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A power protection magazine
of the ABB Group

power



Reliable power

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ABB





Perry Field
General Manager
Power conditioning products

Welcome to this issue of power.

First a few short words about the Power Conditioning business. How time has flown by and we are already half way through 2017. Our New Zealand factory is producing PCS100 modules at near peak capacity, with two shifts operating to keep up with demand, so a very busy start to the year for us. Looking forward, we are very excited with the opportunities ahead for the new PCS120 MV UPS and activities are ramping up for this product following the launch earlier this year.

In this edition, we are pleased to feature the brand new test facility for the UPS factory in Quartino. With this new facility, ABB has taken a significant step forward in strengthening its position in the global power protection market. Read all about the official opening and the comprehensive test facility's full suite of test tools, flexible layout and test regimes.

Highlighted in this issue is a noteworthy article on ABB's recent success. ABB has provided a power conditioning solution for the manufacturing process of a leading dairy company in China. This order marks a significant breakthrough into China's

food and beverage industry, which implies attractive market size and growth potential. See the article within to learn more about this story and how the PCS100 AVC-40 can benefit the food and beverage industry.

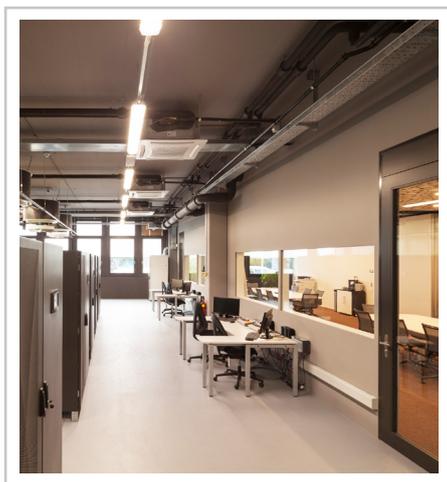
Following on from the successful launch of the PCS120 MV UPS. ABB presented the next-generation PCS120 medium voltage UPS and the DPA-500/MNS-UP dual conversion UPS at a data center event in Taiwan. Learn more about this event herein.

Some of you may recall the article that was published last year about Volico in the United States who wanted to evolve their data center into a "pay-as-we-grow" concept. Read the updated article for more information and click on the link to view the new video of Gadi Has, director of operations at Volico Data Centers, taking time out at the 2017 ABB Customer World US event to share how they replaced an aging UPS system with ABB's Conceptpower DPA 500.

Lastly, read all about power protection for the next-generation data center in the noteworthy article from Dr. Antonio Coccia, data centers segment & projects operations manager, ABB power protection.

In closing, I look forward to a prosperous second half of this year and thank you for subscribing and your support in reading this bi-monthly update.

Enjoy this issue of power



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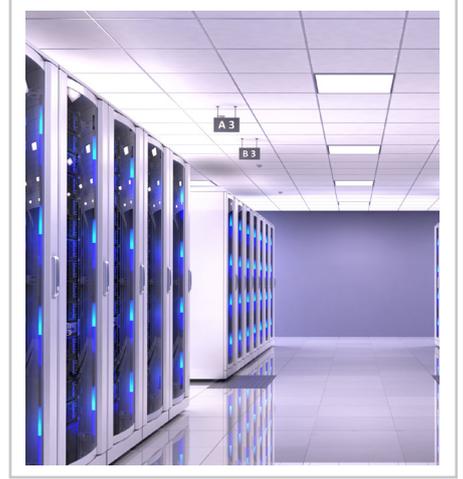
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ABB opens comprehensive UPS test center

New facility at ABB's power protection factory in Switzerland allows full testing of next-generation UPS systems



(From left to right): Remo Lütolf, Managing Director ABB in Switzerland. Tiziano Ponti, Major of the community Gambarogno, Ticino. Michele Sargenti, Managing Director ABB's Power Protection.



With a well-attended official opening on June 8, 2017, ABB opened its brand-new test facility for uninterruptible power supply (UPS) systems at the UPS factory in Quartino, Switzerland. With this new facility, ABB has taken a significant step forward in strengthening its position in the global power protection market.

Remo Lütolf, Managing Director of ABB in Switzerland, welcomed international guests from the data center and critical power industry to the factory for the official opening of a state-of-the-art UPS test facility.

