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A power protection magazine
of the ABB Group

power



Efficient power

Data Center Forum 2017 06

ABB is sponsoring the Data Center forum 2017, which is being held on 13th September in Moscow

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Customized DPA UPScale ST UPS systems installed in the Central Bank data center







Lara Cortinovis
Global Product Group Manager
Power Protection

Dear all,

Welcome to this new issue of Power. I am very excited to be writing my very first editorial for you. As some of you might already know, I took over as Global Product Group Manager the Power Protection business within ABB's business unit Protection and Connection (EPPC).

Perhaps to start off with, I should tell you about myself and how I arrived at this post, which has the official title of "GPG Manager Power Protection, Protection and Connection, Electrification Products (EPPC) division".

Immediately after finishing my Master of Science degree in Business Engineering at the Politecnico of Milan, in 2001, I started with ABB as Product Manager in the Breakers & Switches business unit. I then moved on to various roles in global product management before getting involved in the financial side of things, eventually becoming Hub BU and Global Marketing & Sales Controller for EPPC. I was thrilled when I was offered the chance to lead the Power

Protection Group. I report to Giampiero Frisio, Global BU Managing Director, EPPC, and will be based in Bergamo, but will also have an office in Quartino.

Despite the change at the top, our business has not stood still and we had some exciting orders over the past few months. For example, ABB has just commissioned an advanced shore-to-ship power supply for vessels in the Nansha terminal in Guangzhou Port, China. At berth, a large ship can consume up to 20 MVA – usually supplied by its diesel engines. However, dockside air quality and noise are coming under regulatory scrutiny. The ABB solution enables ships docking at the port to plug into shore-based power supplies so they can shut off their diesel engines.

Also in China, ABB has provided a PCS100 AVC-40 active voltage conditioner for a leading dairy company to make sure their manufacturing process keeps running as smooth as milk. In the dairy industry, voltage sags, for instance, can lead to stoppages and, thus, a threat to the sterile environment that necessitates burdensome cleanups.

On the beautiful island of Malta, the historic Valletta city gate is being completely re-shaped. The work includes a new building to house the Central Bank of Malta, a core element of which is the data center. This includes a "cold aisle" - an air flow configuration that conserves energy and lowers cooling costs. To ensure a continuous flow of clean power to the data center, ABB's partner, VSS, installed two DPA UPScale 120 UPSs, each equipped with six slide-in power modules. The UPS had to be installed in a cold aisle enclosure, so a cabinet with custom sliding doors, roofing and color was produced to the client's specifications. The client chose the ABB'S UPS solution primarily because other suppliers were not able to implement such a system.

You can read more about the stories I have

mentioned in the pages of this edition of the magazine. By the time the next editorial comes along, I am sure we will have lots more exciting news for you.

