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A customer magazine
of the ABB Group
New Zealand

insider



Collaboration insight

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ABB continues to supply pioneering static frequency conversion

Protecting datacenters - 08

PCS100 UPS-I provides the additional protection required

Powering up - 12

Providing efficient grid connection for Fullabrook wind farm

Staying on track with technology - 14

ABB connects the public grid to the railway grid in Norway

Power and productivity
for a better world™



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A truly global solutions partner for all your power conversion needs. From a few hundred kilowatts to ten's of megawatts and a few hundred volts to many thousands.

Centers of excellence for power electronics, designed in both hemispheres and local engineering centers, able to configure standard product platforms to meet the most demanding of applications in all continents.

From power conditioning, uninterruptible supply, shore to ship frequency conversion, though to grid stabilization and battery energy storage.

Improving up-time, product yield, reliability, efficiency and reducing pollution, through to enabling renewable generation and resultant greenhouse gas emissions.

Application help, training, product life cycle support and service available wherever our products are sold.

Global reach and collaboration at its best.



Insider



John Penny
General Manager
LV Power Converter Products (DMPE)

You will notice some changes in this edition of Insider magazine. Not only do we have many more great stories about our low voltage PCS100 power protection and grid interfacing products, but we now also feature the PCS100 big brother, the highly innovative medium voltage PCS 6000. The applications feature a STATCOM at the Fullbrook wind farm in the UK, and the PCS 6000 Static Frequency Conversion (SFC) adopted for binding the public grid with the railway grid in Norway.

The PCS100 and PCS 6000 product families are highly flexible converter platforms that can be applied in a wide range of applications. Both products allow for sophisticated control of voltage and current by the converter platforms. The PCS100 incorporates Insulated Gate Bipolar Transistors (IGBTs) and is available in ratings up to single digit MWs. The PCS 6000 incorporates Integrated Gate-Commutated Thyristors (IGCTs) for applications up to tens of MWs. These very flexible building blocks have been widely applied globally to help our customers realise huge benefits in terms of productivity, energy saving and reliability. These interesting case studies form the prime focus of Insider magazine.

It has been a busy start to the year for the power protection team, with the achievement of our first major order of UPS-I for a datacenter. Four 1.8 MW battery backed UPS systems have been successfully factory acceptance tested and shipped to a Swiss customer. Datacenters are becoming larger and tens of MW facilities are now common place. The extremely high efficiency of the UPS-I compared with legacy technologies makes it an

essential component for application in these super datacenters. Leading power factor and inbalance can also be a problem for datacenters, which invariably need to run on standby generator systems and small scale STATCOMs provide an ideal solution.

The grid interfacing team have also been busy working with the ABB global local engineering centers on many diverse projects for battery energy storage (BESS) and STATCOM. Not only are there often complex power systems modeling and associated control issues involved, but also challenging environmental requirements. The very capable engineers at our local engineering centers are able to provide solutions that are adapted to the particular requirements from the range of standard PCS100 or PCS 6000 building blocks.

Product and service training courses are scheduled for both internal ABB staff and external customers. Our design engineers try to make our products simple to apply and service, however the complex nature of the technology and applications means proper training is an essential requirement. If you are interested in finding out more about the PCS100 and PCS 6000 products, please contact our product centers of excellence in Napier or Turgi, or your local ABB representatives for more information on training opportunities.

Successful training events have recently been held in Europe and South East Asia. We look forward to meeting customers and the ABB local sales and service teams in the various training events.



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Solution for Fullabrook wind farm project



Do you know what a QR Code is?

QR Codes are a scanning device to a URL, video, coupon, or event page, containing further detail and content about a product or service. For more information, follow the smart phone compatible QR Codes appearing throughout this magazine or scan this QR Code to subscribe to Insider magazine. Download a free QR Code scanner to any smart phone with camera.

Reliable, efficient operation of the Rail Systems?

Certainly.



Power and productivity for a better world™ **ABB**

ABB is your competent and reliable partner for modern and future-oriented systems in the rail industry. Our static frequency converters supply the rail operators efficiently and dependably with environmentally friendly energy.