The inauguration of the new amenity opens up a new chapter in ABB's power protection capabilities: Now, even the largest UPS configurations can be tested as one system. This means that when they are delivered to the customer, they can be quickly and smoothly integrated into the power infrastructure. The test center is designed with ample capacity to accommodate large UPS sizes and turn key critical power solutions. The test area is laid out so that testing with extended UPS systems – including, for example, energy storage, input and output switchgear, power distribution units (PDUs) and static transfer switches (STTs) – can be accommodated. This new capability will enhance ABB's ability to address trends toward bigger, more power-hungry data centers and industrial plants that require ever-larger UPS systems.

As part of the opening event, guests were given a live demonstration of the test facility's capabilities. The demonstration was viewed from the comfort of the attached conference room,

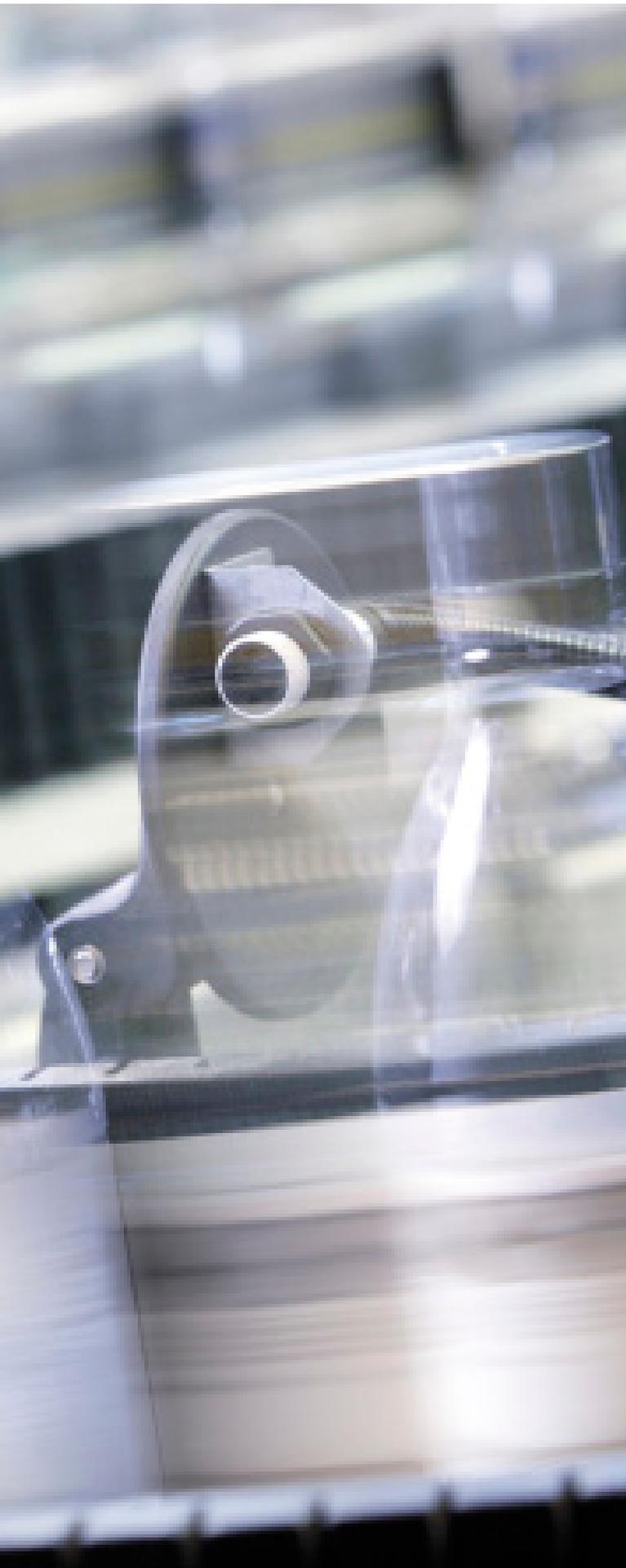
which has large windows that overlook the test bays so that customers and engineers can monitor the entire test process. The proximity to the Factory Acceptance Test (FAT) area, and teleconference and video sharing facilities, allows remote FATs to be performed.

The guests at the inauguration ceremony were also made aware of the environmental advantages of the test bays. The use of a power-loop principle implemented into the test infrastructure tremendously reduces the power consumption from the public electrical network and allows approximately 90 percent of the electrical energy to be re-used.

