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A power protection magazine
of the ABB Group

power



Complete power

ABB launches medium voltage power protection 06

The complete power protection for mission critical facilities

Asia Channel Partner Summit 08

Successful event in Ho Chi Minh City

High architecture meets advanced technology 18

UPS for a new signature Botta-designed tourist attraction in the Swiss Alps

ABB





Doug Whitmer
Vice President Sales & Marketing
Power Protection, NAM

Welcome to this issue of power. As we approach the second half of this year, our collective power protection businesses are experiencing continued growth and momentum in their respective power protection markets. We have a very strong line-up of products and services and have invested significantly in new product development across our businesses and are on track for a prosperous year.

Internally, our power protection product group recently integrated with the Electrification Products division of ABB. This move aligns our businesses with an existing infrastructure of ABB products geared towards operation and maintenance of the complete facility electrical one-line. We are excited to work with ABB sales and support teams familiar with data centers, industrial manufacturing and the mission-critical eco-system of customers, contractors and engineers we serve. Our customers can now buy from ABB in a manner that suits them best. One team for MV and LV distribution and components, from substation to the load, ABB can supply the critical power protection. This business alignment also brings commonality across the service platform for delivery consistency.

In this edition, we are pleased to detail the new product launch activities of the PCS120 MV UPS, introduced to the market in London at Data Centre World, and in Houston, Texas at ABB Customer World. Take note of our technical article that brings light to the unique ZISC based architecture of this next generation MV UPS.

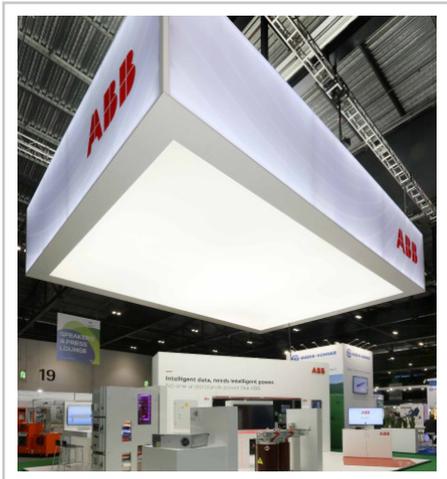
In March, our team hosted “Partners in Power”, a channel partner summit in Ho Chi Minh City, Vietnam. This summit provided in-depth coverage of emerging technologies and business development opportunities in the global marketplace. Learn more about this event [herein](#).

Also, highlighted in this issue is a noteworthy article on ABB’s success with biopharmaceutical giant, Novo Nordisk. How does this world leading company, committed to addressing the unmet needs in haemophilia care, maintain continuous operations throughout their delicate manufacturing process? Since its installation in August 2014, a PCS100 UPS-I has been protecting operations and preventing production voltage drop breakdowns in their Gentofte, Denmark facility. See the article within to learn more about this story and the robust performance capabilities of the PCS100 UPS-I.

We round out this issue with a final article that eloquently conveys how high architecture and advanced UPS technology come together. Learn how the double conversion topology of the PowerValue 11 RT UPS ensures business continuity for a newly opened Mario Botta signature designed attraction situated in the picturesque mountains of Monte Generoso.

In closing, thank you for subscribing and for your support in reading this update.

Enjoy this issue of **power**



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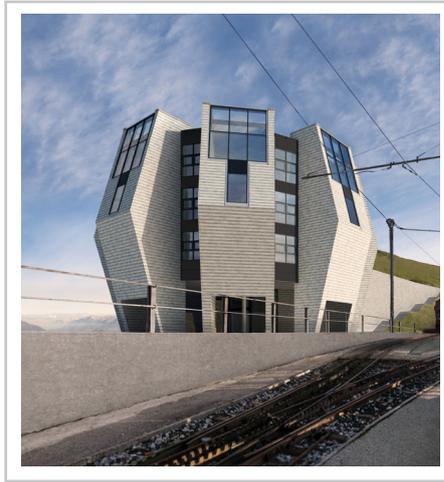
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High architecture meets advanced technology

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ABB launches medium voltage power protection technology in UK and US

The complete power protection for mission critical facilities

ABB's PCS120 MV UPS was introduced to the market in London at Data Centre World, and in Houston, Texas at ABB's largest customer event, ABB Customer World.

