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A power protection magazine
of the ABB Group

power



Continuous power

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PCS100 AVC-40 installed in Abuja, Nigeria

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Power and productivity
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4|16 power



Holger Hannamann

Global sales manager

Power Conditioning Products

Discrete Automation and Motion division

Hello and welcome back from the summer holidays to our readers in the northern hemisphere. While it was a bit quieter in terms of customer contacts we had no signs of less activity in orders. We are also shipping a few big systems out of the door of the Napier factory in New Zealand this month. One of the biggest will be a 6 MVA static frequency converter (PCS100 SFC for 50 Hz -60 HZ conversion) for a shipyard in Singapore. This customer has already an 8 MVA SFC system operating since 2012 and came to Napier for the FAT (factory acceptance test) of the second system in early August.

The semiconductor industry is currently very active worldwide and it is nice to see an increasing activity of this industry also in Europe. Hopefully soon we can report some success in this area.

A case we already can talk about is in Malaysia. After the successful evaluation testing of a small 400 kVA PCS100 AVC-40, we received the first order for 3 MVA unit from a new semiconductor customer in Malaysia. Well done team! We know there is more in your pipeline.

Some of you will recall the mushroom factory in Oman. Our partner, MultiTech in Oman, sold an AVC to a mushroom factory and the unit is now over 12 months in operation. From typically 2-3 shutdowns per month it changed to not a single one since the unit has been operating. Please read the story to see what the customer has to say.

In August last year we had PCS100 product training for new partners in the Middle East/Africa region. It was there I met David Akolawole Odunlami from PowerCell in Nigeria for the first time. We had good technical discussions during the two training days. Only one year later we can report the successful commissioning of the first PCS100 AVC-40 in the country. We are very happy to have you in the team!

It was also about one year ago that we commissioned two 1500 kVA AVC's to protect a large hotel in Yangon, Myanmar. We worked with the customer for about two years before they finally placed an order. After constant performance issues with transformer based voltage regulators, they swapped them for AVC's. We have now received feedback which we want to share with you. The hospitality industry is a good market for AVC-20's.

Our team in Germany has a really nice story to tell. Features like small footprint, scalability, grow as you grow and the decentralized parallel architecture of our DPA UPScale made the difference to get the order for a system upgrade from Krombacher Brauerei (brewery). They are the number one Pils-type brewer by volume in Germany. Now after 1.5 years in operation, it is time to reflect on the success.

We also have an article about ABB's rail specific power protection systems. We will be at InnoTrans, the largest international trade fair for transport technology, which will be held in Berlin 20th September. So if you want to find out more come and visit us at stand 310 in hall 9 – we hope to see some of our readers.

Enjoy this issue of *power*.



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09 First Active Power Conditioner commissioned in Nigeria



10 AVC's installed in Chatrium Hotel, Myanmar

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Chatrium Hotel has installed AVC's to ensure continuous power supply and happy guests

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Powering the railways

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3000 kVA, AVC-40 bound for Malaysia



ABB received an order from ABB in Malaysia for a 3000 kVA, AVC-40, which will be installed in a leading semiconductor test and assembly company.

ABB's customer is one of the world's largest providers of independent semiconductor manufacturing services in assembly and test. The team in Malaysia started the sales process at the beginning of the expansion project. ABB's local Sales manager arranged for ABB Malaysian demonstration AVC to be installed as a trial system for a number of months. The customer was happy with the AVC's performance which then helped in the sale process.

Taking the results into consideration a total cost, of ownership comparison (TCO) against the competition was tabled and was accepted by the company's purchasing team, this was key to winning the order.

Voltage sags have been identified in many international studies as one of the most costly power quality problems for continuous process industry. They are very difficult for the electricity utilities to eliminate from the most robust power systems, even at transmission connection levels. Typically caused by lightning and system faults, sags will propagate quite large distances through the electrical network causing

sensitive loads to trip. For some customers this can just be a inconvenience, but for many it results in expensive product loss and downtime.

The PCS100 AVC-40 is an active voltage conditioner designed to solve these problems. It is a high performance power electronic system, designed for industrial and large commercial applications. It responds instantly to power quality events, providing continuous regulation of voltage.

To find out more about ABB's power protection solutions visit www.abb.com/ups

Mushroom farm eliminates shutdowns with AVC

A major mushroom cultivator based in the Gulf has installed a PCS 100 AVC-40 to help eliminate costly shutdowns

Growing premium quality fresh mushrooms in the desert climate has been fraught with challenges in the form of high ambient temperatures, fluctuating humidity and lack of sufficient quantities of raw materials traditionally used for mushroom cultivation. But the company has consistently overcome these challenges by making optimum use of alternate raw materials it has also learnt how to control the adverse impact of harsh climate conditions through perseverance and consultations with experts. Over the years the, the company has thus mastered the unique art of growing mushrooms in the desert.