Enjoy this issue of **power**



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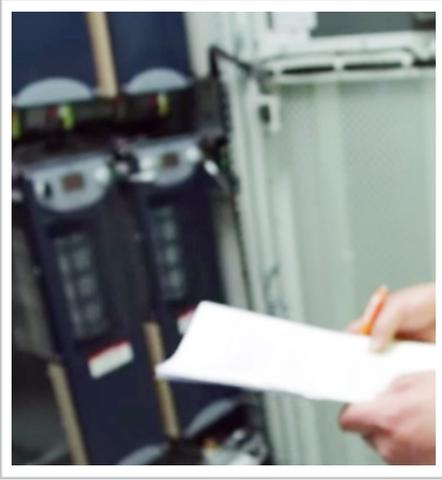
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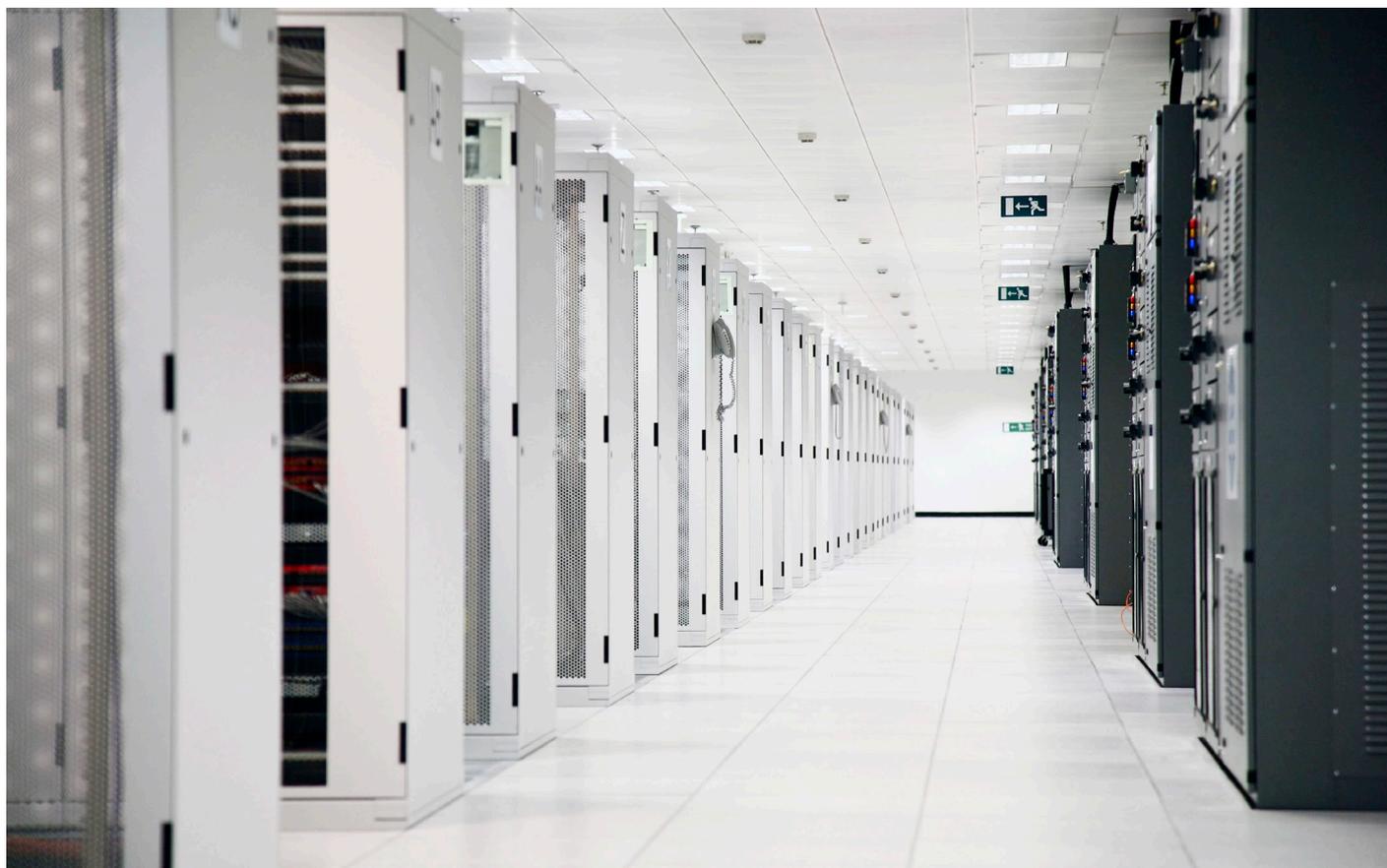
Supporting Data Center forum 2017 in Moscow

ABB is sponsoring the 12th international conference "Data Center forum 2017", which is being held on 13th September in Moscow

At the 12th International Conference and Exhibition, participants will be able to discuss a wide range of economic and technological issues related to the development, deployment and management of the engineering, network and IT infrastructure of the data center. It is expected that this year the event will bring together more than 850 specialists from all over Russia and CIS countries.

The Data Center forum 2017 site is a place for meetings and exchange of experience for corporate and commercial data center owners, large users of data center services, operating, building, engineering companies, leading manufacturers of solutions and infrastructure for data centers.

ABB, one of the sponsors of the event, invites participants to visit its stand, as well as learn about its products and solutions for the data center industry. ABB's Business Development Manager Domagoj Talapko will present a report of medium voltage power protection for large data centers at the conference.





PCS120 MV UPS. Complete power protection at medium voltage.



The next generation of medium voltage UPS intended for multi megawatt power protection. Based on the revolutionary ZISC architecture, the PCS120 MV UPS introduces a flexible solution for higher reliability and higher efficiency in critical power facilities. Visit www.abb.com/ups

ABB's PCS100 Authorized Service Provider course



Delivered by factory based instructors, ABB's PCS100 Authorized Service Provider course was a combination of hands-on practical and theoretical classroom training for field service technicians. Course content included preventative maintenance, fault diagnosis & repair, and on-site commissioning of the PCS100 power conditioning product portfolio.