Read more about the UPS test center on page 18.







ABB's PCS100 AVC-40 for China's Food and Beverage industry

ABB power quality products will ensure stable and efficient operation of a leading dairy manufacturer production line

ABB recently won an order to provide a power quality solution for the manufacturing system of a leading dairy company in China. This order marks a significant breakthrough for ABB's power quality business to enter China's food and beverage industry, which implies attractive market size and growth potential.

Following the trend of higher automation levels and increasing demand of production continuity in the dairy industry, stable power quality has become a major lever for the company to enhance its operational efficiency. Voltage sags, a threat to the sterile environment of dairy production line, may possibly lead to a waste of raw milk and the extra labor to clean production materials like milk containers. As a result, the production interruption usually takes more than four hours to get resumed, meaning a great deal of time and cost loss for dairy enterprises. Therefore the company decided to upgrade and transform its production line in order to ensure that important loads are immune from voltage sags with power protection devices.

The PCS100 AVC-40, ABB's Active Voltage Conditioner 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.

“ABB's active voltage regulator PCS100 AVC-40 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, our sales team had followed up and provided guidance for technical solutions at the customer site for about one year. Our relentless execution convinced the customer of ABB's products and service capability, and they finally chose our solution.” By shortening downtime substantially, reducing wastes, improving product quality, avoiding production losses and lowering the requirements for equipment maintenance, ABB's power quality products help customers in the food and beverage sector improve their profitability.

In recent years, the global food and beverage industry has developed rapidly and players in the market are speeding up their upgrading and updating to optimize productivity and product quality for higher competitiveness, which opens up new business opportunities for ABB. A research report done by Deloitte shows that the market scale of domestic food and beverage industry, closely related to ABB businesses, will increase from US \$1.7 billion in 2013 to more than US \$4.1 billion by 2020. The growth will largely come from such segment as dairy products, beverages and meat processing.

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

Web: www.abb.com/ups

Email: powerconditioning@abb.com





Maximizing productivity and saving costs?

Certainly.



The PCS100 AVC-40 is designed for sag correction in large commercial and industrial applications. Available in ratings from 150 kVA to 3600 kVA, the PCS100 AVC-40 offers continuous protection from the most common utility voltage problems found in modern power networks. Failsafe worry-free operation even in harsh electrical environments and a faster return on investment due to low operation costs will ensure your business is protected from power quality events. Visit www.abb.com/ups

ABB

Showcasing ABB's technology at a data center event in Taiwan

On May 19, 2017 ABB's Power Protection supported a presentation at an intelligent data center event held in Taipei, Taiwan.

This event was a joint effort between ABB in Taiwan and Rittal (datacenter solution and cabinet manufacturer) to promote innovative solutions in the data center market. As Rittal was the main sponsor, they conducted most of the presentations. ABB's Power Protection had a 45 minute period, which was split into two time slots: a 30 minute presentation on the new PCS120 MV UPS and a 15 minute presentation on the DPA-500/MNS-UP dual conversion UPS.

Eduardo Soares, Technical Sales Support at ABB's Power Conditioning in Napier New Zealand said, "overall the event had about 100 participants with a highly varied audience, including data center consultants, service personnel, as well as university graduates that are just starting to step into the data center market. There was good feedback from the audience, and overall it was a great event to create product awareness in this key market."