ABB's PCS120 MV UPS is a next-generation medium-voltage UPS for multi-megawatt power protection that is based on the flexible ZISC (Impedance Isolated Static Converter) architecture. The transition from low voltage to medium voltage is a natural progression of power protection for large sized critical power facilities. By adopting power protection at medium voltage, facility operators benefit from greater energy efficiency as the lower currents at medium voltage lead to smaller cables and lower losses.

ZISC, a revolutionary power conditioning and uninterruptible power supply architecture that supplies continuous clean power, and provides protection from a broad spectrum of utility voltage events.

It is based on an isolating line reactor coupled with high-performance ABB power converters and advanced control. It provides unmatched reliability, high performance and class-leading efficiency.

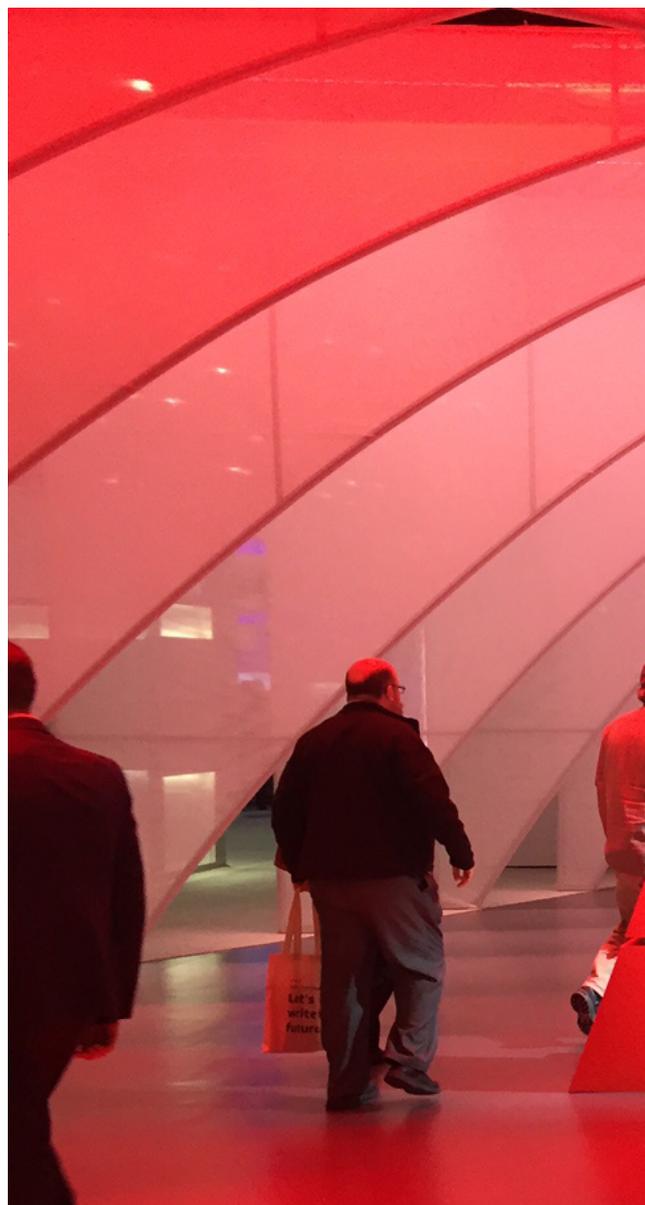
Perry Field, ABB's Global Product Line Manager for Power Conditioning, says, "With the world's ever-increasing demand for high-quality power, driven by increases in industrial automation and large data centers, we are launching a solution well aligned to our customers' needs."

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

Web: www.abb.com/ups

Video: [PCS120 Medium Voltage UPS](#)

Email: powerconditioning@abb.com





Asia Channel Partner Summit

A successful event in Ho Chi Minh City



Bruce Bennett presenting PCS100 applications

In early March, 2017, our Asia Sales team hosted an event in Ho Chi Minh City on UPS and power protection. This summit, “Partners in Power”, was the first of its kind in Vietnam and was attended by channel partners offering the UPS product portfolio including sales, support, service, and engineering. The partner summit provided an excellent opportunity for channel partners to obtain an in-depth look at new technology and explore business development opportunities.

The event was a great success and saw the attendance of virtually all partners from the region. Special thanks must be extended to Derrick Koh, Regional Sales Manager, whose sterling work made it possible for so many to attend.