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Armada D1, previously known as the Monte Umbe vessel

Offshore support

PCS100 SFC latest success with new FPSO customer, Bumi Armada Berhad

ABB's power electronics team continues to supply pioneering static frequency conversion (SFC) technology for shore-to-ship applications, reducing pollution and greenhouse gas emissions. The vast majority of ships and floating platforms run an onboard 60 Hz power supply and require a frequency converter to connect to local 50 Hz supplies. This application is a little different as the vessel will operate most equipment at 50Hz from gas turbine generators, but some of the ship's equipment requires a 60 Hz supply. ABB's state of the art PCS100 SFC technology, with its high efficiency, reliable operation and small footprint, make it an ideal solution to supply the remaining 60 Hz loads.

With years of experience in floating production, storage and off-loading (FPSO), designer and integrator of support vessels Bumi Armada (Malaysia) has adopted a complete e-house building package designed by ABB for Armada D1, previously known as the Monte Umbe vessel. The Ar-

mada D1 is located off Mumbai in India. ABB in Singapore is supplying the e-house building package which includes design, fabrication, assembly, supply, testing and installation of the PCS100 Static Frequency Converter (SFC).

Bumi Armada considered replacing all the ships existing 60 Hz electrical equipment with 50 Hz but this was prohibitively costly. ABB proposed the PCS100 SFC to provide a 60 Hz power supply for the existing equipment that will remain on the FPSO after conversion. The remaining 60 Hz load includes power transformers, switchgear, monitoring, and safety equipment.

Reliable technology

PCS100 SFC's rugged and reliable design was a key factor in Bumi Armada selecting ABB for the e-house supply. The precise control capability of the PCS100 SFC, coupled with its high efficiency and small footprint, meant it was an ideal solution. The modular nature of the SFC means that it is highly serviceable which is a key requirement for any offshore application. Adopting the PCS100 SFC was a practical and cost effective solution for Bumi Armada.

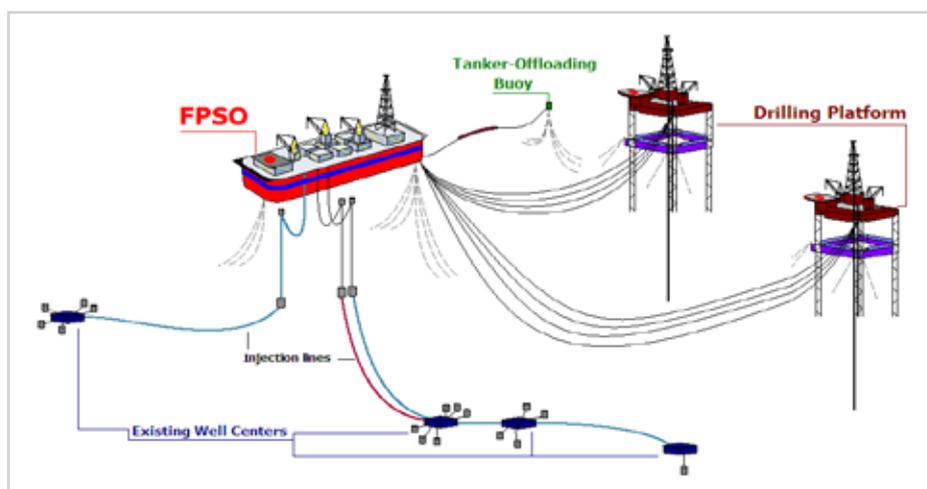
With an overall project value of USD 10 million, this is ABB's second FPSO reference for the PCS100 SFC and marks the continued success of the reliable PCS100 SFC technology in the FPSO arena. The contract also included a control and safety system and a challenging schedule where ABB is required to complete the project within eight months by mid-year 2012.

A tricky situation

The thermal design of the e-house was a challenge for the ABB design team, but was helped by the high efficiency of the PCS100 SFC. Accumulation of heat in an enclosure is potentially damaging to electrical and electronic devices, and must be carefully controlled especially in tropical climates like Mumbai's. Overheating and humidity can shorten the life expectancy of costly electrical components and lead to unreliability. ABB's design ensured the environment inside the e-house is well controlled.

Competitive advantage

The SFC-2000 (16 module pairs of inverters and rectifiers in six converter cabinets) is configured to share the load with two diesel generator supplies. The implementation was straight forward with no additional synchronizers needed due to the advanced generator emulation control feature available on the SFC. Built-in N+1 redundancy was a key feature in the



A typical FPSO application example

SFC units and will enhance reliability and availability. If one module shuts down, the system continues to operate with slightly reduced capacity but still sufficient for the application. Bumi Armada was impressed with the features of the PCS100 SFC and its ability to be configured to meet this demanding application requirement.

