)

## PCS100 UPS-I (Industrial UPS)

- The PCS100 UPS-I is the ideal solution where very deep sags or short term power outages are a problem
- The PCS100 UPS-I uses energy storage coupled through an inverter to allow the downstream load to ride through very deep sags and short term outages
- The PCS100 UPS-I is an offline system. It is inactive unless the voltage increases by 10 percent or falls by 10 to 13 percent. This enables it to be very efficient, up to 99 percent
- Ratings from 150 kVA to 3000 kVA and voltages 208 Vac to 480 Vac. Download PCS100 UPS-I brochure [here](#)



## PCS100 RPC (Reactive Power Conditioner)

- ABB's PCS100 RPC is specifically designed to condition the current drawn by industrial and commercial loads. The PCS100 RPC uses leading-edge power electronic conversion to inject current into supply, correcting for common problems such as:
  - Unbalanced load current
  - Low order harmonic currents
  - Power factor problems including leading power factor
  - Load current induced voltage drop
- As a purely static device, the PCS100 RPC provides extremely fast correction. Its modular redundant design makes it a very reliable, scalable and serviceable product, backed by ABB's global support network. Packed with new features to suit industrial and commercial applications. Ratings from 100 kVA to 2000 kVA and voltages 380 Vac to 480 Vac. Download PCS100 RPC brochure [here](#)

For more information, please visit [www.abb.com/pcs100-power-converters](http://www.abb.com/pcs100-power-converters) or contact [powerquality.nz@nz.abb.com](mailto:powerquality.nz@nz.abb.com)  
Click [here](#) to view ABB's power protection brochure.

# ABB's power protection portfolio – UPS

## Modular three-phase product range

- ABB's modular UPS product range are high-power, modular and transformer-free UPS systems for organizations who need zero downtime
- The UPSs are built using true online double conversion technology and provide low cost of ownership
- The UPS can be sized to exactly fit your needs and can easily be scaled up to provide 3 MW of clean, reliable power
- Each module contains all the hardware and software required for full system operation. They share no common components and potential single points of failure are eliminated

## Single-phase product

- ABB's PowerValue is a true double-conversion online uninterruptible power supply (UPS) that guarantees up to 10 kVA of clean, reliable power for your critical single-phase applications
- Two units of the 6 or 10 kVA models can be configured in parallel to provide redundancy or to increase the systems total capacity up to 20 kVA
- All units can be fitted with up to four battery modules to extend runtime
- For full flexibility, PowerValue is configurable in tower or rack-mount format. The display is rotatable and therefore easy adjustable to your configuration needs



## Standalone three-phase product range

- The PowerWave 33s exceptional design meets all modern requirements of building and operating energy-efficient and environmentally friendly data centers
- The PowerWave 33 employs transformerless double conversion UPS topology and is available from 60 to 500 kW
- The PowerWave 33 boasts features and options that cater to customer's needs, including the flexibility to accommodate an increase in power requirements and to provide n+1 parallel redundancy
- If additional capacity is needed, up to 10 UPS units can operate in parallel configuration, achieving a power capacity of up to 5 MW

For more information, please visit [www.abb.com/UPS](http://www.abb.com/UPS) or contact [ups.sales@ch.abb.com](mailto:ups.sales@ch.abb.com)  
Click [here](#) to view ABB's power protection brochure.



# Energy storage at its best

ABB's Energy Storage System is a key component of a research project at Lodz University of Technology in Poland.

ABB has successfully commissioned the first Energy Storage Power Converter System (PCS) in Poland at the Laboratory of Distributed Generation of the Lodz University of Technology. The solution enables the integration of a variety of energy storage devices, therefore opening up new opportunities for extensive research in the field. At the same time, the installed system considerably enhanced the quality of the existing microgrid, boosting its efficiency and reliability.

The Lodz University of Technology (TUL) was officially established in 1945 and has been developing dynamically ever since. Currently, over 20,000 students start building their professional career at the university, broadening their knowledge and competence owing to the access to world-class research facilities.

#### Requiring a flexible grid

TUL is engaged in many research projects. One of them, launched at the Laboratory of Distributed Generation of the Institute of Electrical Power Engineering, involved the use of different types of energy storage devices. However, to allow these devices to be coupled to the grid, the university required a flexible grid interface that would enable such functionality and at the same time could strengthen the performance and reliability of the existing microgrid.

#### The solution

ABB's Energy Storage PCS was selected as the only available solution that could ensure the integration of as many as three different types of energy storage devices. Accompanied by a DC switchgear, the PCS connects easily with lead batteries, flywheel as well as supercapacitors. Thanks to this functionality, prototypical test stands will be created, which will initiate pioneering research.