One of the key factors in maintaining quality is ensuring that there is a consistent power supply to keep the growing environment at optimum temperature and humidity. Any fluctuation can be extremely costly.

The PCS100 AVC-40 has now been installed for over 12 months and during this period, the factory experienced over 30 major voltage sags and swells. There was no interruption to the instruments, motors, controllers and building automation systems thanks to the AVC-40

The production manager was very pleased with the results without the AVC "we would have experienced a lot of inconvenient and costly interruptions to our business"

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

Web: www.abb.com/ups/pcs100

Email: powerconditioning@abb.com





Small footprint and increased productivity?

Absolutely.



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

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First Active Voltage Conditioner commissioned in Nigeria

ABB in Nigeria stabilizes voltage supply of NNPC

ABB in Nigeria won an order worth 40 kUSD from Nigerian National Petroleum Corporation (NNPC) to improve and stabilize the quality of its voltage supply at its headquarters in Abuja. The order was won in April, 2016 and delivered in June 2016.

Due to severe instability of Grid Power supply in Nigeria, the customer needed to improve the quality of their power supply and stabilize the incoming voltage rate which reached 50% deviation in sags and peaks. This occurred constantly throughout the daily operation.

Scope of supply included the installation and commissioning of an AVC-40, PCS100 family, which is considered to be one of

ABB's leading advanced solutions and technology in power quality improvement.

The customer now enjoys stability of voltage supply thus avoiding breakdown of air conditioners, lifts and other operating equipment and appliances.

Feedback from the customer was a very positive. "With installation of state of art AVC-40 system of ABB, we are confident of having stable incoming power to NNPC, HQ. We hope ABB will be able to implement many more such solutions in Nigeria, in particular at NNPC installation", said Ms. Esther Nnamdi. Managing Director of NNPC Retail Division.



Left to right; Ramesh Jain DM Manager ABB, Enger Bello GM Operations, NNPC Retail, Mrs Esther Nnamdi-Ogbue, Managing Director, NNPC Retail, Akolawole Odunlami, Head of Sales and Marketing, Power Cell Ltd, Seun Ajayi, Field Engineer, James Ajayi, Business Executive Powercell Ltd.



Chatrium Hotel, Myanmar

Chatrium Hotel, Myanmar use
AVC's to ensure continuous
power supply



In the first of its kind in Jardine Engineering Myanmar Co. Ltd handed over two fully commissioned AVC's to the Chatrium Hotel in January 2016.

Chatrium Hotels and Residences three-year vision was to add two more properties, in Bangkok and Phuket, along with expansion of its existing property in Yangon, Myanmar. The renovation and expansion of the Yangon property required technology to protect the automation and control equipment.

The renovation and expansion of the Hotel was designed and managed by the Thailand based contractor – Jardine Mathe

son. Due to the intermittent power supply in the country, much of the hotels automation and control equipment had started to badly deteriorate, resulting in high maintenance costs.

They had previously been using some unknown AVR's which had slow response times and efficiency rates. The requirement was for fast response technology with a high efficiency rating.

ABB in Malaysia had an enquiry from a channel partner in Thailand - PMK who had been working closely with the consultants. The consultants specified AVCs into the Terms of Reference (TOR) as well as designing space to house the AVCs. During the bidding process, the contractor tried to introduce servo motor drive autotransformer technology from Italy however it could not match the response rate specified in the TOR as well as being able to fit into the space already designed. Having a good relationship with the channel partner and getting involved with the project in the initial stages certainly paid off.

ABB's solution

The solution was two AVC's with two years warranty and training.

Mr WeratamPong-ampai (Project Manager) is very happy with the performance to date.

The chief engineer Mr Chit Min said, "the AVCs are working very well and are protecting the facilities within the hotel. The AVC has much better performance compared to the previous traditional voltage stabilizers. The old ones were large with lots of mechanical parts and were difficult to maintain. If there are no power outages the AVC works well on the sag as well".

ABB's PCS100 AVC is an inverter based system that protects sensitive industrial and commercial loads from voltage disturbances. Providing fast, accurate voltage sag and surge correction as well as continuous voltage regulation and load voltage compensation, the PCS100 AVC has been optimally designed to give required equipment immunity from the level of voltage sags expected on the AC supply network.