D-1 FPSO

The D-1 field, owned by Oil and Natural Gas Corporation Limited (ONGC), is located about 200 km to the west

addressed. Regulators realize that pollution stemming from the shipping industry is having a major impact on public health as well as costs. In addition to reducing local carbon dioxide emissions, the use of shore-to-ship power in preference to on-board diesel generators helps to lessen sulphur dioxide, nitrogen oxide and particulate emissions. It also helps with the reduction in low frequency noise and vibrations. In 2000, ABB was the first to deliver a complete

PCS100 SFC's strong and reliable technology played a main factor in Bumi Armada working with ABB.

of Mumbai city in the western offshore area at a water depth of 85 m – 100 m. The FPSO vessel will be located approximately 2 km south east of existing D1 wellhead platform and provide production processing for the existing D1 wellhead platform and three new wellhead platforms. Control and monitoring facilities for the four wellhead platforms will be located on the FPSO. Once processed, the crude oil will be stored on the vessel and periodically offloaded to a shuttle tanker for onward transportation to the refinery.

Meeting the regulation needs of ship owners and ports

PCS100 SFC technology responds to current global legislation to mitigate environmental impact. As shipping companies continue to expand, emerging compliance laws requiring emission control on ships needs to be

shore-side power supply system. Since then, shore-to-ship solutions have been supplied to various ports and further developed the system for vessel types such as cruise and container ships, Ro-Ro and FPSO vessels and LNG carriers.

To see further information please visit : www.abb.com/powerelectronics/grid_interconnection/frequency_converters

or check out an SFC application here





Protecting datacenters

PCS100 UPS-I technology leads the way

The datacenter industry is driven by the digital revolution and cloud computing, one of the most dynamic and fastest growing market sectors. Datacenters require a continuous clean electrical supply for reliable operation and electric power is a major cost for datacenter operation.

ABB's highly innovative UPS-I is proving to be an ideal solution for datacenter protection due to its high efficiency, reliability and small physical footprint. These benefits have led to the UPS-I being selected as the power protection solution for a major Swiss government datacenter.

Government datacenters manage all sorts of critical data and any power supply disruption is particularly harmful. Rows of servers storing unimaginable amount of information operate around the clock. The prospect of a system shut-down or even potential loss of classified data due to unexpected voltage sags or electricity outages is unacceptable.

Identifying the need

The datacenter had been protected by rotary UPS systems but these were unreliable and had dropped the load. ABB's PCS100 UPS-I was identified as an ideal solution to be retrofitted into the datacenter to enhance system reliability. The very high electrical efficiency of the UPS and small footprint were of particular importance. Efficiency and space are always important considerations but restricted space and cooling meant they were essential features. Four UPS-I systems with a capacity of 1600 kW / 2000 kVA were selected and ordered.

Solution required

ABB's PCS100 UPS-I has an innovative single conversion architecture which provides high levels of reliability and extremely high efficiency by minimizing power conversion stages and standing losses.

Various energy storage options are available for the product including new generation super capacitors, however in this case high energy design lead acid batteries were selected. They are coupled through an inverter to enable the downstream load to ride through short outages and very deep sags. This allows enough time for the site standby generators to start.

The PCS100 UPS-I single conversion design offers equivalent no break performance similar to legacy double conversion online systems, but with a fraction of the loss. A revolutionary fast utility disconnect switch allows power to be transferred to and from inverter operation in typically one to two milliseconds. This is the secret to no-break performance with an exceptional efficiency typically close to or exceeding 99% (load dependent). ABB will supply the PCS100 UPS-I along with batteries and ABB's low-voltage MNS switchgear.

Cost of ownership and support

The extremely high efficiency of the PCS100 UPS-I means energy costs associated with power protection system loss is minimized. The modular design means the product is quick and easy to service which also minimizes ownership costs.

ABB has specialist skill in both service and maintenance which is important in any critical application but especially so when batteries are involved. ABB is committed to ongoing support of PCS100 products on a global basis. In this application the customer will also receive practical training on the product.