An additional task of the installed 45 kVA PCS is to improve the energy efficiency of the existing microgrid consisting of wind turbines and photovoltaic cells. The PCS is also used to stabilize the microgrid during the operation of a gas turbine.

#### Modular design

ABB's Energy Storage PCS ranges from 50 kVA to 30 MVA. One of the key features of the system is its modular construction, which accounts for the platform's extreme reliability. Modular inverter blocks also make the system highly configurable and versatile, thereby enabling both indoor and outdoor placement. The PCS solution is easily deployable in terms of installation time and space requirements. Furthermore, low operational costs derive from its high efficiency and low maintenance.

Download ABB's PCS ESS brochure [here](#)

To find out more about ABB's PCS ESS range, please visit:

[www.abb.com/converters-inverters](http://www.abb.com/converters-inverters)  
(Converters for Energy Storage and Grid Stabilization)



TUL's and ABB's representatives during the successful commissioning

#### Highlights - Energy Storage Power Converter System (PCS)

Minimized risk due to proven technology

High availability ensures lowest cost of ownership

Easily deployable

Utility grade with advanced controls

Modular design

Global lifecycle management in close-cooperation  
with customers





# A well-oiled machine

ABB's innovative power protection solutions for the oil and gas industry.

### Backbone of today

The petroleum industry could be regarded as a backbone of today's industrial civilization, continuously providing the major source of the world's energy. Oil and gas operations are usually realized in sparsely inhabited, remote locations, including the bitter cold of the arctic, through the burning heat of the deserts, to extreme offshore conditions.

Not only do these environments themselves present a considerable challenge, but also the electricity grid which might be particularly weak in such locations. To maintain seamless and secure operations in these outlying areas, efficient, high-quality and uninterrupted power supply is of primary importance.

### ABB's power protection offering

ABB's power protection portfolio provides a comprehensive platform for operators of petroleum industry plants for offshore and onshore applications. This unique line-up of advanced technology addresses the global challenge for improved grid quality, which is affected by many aspects, such as voltage, current, reactive power, active power, and frequency.

As the offshore and onshore product configurations are often unique configurations, a gradual product assessment policy is pursued. Comprehensive supply, installation, testing and commissioning is all included in the product and service package.



ABB's PCS Static Frequency Converter

Ships usually operate on 60 Hz grids with many countries globally having 50 Hz land lines. The PCS SFC systems provide the answer to bridging the gap in today's environments where different voltages and frequencies occur. They emulate a generator allowing simultaneous operation of on-board supply units.

### Protecting commercial operations

Protection from voltage fluctuations is a major concern for high end industrial power users. As far as refinery operations are concerned, adequate protection helps to minimize the risk of exploration or, for example, reduce the time required to drill a well. Costs associated with damage and down-time from electrical disturbances are severe for up, mid and downstream operation.

This waste of money and resources includes direct impact associated to facility electrical systems, equipment and software, as well as the costs of downtime and lost revenue. The PCS100 AVC provides extremely fast and full correction of voltage dips. It can correct sags and surges of 30 percent for 30 seconds and 10 percent continuously. During short interruptions to mains, the PCS100 UPS-I bridges the time required to power up diesel generators. The offline UPS system will take up operation only if the threshold voltage is reached. The PCS100 UPS-I features high overload capacity, robustness and an efficiency of more than 99 percent.

### Assurance of power

Assurance of power supply is important in many industrial settings, but, on an offshore oil platform, it is absolutely crucial. Because the offshore environment can be very harsh and remote, the UPS also has to be rugged, with high availability and reliability, and repair and maintenance should be simply accomplished by non-experts. The flexible design of the DPA UPS provides a "pay-as-you grow" model, ideal in situations where requirements may change with time. This scalability means that there is no need to over-specify the original configuration as power modules can simply be added, as needed, without any footprint penalty.

Assurance of power supply is important in many industrial settings, but, on an offshore oil platform, it is absolutely crucial.

### Versatility in applications

- PCS Static Frequency Converter (SFC) enables the connection to and from grids with different frequencies e.g. ships 60 Hz to 50 Hz land lines.
- The PCS100 Active Voltage Conditioner (AVC) protects sensitive systems and loads in industrial applications from voltage fluctuations and dips.
- PCS100 Reactive Power Conditioner (RPC) enables power conditioning, maintaining voltage quality and required power factors.
- The PCS100 Industrial UPS (UPS-I) protects continuous processes from outages or interruptions caused by power failures.
- The DPA modular online-swappable UPSs such as the Conceptpower DPA or the DPA UPScale protects critical loads against supply aberrations including total mains failures.