A function was held at Le Méridien Saigon Hotel on the evening before the event. This gave the guests an ideal opportunity to get to know each other, exchange information and build up a network of contacts.

The event was opened by Amina Hamidi, Product Group Manager, who outlined the company’s strategy and what the overall plan for the business is in the coming years. More details on this topic was then given by Kevin Bickerstaffe, who described market differentiation strategies and ways that ABB can combine its unique sector knowledge, technology leadership and digital expertise to expand the business.

This was followed by product updates and roadmaps from Elina Hermunen. The latest news and insights from the factory by Pierre Gubelmann and a perspective on our service business, which was delivered by Zoltan Gal.

A sales overview was given by ABB's regional sales manager, Derrick Koh. Derrick has extensive experience in this area and his presentation provided the delegates with much food for thought. Furthermore, presentations by Douglas Whitmer, Bruce Bennett and a presentation on Asian reference cases were followed by an open-floor Q&A session that provoked an interesting debate.

After the day's proceedings, the guest prepared themselves for the evening's gala dinner in the spectacular Elisa Floating restaurant located in the port area of Ho Chi Minh City. The dinner provided yet another opportunity for the guests to become colleagues and build up personal relationships – an aspect that makes future collaboration easier and more successful. The event team organized a wonderful evening of food and drink as well as music, dance and further entertainment, in which everyone participated in.

On the second day of the event, the formal presentations finished and the morning was broken down into multiple sessions that were based on a variety of topics. These topics were discussed and feedback and ideas were collected.

Overall, the event was hailed by all as a great success. It provided an excellent opportunity to showcase ABB's development in the UPS and power protection markets as well as to provide a forum for building up interpersonal contacts.

The closing words can be left to Derrick Koh: "Excellent organization, great atmosphere, team spirit, great entertainment, and good sessions – this will be done again in two years' time."



PCS120 MV UPS

Medium voltage UPS based on ZISC architecture

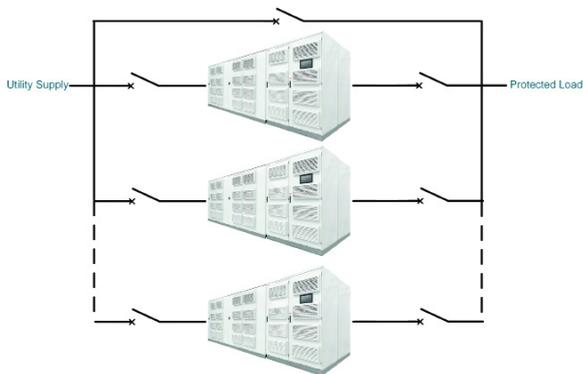
The next generation of medium voltage UPS intended for multi megawatt power protection. Based on the revolutionary ZISC architecture, the PCS120 MV UPS introduces a flexible solution for higher reliability and higher efficiency in critical power facilities.

Medium voltage

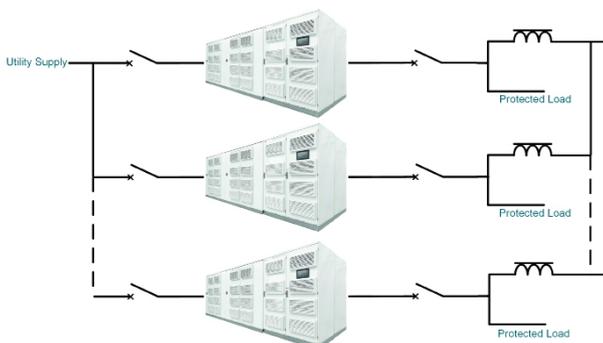
The transition from low voltage (LV) to medium voltage (MV) level is a natural progression of power protection for large critical power facilities. The approach offers two main benefits. It increases reliability and reduces costs of the critical power facility build and operation.

Increased reliability is derived from the MV design approach with larger protected load blocks, lower switchgear count and the operating culture of medium voltage systems.