Eduardo Soares presenting the new PCS120 MV UPS





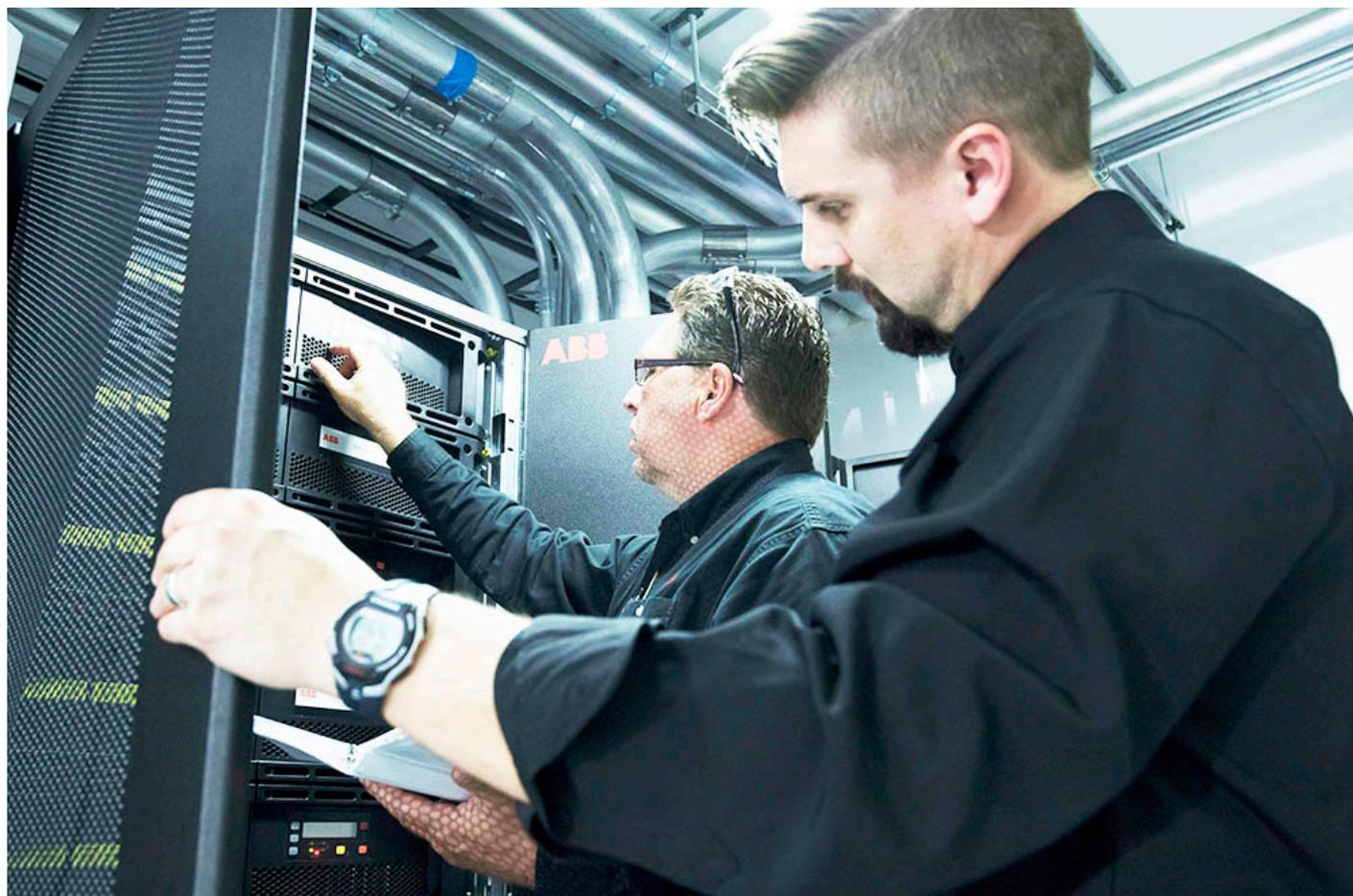
PCS120 MV UPS. Complete power protection at medium voltage.



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



Solving a data center's need for right-sizing and simple scalability



Click on the video to see Gadi Has, Director of Operations at Volico Data Centers, taking time out at the 2017 ABB Customer World US event to share how they replaced an aging UPS system with ABB's Conceptpower DPA 500. Volico uses ABB service and preventative maintenance to support their entire infrastructure including using ABB's advanced digital services to automate the control, monitoring and response of their data centers.



[View the video](#)

Volico Data Centers made a smart decision when they implemented their pay-as-you-grow strategy. Rather than building out their entire data center, their initial facility was built with a plan to grow as needed. Unfortunately when they were ready to grow they discovered their UPS lacked the scalability and flexibility needed to support that growth. Faced with a major roadblock to expansion, Volico reached out to ABB for help.

“We have a long history of providing both maintenance and product to Volico,” explains Amanda Trumble, Regional Sales Manager, Power Protection for ABB. “When they contacted us about their situation, we were able to provide technology that perfectly fit their current need and offer easy scalability to match future requirements for scalable growth with high availability.”

That technology is the Conceptpower DPA 500 UPS, which is suitable for large and mid-sized data centers, server rooms, and other IT infrastructure. While only recently available in the US, the technology has been successfully proven in other markets globally. It features an architecture that ensures the highest level of both reliability and availability by providing true, total redundancy across the UPS modules.