The PCS100 Authorized Service Provider course for channel partners was held in Singapore, on the 8-10 August 2017, hosted by the power conditioning team. ABB was pleased to offer the valued Channel Partners the opportunity to attend training for maintenance, commissioning and service of PCS100 power conditioning products. Service training is a mandatory requirement for ABB's PCS100 Channel Partners to receive continued factory sales support and after sales support.

Following the successful completion of training, partners are assigned the ABB Authorized Service Provider status for PCS100 products, and recognized by way of continued preferential pricing from the New Zealand factory, plus preferred provider status for service and commissioning of PCS100 products for ABB customers.



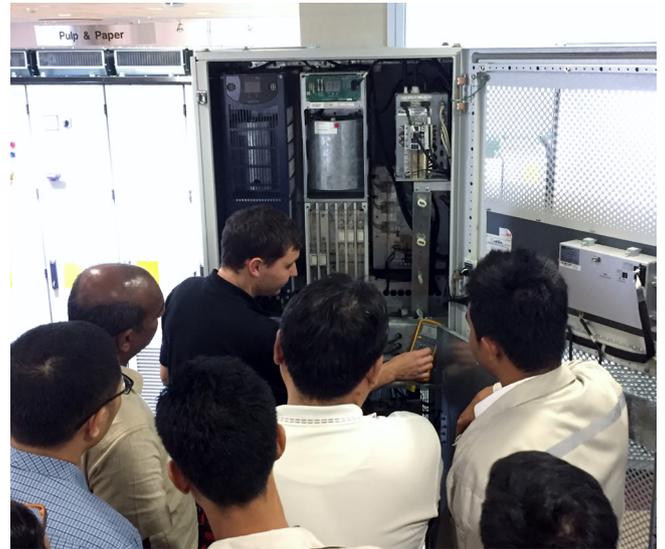
Course profile

Our service and commissioning training courses are aimed at qualifying existing technicians to undertake unsupervised first level support of ABB's PCS100 applications. Upon completion of the course, technicians are able to operate, maintain, and troubleshoot PCS100 systems, locate and identify hardware components, download fault loggers and important information for first analysis by support personnel, replace parts, perform preventative maintenance, and commission new installs. Trainees will gain practical experience using available tools and techniques through organized practical exercises.

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 power conditioning systems
- Extend the lifetime of the product



Successful shore-to-ship power link in China

ABB's static frequency converter (SFC) providing reliable power infrastructure for a greener and more efficient ports



Stock image



ABB has commissioned an advanced Shore-To-Ship (S2S) power supply for vessels in the Nansha terminal in the Guangzhou Port, which is located at Longxue Island in South Guangzhou city, China. This solution enables ships docking at the port to plug for power instead of running on polluting diesel generators and using expensive power. In early April 2017 the Nansha terminal successfully provided 60 Hz, 6.6 kV shore power to a container vessel named COSCO Africa.

