

5|11

A customer magazine  
of the ABB Group  
New Zealand

# insider



## Safeguarding resources

### **Reliable protection - 06**

ABB's AVC provides a solution to ongoing sags and expensive costs in recovery

### **Power of the storm - 08**

AVC in the Philippines

### **Energy storage innovation - 10**

Enhance the performance, quality and reliability of smart electricity grids

### **Service and support update - 12**

Delivering service and support

Power and productivity  
for a better world™





# Protecting profit

Continuous process industries rely on a continuous clean power supply. Unprotected sags, surges and outages result in product loss, quality problems and downtime. This all means lost profit and opportunity.

ABB's PCS100 power protection products offer reliable, efficient performance resulting in a reduction in product wastage and increased yield.

---

# 5|11 Insider



Holger Hannemann  
Global Sales Manager  
LV Power Converter Products

2011 is almost over and I would like to use this opportunity to say thank you to all of you for an exciting and extremely successful year.

This will be the best year ever in our history and we hope this is only the beginning and we can top it again next year with your support!

We had a lot of challenges and we know you could feel it as well. The strong increase in orders forced us to extend our manufacturing capability. Due to size limitation on our base location we had to split production and stores to five different locations within Napier.

Our PCS100 platform of low voltage power converters is now well established in five main products. As you know, we came historically from the niche market power protection for the semiconductor industry. Thanks to our strong ABB sales force worldwide, we entered many new applications in different industries with the power protection products PCS100 AVC and the PCS100 UPS-I. These include painting, extrusion, steel or waste water treatment applications as well as data centre, film studios or cable factories.

Our other product group, grid connection interfaces, has much younger products like the static frequency converters, the energy storage inverter and STATCOM's, that were only introduced last year. In 2010 we were proud to deliver with 4 MVA power the biggest 50-60 Hz frequency converter ever built in low voltage. This of course is in operation now and for 2011 our biggest system had 8 MVA!

The PCS100 SFC installed the furthest away from New Zealand is now doing its job in the most northern capital in the world in Reykjavik, Iceland. We also got orders for PCS100 STATCOM's from all over the world, and delivered systems to a number of wind turbine manufacturers from Asia and Europe. We are in the qualification process with world leading wind turbine manufacturers to become a certified and tested standard solution for their wind park projects.

Did you know that we received orders for more than 30 PCS100 ESS (energy storage system) inverters in 2011? You can find our PCS100 ESS now from Antarctica to Scandinavia, from South America to Australia, in China, Japan, Singapore or Indonesia. I haven't even talked about Europe or North America.

We are very motivated and will do our best to improve our products and services. A number of new features will be added to many products. We will tick more, and open more boxes for meeting special standards or getting needed certifications for application critical functionality, which will help to increase customer acceptance and create more business for us and our partners. We also have new ideas how to improve our communication with you. We will keep you updated.

Thank you for your support and loyalty. We look forward to our future partnership. Merry Christmas and a happy New Year!





## 08 Power of the storm

---

AVC in the Philippines

## 06 Reliable protection

---

ABB's AVC provides a solution to ongoing sags and expensive costs in recovery

### Feature story

#### 06 Reliable protection

ABB's AVC provides a solution to ongoing sags and expensive costs in recovery

### Industry watch

#### 08 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

#### 12-13 Delivering service and support

### Inside ABB

#### 14 2012 product and service training schedule

### Contact Us

Power protection : [www.abb.com/powerquality](http://www.abb.com/powerquality)

Grid interconnection : [www.abb.com/powerelectronics](http://www.abb.com/powerelectronics)

Energy storage systems : [www.abb.com/powerelectronics](http://www.abb.com/powerelectronics)

# 98%

of energy professionals, government officials and CFO's believe that we need to upgrade the electricity infrastructure

## Energy

The drive to upgrade the electricity infrastructure worldwide has begun to focus on governments to incentivise power utilities to adopt smart grid technologies.

Global energy consumption is predicted to increase by 49% between 2007-2035, it's expected that in order to update the electricity infrastructure, neighbouring countries should connect their grid systems to enable cross border delivery of electricity. In doing this, an overwhelming 78% believe in using government incentives to adopt smart grid technologies.

[CLICK HERE TO VIEW ADVERT](#)



# Reliable protection

The PCS100 AVC technology was able to meet customer demand and prevent plant shutdown.

# ABB's AVC provides a solution to ongoing sags and expensive costs in recovery.



A detailed illustration of the petrochemical plant

**ABB has successfully provided a turn key solution for a petrochemical plant based in China. With more than 10 sags per year, with 3-4 causing shutdown, the customer saw this as a necessity to adopt ABB's PCS100 AVC to protect their production line.**

Petrochemical manufacture is a serious production process. Unexpected shutdown can cause extreme financial loss, which includes raw material wastage and lengthy time recovery. The production recovery may take several hours, even days and with a factory with more than 10,000 employees and an annual sales volume of more than US \$10 billion, it was vital that these issues be addressed.