“The ABB modular UPS gave me exactly what our data center needed to enable current and future expansions. At the end of the day, ABB provided the best solution to keep Volico up and running.”

Reliability

“DPA stands for decentralized parallel architecture,” explains Joergen Madsen, Business Development Manager, Power Protection. “The main appeal of this UPS design is that it proactively eliminates or dramatically reduces single points of failure. Every power module is its own fully independent entity, with its own control and all needed hardware. As long as there are more modules than needed to supply the load, one or more modules can be lost with no power interruption. “Other

modular products contain shared components which present single points of failure. The modules of the Conceptpower DPA 500 are totally independent, offering full redundancy.”

Efficiency

Other UPS suppliers achieve the same >96% energy efficiency that the Conceptpower DPA 500 delivers, but not at the same reliability levels.

“Many data-center owners and managers like me expect – and increasingly demand – both high availability and efficiency,” says Gadi Hus – Volico’s Owner and Director of Operations. “That’s what’s delivered in the Conceptpower DPA 500.”

“A decade ago, UPS efficiency was in the high 80% range,” says Madsen. “The resulting, high losses were a costly toll, but data center managers accepted them in return for reliable, quality power. The Conceptpower DPA 500 technology provides Volico with the best of both worlds; high online efficiency combined with very high reliability.”

Scalability

What prompted the search for a new UPS supplier was Volico’s need to expand, something Hus will be able to do with ease in the future. His initial installation consisted of two frames containing 10 module sets, delivering 1 MW. Adding more power will be as easy as inserting another module.

The system is based on unique slide-in UPS module sets, each rated at 100 kW. Modules can be inserted or removed from the frame while the system is running securely in double conversion. The Conceptpower DPA 500 can scale vertically, up to 500 kW in a single frame, and horizontally by adding up to six parallel frames, to a total of 3 MW of power. With ABB’s new modular UPS solution, Volico’s power needs will be easily covered – up to the full potential capacity of the data center.

3 MW of scalable power



Cost of ownership

Volico can expect lower operating costs because the Conceptpower DPA 500 provides low total cost of ownership compared to other UPS systems. The savings begin with speed and ease of installation. The straightforward front access only design, combined with a true three wire plus ground system, simplifies every step of deployment. Additionally, the Conceptpower DPA 500's "online-swap modularity" (OSM) capability, allowing modules to be inserted and removed with the UPS running, simplifies routine maintenance and eliminates service-related downtime.

Finally, but especially critical to Volico, is the pay-as-you-grow capability. The operator can invest in additional capacity in 100 kW increments as needed.

The Conceptpower DPA 500 offers reliable redundant power in a very compact footprint, and significant savings on operating cost thanks to its very high online efficiency.

Summary

For Volico, the Conceptpower DPA 500 perfectly resolved the short-term need to replace a system that was a barrier to expansion, and lays the foundation for future growth.

"Many things played into the success of this project," says Hus. "ABB's modular UPS gave me exactly what our data center needed to enable current and future expansions. At the end of the day, ABB provided the best solution to keep Volico up and running."

Solution details

Each module includes:	
	<ul style="list-style-type: none"> - True online double-conversion UPS - Decentralized module isolator - Built-in back-feed protection - Individual module display with LED mimic diagram
Each frame includes:	
	<ul style="list-style-type: none"> - UPS input and output terminals - Battery breakers and output isolation switches for each module set - HMI interface with mimic diagram and LCD providing information in 13 languages - Communication interfaces (RS-232 and USB ports, I/O dry contacts and external bypass interlock) - Top or bottom cable entry



[View the video](#)

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Intelligent data needs intelligent power?

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The data center industry is at the forefront of the fourth industrial revolution, and demands for availability and efficiency are at an all-time high. You need mission critical technology and solutions that enable reliable, flexible, and secure operations. Whatever the challenge, you'll find future intelligent thinking at the heart of our power and automation offering. Intelligent data needs intelligent power.

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ABB

A test center for large-scale UPS systems

New facility at ABB's power protection factory in Switzerland allows advanced testing of high-power UPS systems



There is a clear trend in the critical power industry for larger scale installations. These large sites need a bigger power infrastructure – and a bigger uninterruptible power supply (UPS) to match. ABB's comprehensive UPS test facility at its power protection factory in Switzerland can handle the biggest UPS systems around and is dimensioned to accommodate the even larger sizes expected in the future.