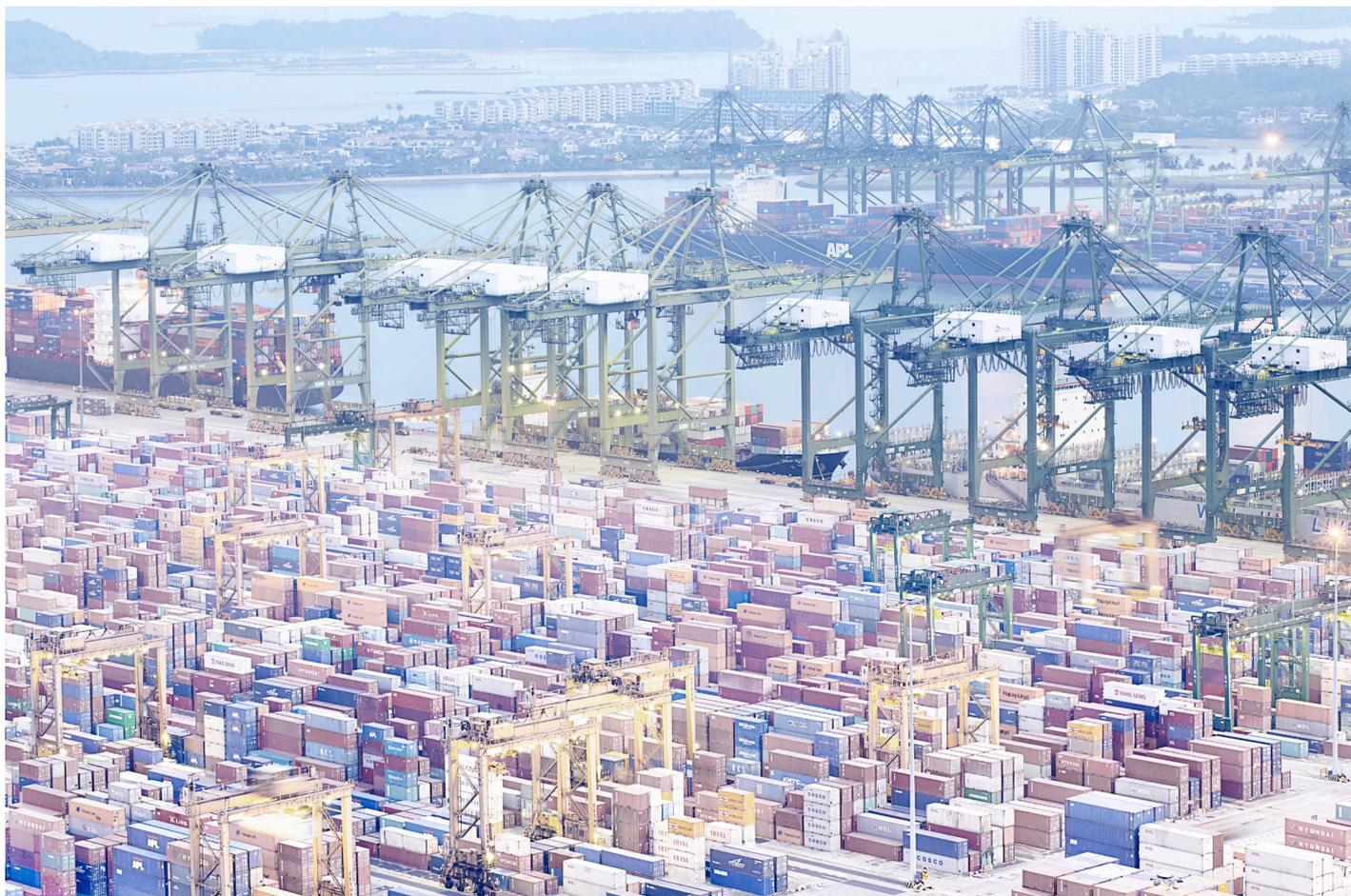
The Nansha Terminal is the only deep-water container terminal on the west Pearl River Delta (PRD) region. Nansha Terminal covers 14 dynamic city clusters including Guangzhou, Foshan, Zhongshan, and Jiangmen. It provides international shipping services to Europe, America, Middle East, and the Mediterranean Sea and provides the most advanced shipping hardware and equipment.

The project was to construct one 3 MVA S2S substation for Nansha Port Phase 111 container terminal, which was listed as one of seven demonstrative S2S projects during 2015-2016 by the Ministry of Transport (MOT) in China.

Solution

ABB's PCS100 Static Frequency Converter (SFC) solution was selected to meet the regulation of emission reduction from the MOT, which is to achieve zero emission in port, and reduce around 1500 tons of CO₂ emission and 600 tons fuel consumption per year.

The PCS100 SFC end-to-end solution is engineered for the demanding port applications with a modular construction, overload capability and power flow control in either direction. The end user selected ABB's solution because of the well-known technical parameters and site testing performance of the PCS100 SFC as S2S power.



ABB's ship-to-shore technology

As a technology pioneer in low voltage installations for marine applications, ABB's PCS100 SFCs, are a safe, economic and highly efficient solution for converting grid electricity to the appropriate load frequency. This leading-edge frequency conversion technology guarantees a seamless automated power transfer of the ship load from the onboard power plant to the onshore source and back.

This solution contributes to a significant reduction of fuel and lubrication oil consumption, which means less pollution and improved financial benefits. S2S power is especially applicable to ships operating on dedicated routes, and vessels that consume large amounts of power while in port or at a shipyard. This could bring real benefits for terminal operators whose ships berth each day for a fixed number of hours.

To find out more about ABB's power protection solutions:

Web: www.abb.com/ups

Email: powerconditioning@abb.com





Eliminating emissions and saving costs with shore-to-ship power.