### Shore-to-ship power

In the petroleum industry, oil and gas platforms have been identified as a prime candidate for enabling significant energy and displaced carbon emission savings. ABB's platform-to-ship frequency conversion solution allows 60 Hz commercial vessels, including oil tankers, container ships as well as floating storage and offloading vessels to turn off their diesel engines and tap into cleaner energy source, that is electric power from the 50 Hz platform.



ABB also provide solutions for land based oil and gas applications

Servicing is easy as modules can be replaced without powering down. The UPSs are based on ABB's unique and proven Decentralized Parallel Architecture (DPA™). With DPA, each UPS module contains all the hardware and software required for full system operation. Modules share no common components, and, as a result, system uptime is maximized. The footprint of the DPA UPS is very small – a bonus in the offshore world where real estate is scarce and expensive.

The modular and standardized ABB uninterruptible power supplies (UPSs) bring many advantages to the oil and gas industry. Modules can be swapped online, i.e., removed or inserted, without risk to the critical load and without the need to power down or transfer to raw mains supply. This unique aspect of modularity directly addresses continuous uptime requirements, significantly reduces mean time to repair (MTTR), reduces inventory levels of specialist spare parts and simplifies system upgrades. This approach pays off too when it comes to serviceability and availability the two most critical parameters of any UPS in oil and gas applications.

The delivery often includes an external input transformer, an external battery charger, an IP 31 protected rating cabinet and the capability of charging a NICD battery set, to provide a long back-up time.

### Ensuring high quality power

PCS100 Reactive Power Conditioner (RPC) minimizes voltage dips caused by direct online motor starts. It can also correct voltage unbalance, poor power factor and low order harmonic problems caused by DC & AC motor drives. With accurate control of the power factor the RPC is particularly suited to ensure backup generators can operate correctly, even with leading power factor loads.

### Customer reference

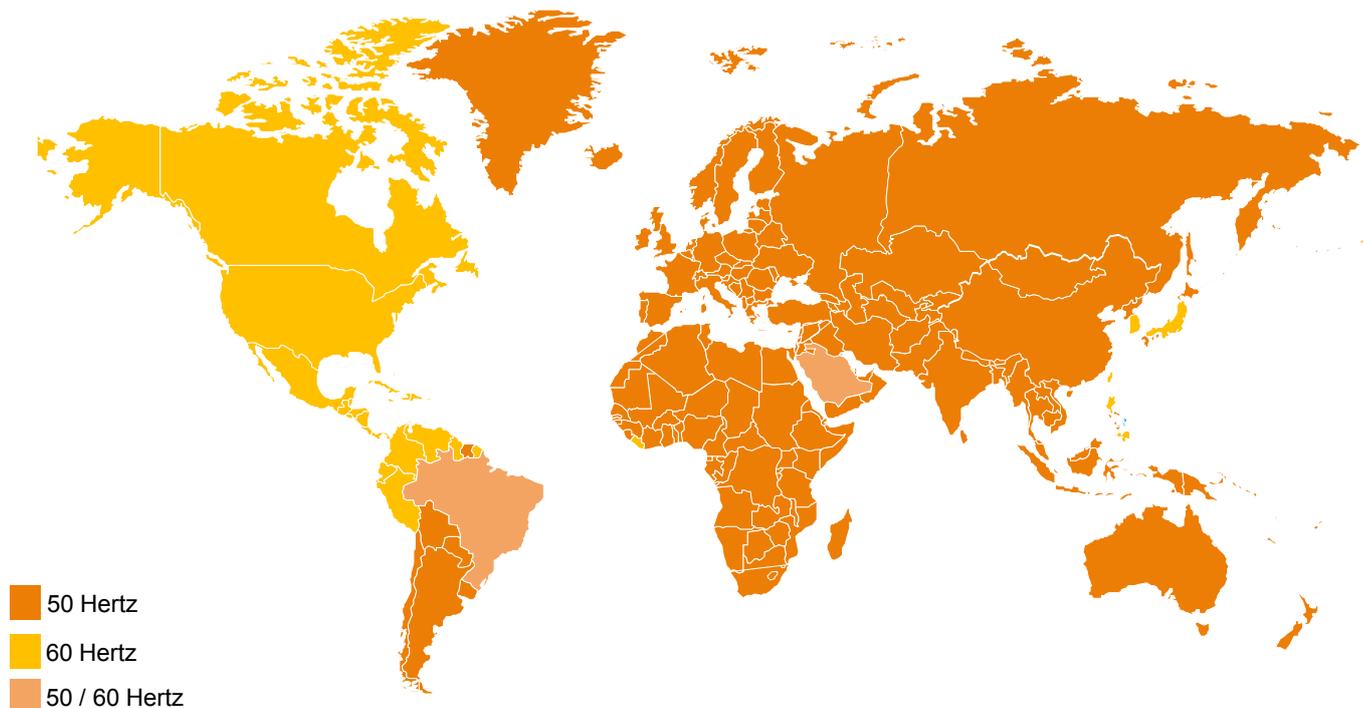
ABB's platform-to-ship frequency conversion solution has proved successful for A.P Moller-Maersk. The PCS SFC supplies a 60 Hz floating storage and offloading vessel with electric power from a nearby 50 Hz oil and gas platform, eliminating the need to power ship systems with its own diesel engines. "I am