## Outweighing the competition

The plant had suffered ongoing voltage sags and shutdowns since it was first established in 1995. Therefore, they were always looking for a good solution to combat production loss, financial and time issues. However nothing in the market could meet their expectations due to high cost and low performance.

When ABB's AVC technology was introduced, the customer showed interest and concluded that it would be the best solution to use due to ABB's AVC unique compact size, and a very low ongoing cost.

Another advantage that in choosing ABB's product was that it included maintenance, training, and came with spare parts should parts need replacing.

## Solution chosen

After identifying these advantages, the petrochemical plant decided to purchase an AVC to protect one existing production line to begin with.

The installed AVC protected the VSD drive of pelletizer and feeder for polypropylene processes. One month after installation, results proved that the AVC protected the load from one deep voltage sag, which saved the plant US \$30,000 as well as several hours of shutdown time. With ABB having an AVC in stock, the lead time was much shorter than normal and thus potentially preventing a shutdown or major voltage disturbance.

**With more than 10,000 employees and an annual sales volume of more than US \$10 billion, it was vital that these issues be addressed.**

## Technical data

ABB's PCS100 AVC technology is available in load capacities from 160 kVA-30 MVA. It has an operating efficiency exceeding 98%, and offers full correction and fast response to three phase sags down to 70%, and single phase sags down to 55% on the AC supply network. All PCS100 AVC models provide continuous regulation within +/-10% of the nominal mains voltage and also remove voltage unbalance from the supply.

When choosing the solution, the customer highlighted a great importance in time issues and the reliability of their production line. Therefore they selected ABB's PCS100 AVC 30% 400kVA due to its competitive cost and the innovative features it offered.

See more on ABB's power quality technology at :

[www.abb.com/powerelectronics](http://www.abb.com/powerelectronics)  
(power quality products)





# Power of the storm

## AVC in the Philippines.

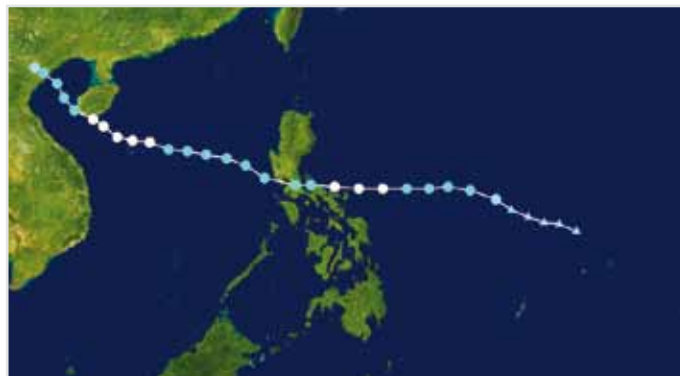
There is no stopping mother nature - you can only be proactive in securing your assets in the best way possible. When Typhoon Conson (Basyang) hit the Philippines in 2011 ABB's AVC, which was installed in a plant situated in the Philippines, recorded over 300 PQ events. This was an extremely high level storm and an intense test for the AVC to perform and maintain power protection to the plant without the interruption of voltage sags and swells.

Developing out of a tropical disturbance east of the Philippines and favorable environmental conditions, such as low wind shear and warm sea surface temperatures, allowed the weather system to intensify into a severe tropical storm. Around the same time, the Joint Typhoon Warning Centre (JTWC) assessed the storm to have been equivalent to a category 1 hurricane. The plant, therefore, was reliant on the AVC in what could have resulted in major power outages.



## ABB's PCS100 AVCs safeguard plant against effects of Typhoon Conson.

The destructive path of Typhoon Conson (Basyang)



**T**yphoon Conson produced widespread, torrential rains which triggered significant flooding in mid July 2011. Preliminary damage estimates were placed at US \$4.1 million. This caused extensive damage to the community and put to the test the two AVC's (PCS100 and PCS80) in the Philippines against the harsh effects of the storm.

### Philippines insight

The company in which the AVCs were installed started its operation in the Philippines in May 2006. Employing 82 engineers and operators, the plant is one of the company's testing facilities for its analog solutions and products. They were having problems with failure of their test equipment, more precisely the power supplies. They also had the usual stoppages due to voltage fluctuations, sags and swells.

The Philippines was hit with up to 120km winds for which was equivalent to a category 1 hurricane. During this time the AVCs recorded over 300 PQ events which at some stages, were greater than the +/- 10% threshold of the voltage supply. Both of the AVCs were able to correct the supply back to a stable output for the end load, in order for plant operations to run smoothly and efficiently.