Ahead of its time

The PCS100 UPS-I's single conversion topology and rugged design provides high fault capacity compared with standard UPS solutions. This makes the selection and setting of downstream circuit protective devices easier, although as in any UPS application careful engineering is required.

The fault handling features of the UPS-I mean that it has also been widely applied in critical industrial applications, such as semiconductor, where the critical nature of loads is similar to that of datacenters. Ruggedness combined with high reliability, efficiency and small footprint makes the PCS100 UPS-I a leader in power protection and an ideal solution for power protection of today's datacenter industries.

With an estimate of 509147 datacenters worldwide, 1200 billions of data created, and outages of power resulting in a loss of US \$320 billion a year, the PCS100 UPS-I is a sound investment.

See www.abb.com/powerquality for more information, or see links below for articles on ABB's PCS100 power protection range for protecting datacenters:

[Weta Digital](#) and [NIWA](#)

Check out:

[ABB's white paper on datacenters](#)



Why UPS-I?

Power failure is responsible for 28% of computer system breakdowns.

Over one third of companies take more than a day to recover from the disruption caused by a power failure. 10% take more than a week.

Because of a power failure, 33% of companies lose between £10,000 and £250,000, 20% lose between £250,000 and £1 million, 15% lose over £1 million.

Out of 450 leading companies surveyed, each suffered an average of nine computer failures each year.

Following a power failure it can take up to 48 hours to reconfigure a network system or a multi terminal.

It can take days, weeks or even months to re-input lost data. Sometimes data is lost forever, for instance in CAD or graphics applications where original work can never be recreated.

Consequences of computer breakdowns

- Loss of business.
- Backlog of work/loss of production.
- Deterioration of customer service.
- Loss of customer account management.
- Loss of financial control.
- Inability to pay staff.
- Financial loss.
- Loss of operational data.
- Loss of customers.
- Loss of market share, damage to a companies reputation, and loss of goodwill are not covered by insurance following a computer disaster.
- Insurance claims take a long time to settle - well after the disaster has occurred.
- 90% of all companies that experience a computer disaster and don't have a survival plan go out of business within 18 months.

Source: Find FVP



Exploring earth's natural resources

ABB's innovative power electronics 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.

PCS100

ABB's PCS100 Power Converter System provides a comprehensive platform of low voltage converter solutions for operators of petroleum industry plants, as well as solar and wind power parks. 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.

ABB's PCS100 platform system is based around a low voltage converter. The robustness, reliability, high modularity and flexibility of the converter strategically aligns with state of the art control software. Digital signal processors (DSP) designed to offer configurations and topologies for numerous applications ultimately improve grid quality.

Versatility in applications

- PCS100 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.
- The PCS100 Industrial UPS (UPS-I) protects continuous processes from outages or interruptions caused by power failures.
- PCS100 STATCOM enables fast reactive power management, thereby maintaining voltage quality and required power factors.
- The PCS100 Energy Storage System (ESS) offers connection of various energy storage technologies in order to reduce dependency on network availability.

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.

Ships usually operate on 60 Hz grids with many countries globally having 50 Hz land lines. The PCS100 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% for 30 seconds and 10% 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 %.

Ensuring high quality power

The PCS100 STATCOM converter delivers seamless dynamic reactive current for voltage stabilization, power factor control and flicker correction and ensures high quality of power supply in regards to voltage, reactive power, and increasing transmission capacity.

Customer reference

ABB's platform-to-ship frequency conversion solution has proved spectacularly successfully for A.P Moller-Maersk. The PCS100 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 please visit :

www.abb.com/powerelectronics





Overview of the STATCOM installation in Fullabrook Wind Farm, UK

Powering up

Solution for Fullabrook wind farm project

Historically electricity generation has been dominated by large synchronous machines. These are fitted with variable excitation systems, which allow fast and significant changes to the power factor of the generator, and variable reactive power output. Wind Power Plants (WPP) in comparison typically comprise many distributed smaller generators. One difference between the conventional plant and the WPPs is that the reactive capability range of some WPPs is not as wide as on conventional plants. STATCOM is the right solution to provide additional reactive compensation.