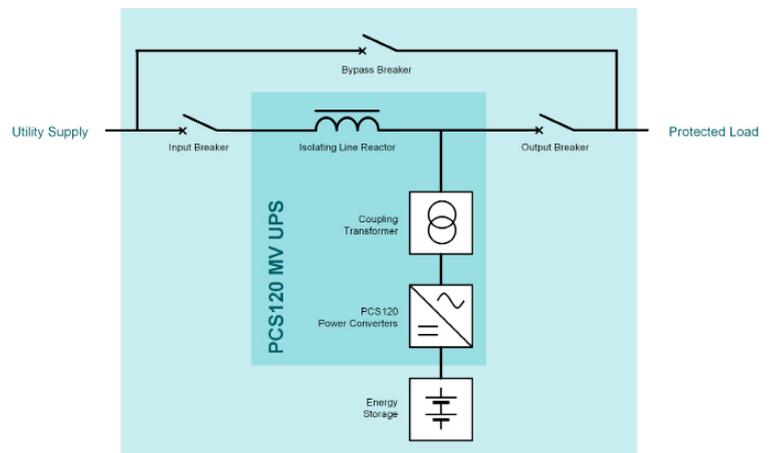
Installing the power protection at the MV level provides the most energy efficient configuration as the lower currents at this voltage result in smaller cables and lower losses.



Parallel configuration



Ring bus configuration
Simplified layout – ring bus switchgear not shown



Single line diagram



Impedance (Z) Isolated Static Converter ZISC

ABB's ZISC is a revolutionary high performance, high efficiency power conditioning and uninterruptible power supply architecture. It provides protection from a broad spectrum of utility voltage events and supplies continuous clean power.

ZISC architecture is based on an isolating line reactor coupled with the high performance ABB power converters. This simple approach, backed up with advanced control, provides unmatched reliability and performance, with class leading efficiency.

Decoupled from the utility via the isolating line reactor, the power converters continuously condition and filter utility disturbances, such as harmonics and voltage imbalance, without cycling the energy storage. Load related events, such as downstream faults and other dynamic reactive current demands, are managed with ZISCs high overload capability.

The isolating line reactor and the coupling transformer are applied at medium voltage, whereas the power converters and energy storage are at low voltage, thus simplifying maintenance.

Combined with a wide range of the modern energy storage ABB's ZISC provides autonomies from a few seconds to many minutes.

+ Cost effective

- Class leading efficiency up to 98 percent
- Reduced maintenance

+ Performance

- Continuous clean power
- High fault clearing capability
- Enhanced ring bus performance

+ Flexibility

- Paralleling and ring bus capabilities
- Distributed layouts
- Versatile energy storage options

+ Connectivity and monitoring

- Web server and email
- Ethernet
- IEC 61850 digital communication
- Event analysis and waveform capture

+ Serviceability

- Plug and play power converters
- Power converters and energy storage at LV
- MTTR typically less than an hour
- Comprehensive service log



Technical specifications

Item	Value	Note
Nominal Voltage	11 kV IEC (10 - 11 kV)	
	15 kV UL (12 - 15 kV)	Available in 2018
	20 kV IEC (20 - 24 kV)	Available in 2018
Power Rating	2.25 MVA / 2 MW	Single unit
Efficiency	>98 percent	
Configurations	Parallel	
	Ring bus	
Energy Storage	Li-Ion batteries	
	VRLA batteries	
	EDLC ultracapacitors	



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

UPS system prevents loss of several millions at Novo Nordisk

ABB has prevented 30 probable production breakdowns

One production standstill at Novo Nordisk in Gentofte, Denmark result in a loss in production of several millions kroner. Since August 2014, an UPS system from ABB has prevented 30 probable production breakdowns due to voltage dips in the power supply

Novo Nordisk in Gentofte, produce medicine for the bleeding disorder hemophilia. During the manufacturing process, the ventilation systems contribute to keeping the environment sterile by generating pressure, which prevents impurities from penetrating from the outside.

However, Novo Nordisk had problems with voltage drops in the power supply, where the sensitive ventilation system cut out – resulting in large production losses.

“In case of missing pressure above the atmosphere, all medicine must be discarded and production premises as well as equipment shall undergo an extensive cleaning that takes three days”, says Jesper Agertoft Pihl, electrical engineer and plant owner at Novo Nordisk in Gentofte.



Jesper Agertoft Pihl, electrical engineer and plant owner, is responsible for the electrical installations at Novo Nordisk in Gentofte



A standstill may cost several millions Danish kroner and in the worst case, the pharmaceutical manufacturer will not be able to supply the market. Novo Nordisk in Gentofte is in production 24 hours a day throughout the year, which means that it is not possible to make up for a production loss and this could affect the supply security of the consumers. That is why the factory chose to install two offline PSC100 UPS-I systems from ABB in 2014, which keeps the voltage stable and prevents shutdowns.