glad to inform you that the project onboard Nkossa II has now been in operation for over six months, and the static frequency converter system - rated 3 MW - is operating fully according to the expectations and technical specifications".

(A.P Moeller-Maersk)

To see further information on our technology, please visit:

[www.abb.com/pcs100-power-converters](http://www.abb.com/pcs100-power-converters) for power conditioning and [www.abb.com/UPS](http://www.abb.com/UPS) for UPS solutions.



## PCS Static Frequency Converter (SFC)

Now the whole world is at the same frequency

ABB's PCS SFC is the answer to bridging the gap in today's industry environments, where equipment has different voltages and frequencies. Providing the ability to shift power to and from the 60 Hz to 50 Hz grids, the PCS SFC is the economical answer to running your industrial equipment overseas, or your overseas equipment here.

### Typical applications include:

- Where load frequency is different to the local supply
- Relocation of industrial plants; and
- Supplying power to docked ships

ABB offers a complete product range from 125 kVA to multi MVA. The system is internally configured as a parallel arrangement of modular rectifiers and inverters all controlled by a central master controller. Each rectifier draws a clean sinewave current at unity power factor from the utility supply. Each inverter produces a clean sinewave voltage to supply the output load. The modular design makes the system compact and highly serviceable. In the unlikely event of a failure, individual converter modules can be moved and replaced with minimal downtime.

[www.abb.com/converters-inverters](http://www.abb.com/converters-inverters)  
(Converters for Grid Interconnection)



### Advantages

- 50 Hz to 60 Hz and 60 Hz to 50 Hz conversion at any voltage via transformers
- Unity power factor rectifier with a THDi of < 3%
- High efficiency 95% typical
- Overload capability of up to 200%
- Able to parallel with multiple PCS SFC or other generators
- Very high system availability through advanced power module redundancy
- Provides output immunity to input disturbances (voltage sags, frequency shifts)

# PCS100 Product training 2014

Register your interest now for 11-13 March 2014



Enhance your technical ability and knowledge in the PCS100 product range. Receive the benefit of interactive practical training with real devices for demonstration purposes and functional exercises.

**Product training**

**Products, applications, markets and technical basics**

- Power protection
- Frequency conversion
- Grid connect interfaces

**Marketing**

- PCS100 tools and support

**Hardware**

- Power modules, aux.module, interfaces

**Control modes, interfaces, options**

- Power protection
- Frequency conversion
- Grid connect interfaces

**Order handling process**

- PCS100 sizing and pricing

**PCS100 outlook**

- Ongoing and future developments

**Who should attend?**

ABB channel partner sales and service engineers.

**Training locations**

ABB's low voltage power converter product training is conducted in our well-equipped manufacturing and R&D facility in Napier, New Zealand, by highly qualified engineers and instructors.

**Enrolments**

Register your interest for any one of our courses via email to: [pq.supportline.nz@nz.abb.com](mailto:pq.supportline.nz@nz.abb.com)

**Confirmation**

Confirmation of acceptance and course information will be sent approximately two weeks before the start of the course. We will inform you by email or phone if there are no vacant places.

**Course program**

The course program and all related information about the course times and venue are sent to the participants with the confirmation. The course normally runs from 9.00 a.m. - 4.00 p.m. over a three day period.

**Reservations**

We reserve the right to change any course schedules, programs and their contents. A course could be cancelled due to minimal enrolment. The maximum number of students varies between 10 - 12 persons.

**Cancellation**

In the case of cancellation, inform us as soon as possible. This will allow another applicant to attend the course. Your place on a course can be transferred to another person in your company or department.