### Potential obstacles eliminated

The plant had limited space and in order for the two AVCs to be installed the team had to overcome potential obstacles. One would be to build a new building, which would increase costs and potentially blow the budget. Another would be moving the equipment around in the external switch room to make room for the AVCs. In the end the decision was made to make some changes to the equipment in the switch room. Since ABB's AVCs are compact in size, this was easily solved and also saved them considerable costs.

Another challenge faced with the installation was that there was no air conditioning in the room. The temperature would reach 40 degrees due to the tropical climate. However, both AVCs were not fully loaded so could therefore cope with temperatures of up to 50 degrees.

After outweighing the main obstacles, no other competitor could meet the customer's requirements and the company have made enquiries for the order of more ABB's AVCs for an expansion they are planning. Delivering reliable products to customers is important to ABB. In this case, the plant to operate effectively from such things as environmental forces, to protect their power supplies. This was an opportunity for ABB

to introduce the AVCs to effectively improve the plant's power performance while at the same time lowering environmental impact.

### Product advantages

The PCS100 AVCs produced in Napier, New Zealand is an inverter based system that protects sensitive loads from voltage disturbances. It offers voltage unbalance correction and correction for voltage vector phase angle errors created by faults in the supply. The user benefits the AVC offers are fast (sub-cyclic) response, simple user controls with an extensive diagnostics of faults detected. Along with the diagnostics detected, the AVC also has a system where fault and voltage event data logging can be analysed including how long the sag or swell lasted and the output the AVC restored the power supply load to.

### Sustainability risk in the Asian power sector

The fact that climate change will have a significant impact on the power sector is a given. Whether it is via physical impacts due to climate events or regulation around GHG emissions, the industry is facing new threats due to environmental factors, such as climate change, which is beginning to have a monetary influence on business operations. This can broadly be classified as a sustainability risk.

In order for the power sector to credibly manage sustainability risks, it needs the ability to articulate the risks within the context of the business. However, given the nascent nature of sustainability risk management, firms across the power sector have a diverse viewpoint on the subject, making management of these risks difficult and many times arbitrary and rooted to compliance and regulation.

Given the rapid projected expansion of the power sector – especially in India and China – the time is now for the power sector to take immediate action to assess and mitigate environmental and social risks. Such action will help companies develop capacities to absorb shocks related to climate change and sustainable development related impact, regulation, and market demand.

**Source: asianpower**



# Energy storage innovation

Enhance the performance, quality and reliability of smart electricity grids.

ABB's PSC100 Energy Storage System (ESS) product has proven very popular for 2011. The Napier office has had numerous orders from all over the world, predominantly from the US and China. Furthermore, a recent project in Hawaii, to accelerate the use of renewable energy to the Island, has given ABB the opportunity to integrate its innovative technology in order to provide ever-increasing amounts of energy for lifestyle

improvements. There are ongoing orders for this product as it continues to develop further to meet customer demands. It's impressive performance levels of storing energy from the electricity grid and returning it when required, enables customers to manage their electrical grid effectively.





## Storing energy when it is needed plays a vital role in smart grid connection.

See more on ABB's energy storage technology at :

[www.abb.com/powerelectronics](http://www.abb.com/powerelectronics)  
(energy storage and grid stabilisation)

### Renewable energy a popular trend

Ecoprog anticipates more than 60 new pumped-storage plants with a total capacity of about 27 GW will be built in Europe by 2020, with the market particularly booming in Spain, Switzerland and Austria. The main reason for this growth is the development of renewable energy throughout Europe. Many European countries are planning, constructing or upgrading pumped-storage facilities to deal with the growth of renewable energy and the related increasing share of intermittent electricity sources, such as wind and solar.

Nearly 75% of the installed pumped-storage capacity in Europe is concentrated in eight countries, with more than half of this in four countries: Italy, Germany, France and Spain. The UK is the only exception to this trend as the country has comparatively small pumped-storage capacity.

According to EU specifications, the share of final gross energy consumption from renewable sources is to increase to 20% by 2020. The current percentage is 11.6%. The majority of this increase is supposed to be generated with wind power. In Germany, for example, the government is calling for 10 GW of capacity to be available from offshore projects by 2020. In the UK, this number amounts to more than 15 GW.

**Source: ecoprog**

The ESS product has had over 30 orders for 2011. Installed in countries such as Antarctica to Scandinavia, from South America to Australia, in China, Japan, Singapore, Indonesia, from Europe and North America, the ESS is fast emerging for its performance and reliability for electrical grid storage.

To unleash the full benefits of grid connected energy storage, smart grid connected converters are required. The ESS is such a device, offering advanced features and configuration options. The ESS helps improve quality power and grid stabilisation, which increases use of renewables.