“An offline UPS system is connected in parallel with the supply. It monitors the network, and if it detects a fluctuation in voltage or a failure in the supply, it will take over the load”, explains Rasmus Theill, product marketing director of Power Protection & EV Infrastructure at ABB in Denmark.

Increase in voltage dips

Previously, the pharmaceutical company typically had four to six shutdowns a year, which had been increasing. From the installation of the UPS facility in August 2014 to mid-December 2016, they had registered 59 voltage dips. From this, 30 would have caused downtime because the voltage dips fell below 30 percent, this is where the ventilation systems cut out.

“Only three weeks after installation, it prevented a breakdown due to voltage dips – it had then paid for itself”, says Jesper Agertoft Pihl.

The voltage dips occur at switching of the mains voltage between power plants (wind energy and solar energy). The number of these disconnections had been increasing during the last few years as more and more of the power supply comes from alternative energy sources. The voltage drops will not affect a normal production, but it is problematic in highly sensitive facilities.



The UPS-I facilities had a payback period of only three weeks

Best security in the market

The function of the UPS system is not only to prevent break-downs due to voltage fluctuations, but also to act as a general emergency supply and here every precaution is taken. The construction of the system is redundant with eight modules per plant, each having five battery strings. Even if one module drops out, the remaining modules ensure that there is supply. The plant has no less than ten minutes of battery backup. The uniqueness of the UPS-I is that the transfer time - the time it takes for the system to connect, is less than 1.4 milliseconds. Additionally, it does not have the same power loss as an online UPS solution, but achieves an efficiency better than 99 percent, which is the highest in the market, emphasizes Rasmus Theill.

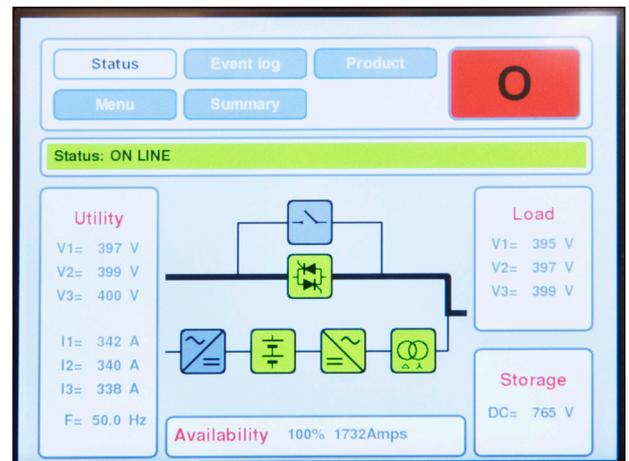
At the factory, they had previously problems with harmonic currents, which caused unintended tripping and affected the lifetime of the components. For each UPS system, they have consequently installed two 100 amp active filters from ABB that solve this problem.

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

Web: www.abb.com/ups

Video: [The features of a UPS-I](#)

Email: powerconditioning@abb.com



The touch screen visualizes the status of the plant and supply conditions.



Power correction that you can rely on?