A comprehensive test facility

To make the integration of an ABB UPS into the customer's power infrastructure a smooth and simple operation, the entire UPS configuration – including ancillary system components such as switchgear and static transfer switches – is tested as one integrated unit before it leaves the factory.

ABB's UPS customers are purchasing UPS systems that are far larger than before. For example, data center operators are already at the 2 to 3 MW level and systems beyond 3 MW are beginning to appear. ABB's new UPS facility ensures that these, and future, even larger, UPS systems can be completely tested before delivery.

The most important function of the facility is the customer factory acceptance test (FAT) and the layout has been designed with this in mind. Not only that, but the facility also provides a unique tool for new product development, special product testing and type tests.

A full suite of test tools

ABB's UPS test facility is located in its power protection factory in Switzerland. The center boasts five test stations, each with an AC capability of 800 kW (4 MW total) and a DC capability that can simulate 480 kW of battery power (2.4 MW total).

Real batteries can be used too: the test facility has 200 batteries of 90 Ah each, which provides 10 minutes of autonomy at 500 kW. The batteries can be set up in a one- to four-string configuration, with 40 to 50 batteries per string.

The AC nominal test voltage provided can be 400 VAC (variable to – 30%) or 480 VAC (variable to +10%) – all at 50 or 60 Hz, variable to 35/70 Hz with ± 0.5 power factor.



In addition to accommodating testing at 400 VAC, and standard voltages for Europe and other IEC markets, the facility can be adapted to perform tests at 208 VAC and 480 V, typical for the North America area and other UL markets.

This full spectrum of power availability enables even the largest and most varied UPS systems to be fully tested.

Flexible layout

The test area is laid out so as to make it easy to test extended UPS systems – including, for example, UPSs, input and output switchgear, power distribution units (PDUs) and static transfer switches (STSs). The facility also features dual input feed for large UPS systems; up to 10 UPS units in one parallel system; and static system bypass module tests up to 5000 A.

There is ample capacity to accommodate future, larger UPS sizes, which enhances ABB's ability to address data center and industry trends to larger-sized installations.

Test regimes

Naturally, system requirements differ from customer to customer. To cover all possible customer test requests, a fully comprehensive suite of test procedures is catered for in the test center:

- Visual inspection (quality, safety, labels and markings, etc.)
- Insulation resistance and ground continuity
- Steady-state tests (input/output stability, harmonics, efficiency, standard nonlinear load, variable cos phi, etc.)
- Dynamic tests (changes of operating mode, step load, overload, fuse clearing, etc.)
- Transformer heat run
- Failure simulations (e.g., over-temperature tripping, battery failure, etc.)
- System tests (load sharing, faulty module isolation, etc.)
- Burn-in test
- Connectivity test
- AC load short-circuit test: individual phases or all together (phase to phase, phase to neutral, etc.)
- AC mains failure test: low-impedance and high-impedance mains failure capability
- AC UPS without neutral test: up to 2 x 800 kVA



Witness test experience in comfort and modern ambiance

ABB places great value on customer participation at every step of the product delivery process, from initial design to final commissioning, and beyond. This is why the ABB UPS test facility includes a fully equipped conference room. In this comfortable location, which has large windows that overlook the test bays, customers and ABB engineers have a safe environment in which they can closely monitor the entire test process. As well as direct visual access, measurements from the test bays are displayed in the conference room.

The test center is right beside the FAT area - where customers participate in the final testing of their products before they are shipped. In case travel is not convenient or the customer wants to share the FAT event with others, the facility is fully equipped with teleconference and video services to allow customer participation in FATs, or any part thereof, from anywhere on the planet. FATs are recorded for future forensic analysis, record keeping and traceability.



Electronic load saves energy

By their very nature, large power set-ups consume a lot of energy. ABB places great emphasis on lowering emissions and that is why ABB's UPS test equipment has been designed to recycle the energy used during testing. The test power is circulated around electronic loads, which means only 10 percent of the actual power used in the test is taken from the public mains.

Keeping an eye on the future

UPS system power specifications are increasing year-by-year, as applications grow ever more power-hungry and complex. As one of the few major players in the UPS market, ABB has, with this test facility, a tool to reinforce the ability of the company to successfully design, build and test high-quality UPS systems for applications involving the highest power applications.