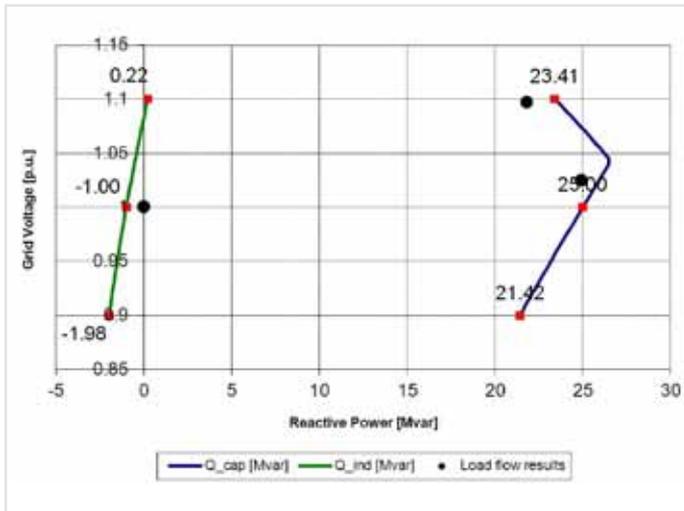


Figure 1 - Reactive power diagram STATCOM

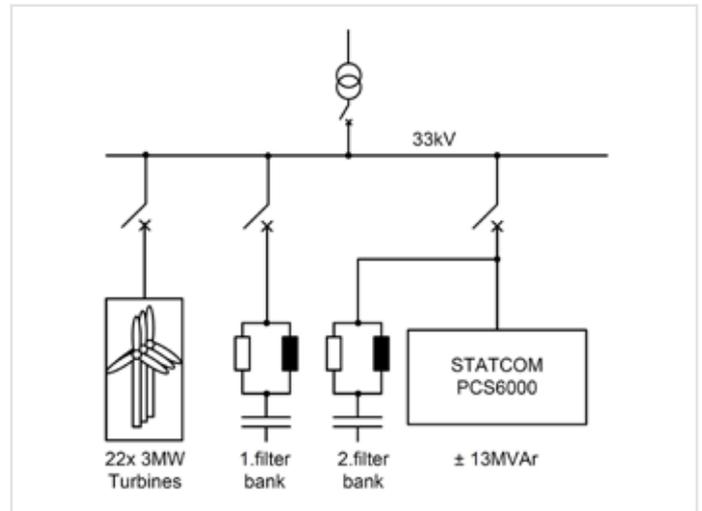


Figure 2 – Schematic of proposed solution

The significant increase of installed wind power has forced the transmission system operators to tighten their grid connection rules – also known as grid codes – in order to continuously secure the grid stability as power sources are changing from conventional plants to renewable energy. This is the case in the UK, the most stringent grid code worldwide. England’s largest wind power plant, Fullbrook, developed by ESB International (Ireland) with a total power output of 66 MW, requires additional support to fully guarantee grid compliance as required by the grid code.

Solution needed

It is economically attractive to combine the reactive power contribution of the turbines and the STATCOM. As the wind turbines have more inductive than capacitive output capability, mainly capacitive contribution is required from the STATCOM.

Such solution has been made possible due to close cooperation between ABB and the turbine manufacturer, whose overall WPP control system controls the sum of reactive power from the plant.

Inherently, the STATCOM has a symmetrical reactive power output capability. Therefore, to fully use the STATCOM reactive power capability, it is combined with a capacitive filter bank (Figure 1). Additionally the harmonic emission can be significantly reduced.

For both the turbine harmonics and the STATCOM harmonic emission levels to be effectively reduced, a two filter solution is proposed (Figure 2):

- The first filter is required for filtering the turbine harmonics.

- The second filter is needed for filtering the STATCOM harmonics.

Fullbrook

Fullbrook Wind Farm consists of 22 turbines of up to 3 MW capacity, giving a total installed capacity of 66 MW.

Each turbine is 65 m high to the hub with 45 m blades, making the total height of the turbines 110 m to the tip of the blade. Also on site is a permanent 65 m anemometer mast to monitor wind speeds and an electricity substation on the southern edge of the wind farm site.

From the electricity sub-station, underground cabling connects the wind farm to the national grid at the Rock Park electricity substation south of the bridge over the River Taw at Barnstaple. The wind farm has been producing green electricity for export to the grid since autumn 2011.