By choosing from ABB's shore-to-ship solutions, you are selecting from a unique line up of advanced technologies and expertise. ABB's grid interconnection products allow direct connection of ships to a harbor's electric grid, at the same time eliminating port noise and emissions. Thanks to a complementary product portfolio, ABB is able to offer adequate static frequency converter solutions ranging from 120 kVA up to 120 MVA.

www.abb.com/converters-inverters (Converters for Grid interconnection)

ABB to protect against voltage sags in the food and beverage industry

Active Voltage Conditioning (AVC) technology bound for China to protect power in critical production process



A leading dairy company has purchased a 750 kVA PCS100 AVC-40 to protect the bolting and sterilization machines in their production line. The technology will help solve the voltage sag problem they are facing, which has caused complications for numerous years.

Any power event or interruption is a threat to the sterile environment of a dairy production line. Costs can be significant with the disposal of wasted product and the extended time it can take to clean the system prior to recommencing production. Increased automation means conveyors of increased speed are being used. When bottling interruptions are usually caused by voltage fluctuations, which causes sensors, drives or controls to malfunction. Beside the physical damage to product or tools, it can also cause time-outs for cleaning or repair work.

Background

Following the trend of higher automation level and increasing demand of production continuity in dairy industry, stable power quality has become a major lever for China's largest dairy producer, to enhance its operational efficiency. To this end, the company has decided to upgrade and transform its production line in order to ensure that important loads are immune from voltage sag with a power protection device.

The total solution

ABB's solution to insure that the dairy is protected from voltage sags is the PCS100 AVC-40. The AVC will be used to protect the critical loads, which include bolting and sterilization machines. The customer selected ABB over its competitors due to a better service offering.



“ABB’s active voltage conditioner has typical applications including high-speed bottling, packaging, dairy processing and other food and beverage production lines,” said Kenny Huang, Sales Manager of ABB’s Power Conditioning business, China. “For this project, ABB provided an AVC demo for testing on the customer site for several months and finally we got the breakthrough order. Our relentless execution convinced the customer of ABB’s products and service capability, and then they finally chose our solution.”

The PCS100 AVC-40 is a high performance power electronic system specifically designed for industrial and large-scale commercial applications. It responds instantly to power quality events by correcting voltage sags, phase angle errors, unbalance and surges, while providing continuous voltage regulation. At the time of voltage sags and swells, the PCS100 AVC-40 can respond within milliseconds and inject up to 40 percent correction voltage.

Thanks to its compact design, it can be easily installed in a machine room or other confined spaces, reducing the demand for additional floor space in the course of design and

construction. Moreover, it is featured with a redundant internal bypass system that ensures continuous power supply to loads from utility grid.

Food and Beverage

ABB’s power protection product portfolio consists of a comprehensive range of UPSs and power conditioners that can protect a food and beverage facility from disturbances in the electrical supply. With power protection from ABB in place, food and beverage product quality, safety and production can be maximized, ensuring the greatest utilization of your facility and enhanced product quality to the customers.

To find out more about ABB’s power protection solutions:

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Email: powerconditioning@abb.com

PCS100 AVC-40

Active Voltage Conditioner for sag correction 150 kVA - 3600 kVA



The PCS100 AVC-40 Active Voltage Conditioner is specifically designed for correcting voltage sags in large commercial and industrial applications. With a proven and dependable converter platform, the PCS100 AVC-40 ensures instant surge and voltage sag correction, thereby increasing productivity. The load capacities range from 150 to 3600 kVA, and higher ratings can also be used on request.

The rugged overload capability and industrial design of the PCS100 AVC-40 allows it to withstand conditions that cannot be handled by other systems. In addition, a redundant internal bypass system ensures continuous supply of load from the utility.

The PCS100 AVC-40 achieves higher than 98 percent efficiency and minimal heat rejection, thereby reducing the costs of cooling and electricity. It does not require batteries as the utility supply provides the additional energy to make up the correction voltage.