**Training schedule 2014**

Course	Day one	Day two	Day three
One	11 March	12 March	13 March
Two	13 May	14 May	15 May
Three	16 September	17 September	18 September
Four	18 November	19 November	20 November
<b>Agenda a.m.</b>	PCS100 product platform overview	PCS frequency conversion	PCS100 sizing and pricing tools
<b>Agenda p.m.</b>	PCS100 power protection	PCS grid connection	Outlook /future developments

# Service and commissioning training 2014

Register your interest now for 18-20 March 2014

## Your knowledge. Your power.

ABB is a leading supplier of power electronic systems. This extensive experience and history of innovation helps customers around the world to improve plant performance and production.

Our customer awareness means that we are committed to supporting customers globally in their plans for growth. ABB offers a wide range of professional training courses adapted to meet the needs of customers and partner channels.

## Benefits of the training

Service and commissioning training courses give valuable support to increase return on investment, reduce costs in down time and improve skills and motivation of personnel.

Training participants profit from our extensive experience and modern training infrastructures which enable them to:

- Efficiently operate and maintain ABB's PCS100 low voltage power converter systems
- Extend the lifetime of the product

## Training locations

ABB's low voltage power converter product training is conducted in our well-equipped manufacturing and R&D facility in Napier, New Zealand, by highly qualified engineers and instructors.

## Course profile

Our service and commissioning training courses are aimed at qualifying existing maintenance engineers to undergo unsupervised first level support of ABB's PCS100 applications. The main goal of the course is to learn how to operate, troubleshoot and maintain the system.

Upon completion of the course, maintenance engineers will be able to locate and identify hardware components, download fault loggers and important information for first analyses by support personnel, replace parts and perform preventative maintenance. Trainees will gain practical experience using available tools and techniques through organized practical exercises.

## Who should attend?

In order to ensure that the people we train in the servicing of the PCS100 product attain the level of understanding required for field work, it is vital that those attending this training have the following background;

- Work hands on as a Service Technician
- Have a good understanding of three-phase electrical system theory



- Are familiar with the operation and use of relevant test equipment (scope/multi-meter etc)
- Understand the basics of fault finding and can follow direction in terms of testing required by the factory

## Enrolments

Register your interest for upcoming courses via email to: [pq.supportline.nz@nz.abb.com](mailto:pq.supportline.nz@nz.abb.com)

## Training schedule 2014

Course	Day one	Day two	Day three
One	18 March	19 March	20 March
Two	20 May	21 May	22 May
Three	23 September	24 September	25 September
Four	25 November	26 November	27 November
<b>Agenda</b> a.m.	PCS100 platform service introduction	PCS100 service power protection	PCS service grid interconnection
<b>Agenda</b> p.m.	PCS100 platform service detailed	PCS service frequency conversion	Outlook / future developments

# Automotive excellence



## Power protection

### 06. PCS100 Active Voltage Conditioner

New 400 V PCS100 AVC has 20 percent more kVA rating

### 09. Accelerating to new levels

PCS100 making head waves in the automotive industry

### 11. Producing a good yarn

Allowing grid interconnection for Sinterama's new production facility

## Power protection events

### 13. ABB event in Malaysia

Ineltec 2013 exhibition and ABB's Power Quality seminar

## Grid interconnection

### 17. A shore connection

ABB providing shore power supply to Viktor Lenac shipyard

# Reliable power protection



## Power protection

### 06. Data center dynamics

PCS100 solutions for protecting data centers

### 09. Five reasons to invest in power protection

Its business as usual with PCS100 power protection

### 10. Top five projects for 2013

Around the world with PCS100

### 12. Critical protection

Zero downtime can now be achieved

## Grid interconnection

### 15. A shore connection

ABB's shore-to-ship technology

To receive one of the back issues shown above email: [sophie.benson-warner@nz.abb.com](mailto:sophie.benson-warner@nz.abb.com)



## Power security without barriers



Safeguarding your power supply has never been easier. Ideal for small IT power environments up to 10 kVA, ABB's PowerValue single-phase uninterruptible power supply is simple and cost-effective to install, maintain and expand. Its high efficiency means that it is not only cheap to run, but cooling bills are lower too. An excellent power factor and unique technical features that minimize battery usage and prolong lifetime mean the PowerValue is easy on your pocket all round. For full flexibility, it is configurable in tower format or rack-mount. To see exactly how ABB UPSs remove the barriers to UPSs ownership, visit [www.abb.com/ups](http://www.abb.com/ups)

Power and productivity  
for a better world™