ABB's technology

ABB's compact PCS 6000 (Power Converter System) represents a quantum leap in high power technology, particularly in terms of technical performance and economic operation. The PCS 6000 is an efficient and effective power system package that is specifically designed to interconnect normally incompatible networks. The flexibility of the system allows it to be applied to a wide range of applications. The PCS 6000 is particularly competitive in terms of installation time and space requirements. Furthermore the high efficiency and low maintenance lead to low operational costs.

This new generation of modular high power static frequency converters is designed for applications of up to 32 MVA per unit. Higher powers can be achieved by easily paralleling multiple PCS 6000 systems.

Typical applications of the standardized PCS 6000:

- Interconnecting networks with different frequencies.
- Railway network interconnections and load balancing (connecting single-phase railway networks to the three-phase grid).
- Interconnection of ships to the electricity grids while at berth (conversion of fre

The PCS 6000 is an efficient and effective power system package.

- quency and stabilization of port electricity grid).
- Special industrial applications (e.g. Dynamic Voltage Restorer).
- STATCOM applications (PCS 6000 can provide independent reactive power control in both networks).
- Connecting special synchronous machines or processes to an existing network.

To see further information please visit : www.abb.com/powerelectronics





Staying on track with technology

The first PCS 6000 static frequency converter binds public grid with the railway grid in Norway



One of the two converters PCS 6000 with earthing connections. Each converter is capable of delivering 15 MW to the railway grid

Commissioned two weeks ahead of the schedule, the PCS 6000 static frequency converter (SFC) now couples the 50 Hz public utility grid with the 16.7 Hz grid of the railway. This delivery represents the core of a large order that was executed by ABB in close cooperation with Balfour Beatty Rail company.

Oil capital of Norway

Often referred to as the “Oil capital of Norway”, Stavanger is the fourth largest city in the country and has a busy railway infrastructure. The railway network is operated by the government agency Jernbaneverket (the Norwegian National Rail Administration) which is this project’s end-customer.

Rail system

The rail system in Norway has its challenges. The equipment, including rolling stock and converter stations, comes from various suppliers and various generations of products. So when new equipment is added, whether trains or power supplies, the network operator has to ensure a smooth interoperability of the new installation with the existing system.

In order to guarantee the required trouble free interaction, ABB provided functionality simulation and analyses according to the EN50388 norms (technical criteria for the coordination between power supply and rolling stock to achieve interoperability in railway applications). “It was a meticulous job, but we gained a valuable experience through it”, comments Andreas Haemmerli, Project Manager for ABB’s MV Power Converters.

External influences

The harsh climate in Northern Europe imposes tough demands on the equipment, such as the ability to start up after several weeks long stop at temperatures of -25°C. ABB’s PCS 6000 static frequency converter met this requirement insuring a trouble free start up. The supplied PCS 6000 SFC has two units, of 15 MW each. The system couples the 50 Hz public utility grid with the 16.7 Hz grid of the railway and allows transmitting energy either way.

Installation

The fully standardized and modular PCS 6000 system is usually installed in a container outdoors, as a faster and cost effective



Jernbaneverket new converter station in Stavanger officially opened in December 2011

solution. At Stavanger, upon the customer’s request, the converter was installed inside of the newly built converter station. The power part, the sophisticated controls and the reliable cooling unit are delivered as separate modules, which allows installation in an independent room with as few connections as possible.

Balfour Beatty Rail, as turn-key contractor, was in charge of the overall project management, overall system design and integration, including the building adaptation, station control system and installation of the whole station. Balfour Beatty Rail has previously supplied five static frequency converter substations to the Norwegian railway.

Besides the power converters, ABB’s scope of supply included custom-made transformers, cooling equipment, the auxiliary power distribution, 50 kV switchgear, capacitors, as well as MicroSCADA for the station communication with the superior grid control. ABB units from Sweden, Finland, Switzerland, the Czech Republic and India worked closely together to make this order a success.

To see further information please visit :

www.abb.com/powerelectronics



PCS100 Product training 2012

Register your interest now for 8-10 May



Enhance your technical ability and knowledge in the PCS100 product range. 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 LV Power Converter product trainings are 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

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 is sent to the participants with the confirmation. The course normally runs from 9.00am - 4.00pm 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 applicants to attend the course. Your place on a course can be transferred to another person in your company or department.