Key features

The main features of the PCS100 AVC-40 are:

- Small footprint design
- Low cost of ownership
- Can be easily fitted into confined spaces or equipment rooms
- Batteries not required
- Rugged overload capability ensures operation in harsh electrical conditions
- Continuous protection from voltage sags and surges

Key benefits

Continuous protection from the most common utility voltage problems found in modern power networks. Even the most modern power networks are not perfect and voltage sags are the most common cause of equipment malfunction in today's automated industry. The PCS100 AVC-40, built on a proven and dependable converter platform, provides instant voltage sag and surge correction, ensuring maximum productivity. Failsafe worry free operation even in harsh electrical environments. The PCS100 AVC-40 is specifically designed for industrial and large commercial applications. It's industrial design and rugged overload capability means it can handle conditions that others cannot. Furthermore, it contains a redundant internal bypass system that ensures that the load continues to be supplied from the utility.

Faster return on investment due to low operation costs. With industry leading efficiency exceeding 98 percent the PCS100 AVC-40 has minimal heat rejection, resulting with minimal

costs for electricity and cooling. The PCS100 AVC-40 requires no batteries, as it draws the additional energy required to make up the correction voltage from the utility supply. With no ongoing maintenance costs typically associated with batteries the cost of ownership for a PCS100 AVC-40 systems is very low. As the system is has a small footprint, it can be easily fitted into equipment rooms or confined spaces, eliminating the need to design and build added floor space.



Watch the video: [ABB's PCS100 AVC-40 active voltage conditioner for sag correction](#)

To find out more about ABB's power protection solutions:

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Continuous power flow for the Central Bank of Malta







ABB's partner for UPS systems, VSS Ltd., installed customized DPA UPScale ST UPS systems in the Central Bank data center located in the completely reshaped city gate, a masterpiece of a civil complex developed by Italian architect Renzo Piano.

The historic city of Valletta in Malta is well known for its architectural beauty and was declared a world heritage site by UNESCO in 1980. The city gate, Valletta's only land entrance, has been rebuilt multiple times since the 16th century and is now being completely reshaped in a project dubbed "City Gate." This enterprise has four parts: the Valletta City Gate itself, a flexible performance space that incorporates the ruins of the former Royal Opera House, the construction of a new parliament building and the landscaping of the moat.

The work includes a new building to house the Central Bank of Malta. A core element of the bank is its data center, which includes a "cold aisle" - a data center configuration that conserves energy and lowers cooling costs by managing air flow. The cold aisle is enclosed, with cold air flowing into the electronic and power modules from below and allowing the rest of the data center to become a large, hot-air return plenum.



To ensure a continuous flow of clean power to the bank's data center, ABB's partner, VSS, installed two DPA UPScale 120 UPSs, each one equipped with five slide-in power modules of 20 kW.

The UPS is an all-in-one solution that includes the frame, UPS, battery and communications devices. The UPS design is based on ABB's decentralized parallel architecture (DPATM), which delivers unprecedented reliability, availability, low total cost of ownership and simple service and maintenance.

Because DPA allows modules to be added as critical power needs grow, there is no need to overspecify the original configuration. This reduces capital outlay and makes maintenance and service easy as modules can simply be hot-swapped. These features all lead to a low cost of ownership.

As well as providing a fully scalable and easily maintained UPS with unparalleled uptime and energy efficiency, the DPA UPScale 120 also delivers clean backup power to the electronic devices that monitor and control infrastructure, thus preventing loss of data or damage to equipment.

The City Gate installation required the UPS to be installed in a cold aisle containment, which is not what the DPA UPScale 120 was designed for, so a cabinet with custom sliding doors, roofing and color was produced based to the client's specifications.

The cabinet planning and implementation included a 3D model, which was presented to the client in order to provide a preview of how the cabinet would fit into the current configuration and how the final installation would look. Installation of the UPS was simplified once the components arrived on site, as technicians already had a 3D model to work from.

The client chose the ABB UPS solution as other suppliers were not able to implement a system such as this, with sliding doors and roofing. As well as the customized cabinet, the system's full redundancy and ability to online-swap were deciding factors for the client in selecting ABB as their supplier.

Complete power



- 06. ABB launches medium voltage power protection**
The complete power protection for mission critical facilities
- 08. Asia Channel Partner Summit**
Successful event in Ho Chi Minh City
- 18. High architecture meets advanced technology**
UPS for a new signature Botta-designed tourist attraction in the Swiss Alps

Reliable power



- 08. PCS100 AVC-40 for China's food and beverage industry**
Power quality products ensure stable and efficient operation of a leading dairy manufacturer production line
- 18. Test center for large-scale UPS systems**
New facility for ABB in Switzerland allows advanced testing of high-power UPS systems
- 21. High architecture meets advanced technology**
Power protection for the next-generation data center