### Projects underway

Recent projects include a joint collaboration effort between Saft and ABB to provide a new energy storage system in Hawaii. The solution will be to incorporate Saft's 2 Intensium Max 20E containers along with ABB's leading edge power conversion system. This solution will integrate more renewable energy and help Hawaii maintain its status as the leader in renewable energy. This energy efficiency solution comprising a Li-ion battery, power conditioning system, communications interface and installation

and commissioning features has many industry productivity advantages. These advantages including the reduction of renewable output, frequency regulation, and an increase in power performance, will deliver a real return on investment with minimal environmental impact.

Another successful order was from a government-owned enterprise in China to supply 10 units of PCS100 ESS to the Wind & Solar Energy Storage and Transmission Demonstration Project, for energy storage, wind and solar power output smoothening, scheduled generation tracking, peak shaving and system frequency modulation.

A major milestone is a recent order for Indonesia. This is because it is ABB's first ESS flow battery exported from China to Indonesia in the Chinese Battery Manufacturing industry. This highlights the ever growing demand for energy storage products like the PCS100 ESS, and how it will increase the use of renewables. ABB's tailored made solutions for the ESS will help create a sustainable environment while strengthening smart electricity grids.





The outside of the clothing manufacturing plant in Brazil

# Delivering service



PCS100 AVC that was damaged in transit

ABB in Napier have a specialised service team that travel around the world to make sure the PCS100 platform is in top condition.

Graham Ward, ABB's Service Engineer, was recently sent to service an Active Voltage Conditioner (AVC) that had been damaged in transit, at a textile manufacturer in Brazil.

This plant, which produces 1000s of reels of material, ships to clothing manufacturers worldwide. With the AVC protecting the plant from any voltage disturbance, it was a key piece of equipment that needed to be repaired.

Damage to the cabinet was evident, as the back panel was partly crushed into the cabinet frame, along with the bending of some internal enclosure bracing.

Transformers and some electronics were damaged as well, with the high G-shock leading to reactors tearing away from their steel footings.

There are two AVCs installed on site, both of which condition the utility supply and help protect sensitive loads in the factory from electrical sags and surges. These electrical disturbances, though not always necessarily harmful, can prove disruptive to plant process, leading to costly downtime whenever a significant utility electrical event occurs.

By utilising ABB's AVCs, the company can ensure efficient and uninterrupted production, regardless of utility sags and surges.



# Supporting the overseas market

Ensuring customers understand our products.



The historic site of Manggyeongam where David Ross is pictured, with the City of Seoul in the background

In order to ascertain that our products are communicated to our international markets, and in this case the Korean market, ABB's Customer Support Engineer, David Ross, is now residing in Korea to support the local markets.

With the introduction of the UPS-I, which are being installed and commissioned into this market, David is assisting in this area so our internal customers can gain insight into the UPS-I's applications.

David works with internal customers to make sure they understand ABB's PCS100 innovative technology in order to gain an in-depth knowledge of key industrial markets, driven by external customer needs.

Traditionally the Korean semiconductor fabrication industry has been our largest market for our power protection products with the AVC and now the UPS-I and sales are channeled through the local ABB in Korea.

# PCS100 Product training 2012

Register your interest now for 6-8 March



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 partner channel sales and service engineers.

## Training locations

ABB 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](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 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
One	6 March	7 March	8 March
Two	8 May	9 May	10 May
Three	7 August	8 August	9 August
Four	6 November	7 November	8 November
<b>Agenda</b> Am	PCS100 product platform overview	PCS100 frequency conversion	PCS100 sizing and pricing tools
<b>Agenda</b> 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 PCS100 LV Power Converter systems
- troubleshoot problems faster
- extend the lifetime of the product

### Training locations

ABB 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 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](mailto:pq.supportline.nz@nz.abb.com)

### Training schedule 2012

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

# Embracing Evolution



## Project feature

### 6. The power to make a difference

Marine mega yard takes ABB technology on board

## Product development

### 8. Grid performance

ABB provides smart technology for dispersed generation in energy grids

## Industry watch

### 11. Brighter prospects for renewable energy

Solar prospects for the second half of 2011 - Global wind energy market

### 12. Competitive advantage

Automotive giant breaks new ground with ABB technology

## Inside ABB

### 14. Innovation highlight

ABB's DC fast charger

# In Control



## Project feature

### 4. Environmentally friendly force

ABB provides power supply to new frigates

## Industry watch

### 8. Powering up

High penetration solar photovoltaic and diesel power stations

### 12. The wind business

ABB's success and global presence

### 14. Electric drive

The business, product and strategy



Power correction that you can rely on?

Certainly.



By choosing from ABB's PCS100 Active Voltage Conditioner and UPS-I 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. Both systems give superior value to operations in the industrial, utility and commercial sectors.

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

**ABB Limited**  
**New Zealand**

Tel : 0800GO4ABB (0800 46 4 222)

E-mail: [powerquality.nz@nz.abb.com](mailto:powerquality.nz@nz.abb.com)

Power and productivity  
for a better world™