Training schedule 2012

Course	Day one	Day two	Day three
Two	8 May	9 May	10 May
Three	7 August	8 August	9 August
Four	6 November	7 November	8 November
Agenda Am	PCS100 product platform overview	PCS100 frequency conversion	PCS100 sizing and pricing tools
Agenda Pm	PCS100 power protection	PCS100 grid connection	Outlook /future developments

Service and commissioning training 2012

Register your interest now for 2012 courses

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 support 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 LV Power Converter systems
- troubleshoot problems faster
- extend the lifetime of the product

Training locations

ABB's LV Power Converter product trainings are 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 to qualify maintenance engineers to undergo unsupervised first level support of ABB's PCS100 applications. The main course goal 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 good practical experience using available tools and techniques through organised practical exercise.

Who should attend

ABB partner channel and customer service engineers.

Confirmation

Confirmation, reservation details, and all related course information including schedule and venue details will be sent approximately four weeks before the start of the course.



Enrolments

Register your interest for upcoming courses via email to : pq.supportline.nz@nz.abb.com

Training schedule 2012

Course	Day one	Day two	Day three
Two	22 May	23 May	24 May
Three	21 August	22 August	23 August
Four	20 November	21 November	22 November
Agenda Am	PCS100 platform service introduction	PCS100 service power protection	PCS100 service grid interconnection
Agenda Pm	PCS100 platform service detailed	PCS100 service frequency conversion	Outlook /future developments

PCS100 internal ABB sales awards race

Results from 2011 and update on 2012

The power electronics team have introduced a new internal marketing sales race called the, 'PCS100 Silver Fern Awards'. This initiative is designed to encourage and inform ABB's internal international power electronics team about the PCS100 market and its ever growing demand around the world. Ultimately the team are striving to provide the best products and service to customers and the award helps by encouraging some healthy competition. Below are just some pictures taken from 2011 and the results, plus an updated result of PCS100 sales in the market for the first quarter in 2012.



John Penny - middle (General Manager for LV Converter Products) awarding ABB USA for "Biggest PCS100 ESS volume sold"



Holger Hannemann - far right (Global Sales Manager) awarding ABB Australia for "Biggest PCS100 STATCOM volume sold"



Brent Kwai - right (Product Manager - SFC) awarding Binson Lee (on behalf of ABB Singapore) for "Biggest SFC volume sold"



Andrew Hiscock - far right (Power Protection Manager) awarding ABB Poland for "Highest order received value in a new region"

Award	Winner 2011	Frontrunner (based on orders received) after...
		Q1/2012
Highest PCS100 volume sold absolute	Korea	Korea
Highest \$ increase from previous year	Korea	N/A
Highest % increase from previous year	Singapore	N/A
Highest \$ "new" entry	Europe / Poland	N/A
Biggest single order	China	Korea
Most new applications	Poland	N/A
Best new PCS100 AVC application	China	N/A
Best new PCS100 UPS-I application	Switzerland	N/A
Biggest PCS100 ESS volume sold	USA	Beijing, China
Biggest PCS100 STATCOM volume sold	Australia	New Berlin, USA
Biggest SFC volume sold	Singapore	Poland
Best sales and marketing plan for the next year	UK, Jon Clews	N/A
Special achievement award	Japan, for selling UPS-I to Toshiba	N/A

Safeguarding resources



Project feature

- 6. Reliable protection**
ABB's AVC provides a solution to ongoing sags and expensive costs in recovery

Industry watch

- 8. Power of the storm**
AVC in the Philippines

Product feature

- 10. Energy storage innovation**
Enhance the performance, quality and reliability of smart electricity grids

Service and support update

- 12. Delivering service and support**

Behind the scenes



Project feature

- 6. Production success**
ABB provide power protection to Australasia's leading forest products company

Industry watch

- 8. Going for gold**
Dynamic voltage control for Canadian mines

Project completion

- 10. New beginnings**
Power protection is an important factor to prevent expensive recovery costs

Product feature

- 12. PCS100 UPS-I**
Advancing efficiency with the PCS100 UPS-I



Small footprint and increased productivity?

Naturally.



By choosing from ABB's PCS100 Active Voltage Conditioner solutions you are selecting from a unique line up of advanced technologies and expertise. This low voltage power protection product range provides energy efficiency, high reliability and increased productivity. A unique system giving superior value to operations in the industrial, utility and commercial sectors.

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Power and productivity
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