Power protection for the next-generation data center



The quantity of data in our society is growing exponentially. Social media, e-commerce, Industry 4.0, business transactions, leisure, public administration and social security are just some of the aspects of modern life that generate a torrent of terabytes around the globe each and every day. This deluge of data has to be stored in a safe and rapid way, and has to be retrievable just as rapidly - 24/7 and 365 days a year - so it can be utilized in one of the many different applications upon which our day-to-day life depends.

What happens in the space of one minute in this world of data is truly astonishing: 16 million text messages and 156 million e-mails are sent, over \$750,000 spent online, more than 3.5 million terms searched on Google, 450,000 tweets exchanged - and these represent just a tiny fraction of the many thousand transaction and interaction types hosted by the Web. As the

population continues to grow in number and wealth, and as the number of ways in which data is used multiplies, so too will this ocean of data.

Our participation in this data world is often unconscious but, nevertheless, we are experiencing the beginning of a Data Era and the participation of each and every individual in this new era contributes to its further development, progress and shaping.

Fundamental information technologies such as virtualization or cloud services enable improved utilization of the existing infrastructure so that increasing data traffic demand can be managed better. Nevertheless, the exponential growth of data volumes forces us also to build new data center infrastructures.

The inescapable fact is that more data will require more physical memory locations and these memory locations will require more electrical power distribution equipment capable of supplying continuous power at the right power quality level. In the world of data storage, the imperative is to guarantee 24/7 instant data availability. Everyone expects their data to be available – now!

Whether we are talking about telecom data center spaces, enterprise solutions, co-locations or cloud/business services providers (the latter - typically hyper-scale environments - show the highest growth rate according to the latest market research), all data centers spaces and operators have a set of common requirements, the most important being:

- Business continuity and zero downtime: All systems have to be always up and running, and whatever happens on the infrastructure side, load-drops are not an option. This is to guarantee a safe data transaction, storage and recovery.
- Reduction of the investment costs through higher energy efficiency. Better efficiency reduces energy losses and operational costs, and at the same time eliminates the capital investment that would be needed to purchase higher-performance temperature conditioning systems (which heavily impact upfront investments).
- State-of-the-art general electrical performances to guarantee the highest level of electrical power quality, the highest level of voltage stability at the servers' input, the lowest level of harmonic pollution on the electric mains, circular power diagrams to reduce the system level oversizing needed should the system operating power factors drift off unity factor.
- Easy operation and serviceability, enhanced by condition monitoring, remote diagnostics, and simple man-machine interfaces.
- Cyber security.

Also, there are many other specific requirements, which vary by customer, region and segment and which will influence the product development roadmaps for the next five to 10 years for all players active in the field of power protection and critical power equipment. Examples of these requirements are:

Customer-driven requirements:

- The top 10 data center space players are showing more international presence (some of them are already global players) and this leads to a requirement for a certain level of "systems standardization" to enable faster deployment when building new facilities, as well as to overcome local electrification differences. Ideally, electrical power systems will be designed to flexibly cover any voltage, any frequency and any electrical configuration.

- As data flow increases, so does the data center power requirement and, consequently, the power levels that have to be supplied by the power protection equipment. While a few years ago a 10 MW data center would have seemed large, today 50 to 60 MW facilities are becoming standard. These facilities are typically structured into several data halls that each consume around 3 MW – a level likely to be exceeded in the next three to five years.

Regional requirements

- It is a fact: space has become a real issue, especially in Europe and Asia. In Singapore, Shanghai, London, Frankfurt, etc., buildings cannot easily expand horizontally and vertical expansion is also limited. Therefore, for all major UPS players, power protection equipment form factor has become a fundamental parameter that determines design complexity.
- In some regions - eg, the EU - there is increased interest in elastic infrastructures that can dynamically optimize the power consumption distribution based on real-time server loading conditions, without compromising system availability.
- Requests are now being made more often to use data center energy storage capabilities to interact with the public mains and support or facilitate ancillary functionalities like grid frequency regulation, peak power shaving, and reactive/active power conditioning for smart grid integration.

Segment requirements

- Many data center operators insist that the equipment they bought is validated at full design power during the FAT. Further, validation is often also required within the overall power distribution train – ie, together with upstream/downstream distribution equipment, static transfer switches and generator sets (to validate UPS synchronization on gen-set kick-in).
- Industrial operators insist that power protection equipment suppliers validate the sold systems under all possible variable loading conditions (including load steps, transitions, power factors, etc.), in addition to validating the performance of the overall system, including overloads, at higher operating temperatures (a very critical requirement in, for example, offshore O&G).