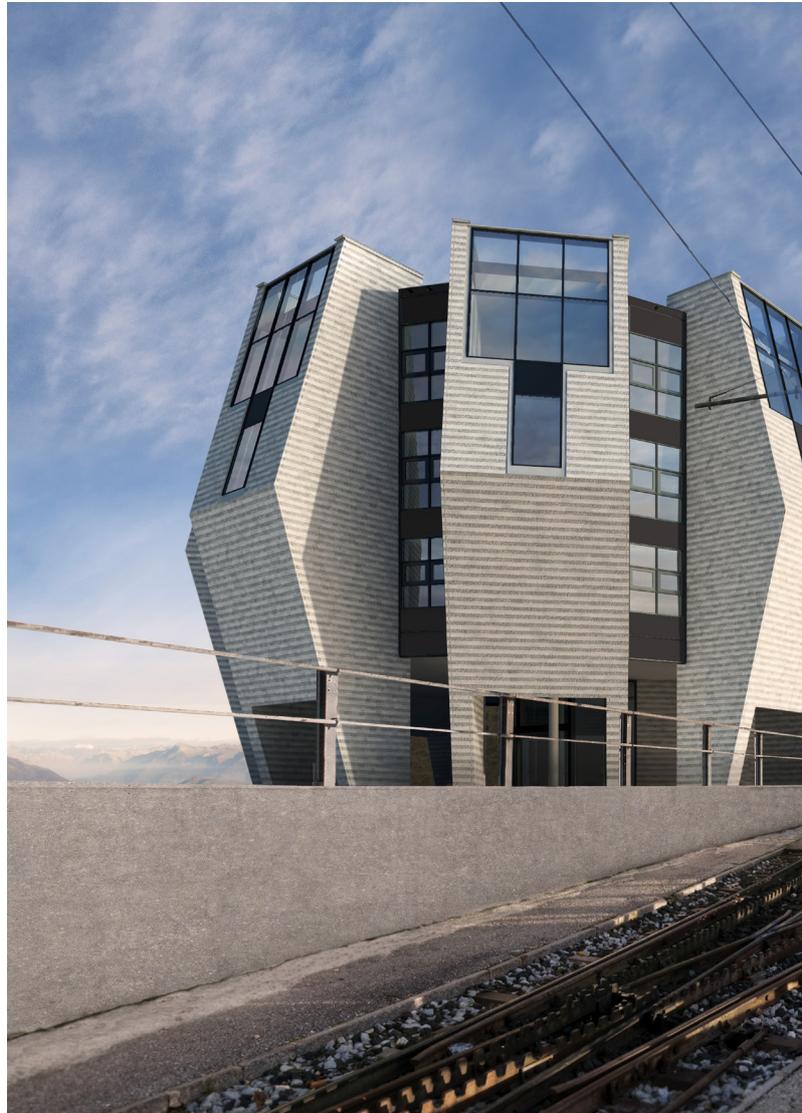
Absolutely.



By choosing from ABB's PCS100 Industrial UPS solutions, you are selecting from a unique line up of advanced technologies and expertise. This low voltage power protection product provides a long lifetime energy storage, highest efficiency and availability, and a small footprint. With ratings from 150 kVA to 3000 kVA, the PCS100 UPS-I gives superior value to operations in the industrial, utility and commercial sectors. www.abb.com/powerquality

High architecture meets advanced technology

ABB's UPS for a new signature Botta-designed tourist attraction in the Swiss Alps



Since designing his first building, a family house in Ticino, Switzerland, Mario Botta has gone on to become a world-famous architect. His work can be seen around the globe and the new restaurant and conference center on Monte Generoso provides a typical and striking illustration of his unique approach to building design.

Monte Generoso is situated in the mountains around Lake Lugano. The mountain's summit and the new building are serviced by a picturesque rack railway that has been in service since 1890. The new Botta-designed building opened on the

8th April 2017 and features large picture windows that perfectly frame the breathtaking alpine panorama presented by the surrounding peaks. Lighting and views provide two key notes to the building's design: the restaurant and conference room are both flooded with light and have magnificent mountain views all around.

In line with the quality of the views, the conference center is equipped with the very best in technical equipment. It is into this prestigious setting that ABB has now delivered one of its UPS products – the PowerValue 11 RT.



To ensure business continuity, ABB's PowerValue 11 RT UPS double conversion topology has been chosen to protect the load from all possible input mains disturbances.

The PowerValue 11 RT's compact and flexible design allows for easy setup and maintenance, configuration in tower or rack-mount format and connection to parallel battery modules for extended run time.

Due to its high reliability, low cost of ownership, flexible design and efficient service concept, ABB's PowerValue 11 RT is ideal for use in Monte Generoso.

Power solutions



- 06. ABB's UPS on show in Vietnam**
Key power protection featured at power and automation show
- 09. ABB India's first shore-to-ship power supply**
PCS100 SFC end to end solution installed at Tuticorin port to significantly reduce carbon footprint
- 14. Power factor and the uninterruptible power supply**
Power factor has to be taken into account when specifying a UPS

Power correction



- 06. Chatriumhotel's dramatic results**
Steady power, fuel savings, and emission reduction courtesy of a PCS100 AVC
- 10. PCS100 AVC-40 bound for Myanmar**
Two x PCS100 AVC-40's ordered for an industry leading brewery
- 12. ABB expands its modular UPS product offering for data centers**
Optimized 300 kW UPS cabinets
- 16. Uninterruptible power supplies**
Light industrial UPS versus commercial UPS