Most likely, the next generation of UPS products will include all the abovementioned requirements – and certainly some additional ones. This raises another issue: Suppliers of critical power products will have to be equipped appropriately so they can properly validate the equipment they sell against very demanding site acceptance test specifications.

It is to fulfill this emerging demand that we at ABB have invested heavily over the past 18 months in our new test arena. Our new facility will enable us to validate - in front of our customers - all sold equipment against the most challenging site acceptance test specifications and customer special wishes.

Objective, Innovation and Future Trends. These are the three-fundamental values we have been thinking of while addressing the concept design phase of the newly introduced test arena:

Objective

- We aimed to create a facility that enables us to test:
 - All voltages, frequencies and network configurations found in low-voltage distribution networks around the world:
 - Starting from 120 V to 480 V and passing through 400 V and 440 V.
 - At 50 or 60 Hz or any other value that could be of interest for the customer.
 - Three phases with three wires, three phases with four wires and even single-phase configuration.
 - Any power factor ranging from 0.5 to unity, leading or lagging.
 - Any full system or combined test configuration
 - Not only focusing on the UPS but eventually integrating a full data center power distribution system including upstream distribution, downstream distribution, static transfer switches, PDUs, generators, etc.

Innovation

- We aimed to have a “green” architecture, as we wish to preserve our future: Thanks to a power circulation loop, we can minimize the actual power consumed from the public network.
 - The power taken from the public mains is, at maximum, only 10 percent of the actual power circulated into the UPS.
- We introduced remote FAT functionalities and possibilities.
 - Businesses are becoming more global. Our customers are located all around the globe, which means that some customers might prefer to run their FAT via our IT/video-streaming system. This way, they can sit comfortably in their own facilities while the system is under test in Switzerland. This is ABB Ability.
- We wanted to have a power infrastructure that is state-of-the-art in terms of electrical safety and comfort for our operators and our customers so long testing programs, which can exceed three working days, are made easier.
 - We designed the test arena in such a way that the FATs could be assisted by our customers from a comfortable and safe environment (conference rooms) without them missing any important part of the FAT.
 - The operators will remotely control the overall system through an automation layer, implemented on a LabView platform.

Future Trends

As critical power applications are becoming more and more power hungry, we wanted to have a:

- Versatile environment that could enable us to test any UPS size spanning from a few tens of kW to a multi-MW system, including overload conditions
- Test area versatile enough to enable the implementation of important future requirements for smart grid Integration
- Test area real enough to demonstrate our systems’ behaviors while connected to any energy storage (batteries, Li-Ion, flywheels, external generators) in common or independent strings configuration.

The construction of our test arena was an exciting and complex journey, very fruitful in its brainstorming phase, to make sure that all possible important customer values were properly captured and implemented in an innovative way. We wanted to have an environment that is:

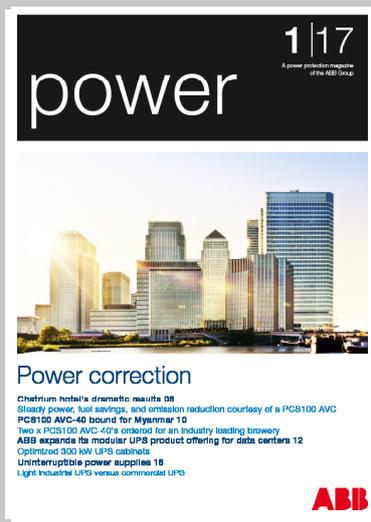
- Flexible not only from a customer perspective but also for our daily operational needs, which includes the capability of running more than one system level test at the same time.
- Able to meet different customers’ specific requirements, independent of the final application segment (data centers, industrial, transportation, etc.) and region and to accommodate all voltage and frequency levels that appear in low-voltage applications around the world.
- Green: to commit to our society for a smarter and better utilization of energy resources
- Available - achieving 100 percent uptime through modularity to enable 24/7 validations, with no production stops or delivery delays.
- Capable of integrating ABB Ability functionalities.
- Ergonomic and safe for our customers.

Today, we are proud to say, “we made it.”

Author:

Dr. Antonio Coccia, ABB Power Protection SA
Datacenters Segment & Projects Operations Manager

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

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