To find out more about ABB's power protection solutions visit www.abb.com/ups



A continual, regulated supply of utility voltage?

Absolutely.



The PCS100 AVC-20 is a power protection system designed for use in industrial and large commercial operations in environments where an unstable network or utility voltage affects productivity. The system ensures a continual, regulated supply of utility voltage where the electronic infrastructure is stressed, unstable or unreliable.

Power and productivity
for a better world™



PCS100 AVC-20

Active Voltage Conditioner for continual voltage regulation - 250 kVA to 3,000 kVA

The PCS100 AVC-20 is a power protection system designed for use in industrial and large commercial operations in environments where an unstable network or utility voltage affects productivity. The system ensures a continual, regulated supply of utility voltage where the electric infrastructure is stressed, unstable or unreliable.

Benefits to your business

+ Increase operational reliability

- Achieve consistent processes
- Increase the lifetime of your equipment
- Experience fewer equipment malfunctions
- Improve the quality of products and services
- Reduce usage of expensive critical back-up systems

A fluctuating voltage supply affects productivity and the consistency of operations, leading to a reduction in the quality of products and services. It can also lead to increased wear on machinery components, resulting in a greater number of malfunctions and a reduced life expectancy of equipment. The PCS100 AVC-20's fast, accurate voltage regulation secures productivity by improving consistency in operations and reducing the impact of fluctuating voltage on equipment and production.

+ Reduce costs

- Optimize your energy usage
- Improves motor efficiency
- Better use of your resources
- Increase your usage of cheaper utility power

Brownouts, over-voltages and an unbalanced voltage supply could cause motors in equipment and machinery to function inefficiently and result in poor use of resource, in terms of staff, materials and energy consumption. It can also cause reliance on costly back-up systems, such as diesel generators. The PCS100 AVC-20 ensures a regulated supply of voltage, helping streamline operations and optimize resource to reduce wasted capacity and improve the return on operational investment.

To find out more:

Web: www.abb.com/ups



PCS100 AVC-20 Active Voltage Conditioner





Ready to toast

UPS systems by ABB protect Krombacher's production, filling and logistics center in Krombach.

The Krombacher Brauerei (brewery) is one of the leading premium breweries in Germany. Installed in autumn 2015, three DPA UPScale ST UPS systems by ABB protect the company's production, filling and logistics center in Krombach.

The Krombacher Brauerei is the number one for Pils-type beers in Germany. In 2015, the brewery delivered an all-time high in terms of output and sales revenues and sold 4.26 million hectoliters of Krombacher Pils alone, their flagship product. In order to ensure a continuous production and logistics of such large quantities, the supply of uninterruptible, clean i.e. undisturbed power has to be provided.

With the decision for the replacement of the aged UPS installation with state-of-the-art UPScale ST systems in 2015, the Krombacher Brauerei made the step towards modular UPS technology. The old systems required too much space and did not feature redundancy and decentralized parallel architecture.

Timo Kleinsorge, from Krombacher Brauerei, not only provides project support for electrical engineering, but was also involved in finding suitable UPS suppliers. He says: "When awarding such a contract, a coherent technical concept and the optimal price-performance ratio are decisive. ABB could present a convincing overall concept which ultimately had the competitive edge". He praises the ABB's efforts: "The project execution was absolutely top-notch."

One important argument for the ABB solution was the decentralized parallel architecture (DPA) of the DPA UPScale ST modules. Each system consists of autonomous UPS modules containing the complete hardware and software required for the operation of the overall system. In the worst-case event when one UPS module fails, the overall system continues operation with the capacity of one module less (N+1-redundancy).

"In regard to fail-safety, the concept of a modular exchange was the crucial criteria. Using 10 or 20 kVA modules, each system featured good scalability according to the respective power requirements", Timo Kleinsorge states.

For ABB's Automation Products GmbH this project was the first installation of a UPS system in a brewery. The package included delivery, assembly and commissioning of the three UPS systems, including the battery cabinets. In the event of grid disturbances, failures or even loss, the systems switch to battery operation.

In November 2015, the new systems were put into operation. The first UPS system is located in the filling and logistics center of the brewery. The DPA UPScale ST120 replaces several small UPS systems, which previously backed up separate areas, such as data processing center, filling, logistics etc. The second system, a DPA UPScale ST120 protects process-relevant servers of the brewery's production facilities and secures the cellar warehouse, control rooms and other process plants.

The smallest system, a DPA UPScale ST80, is installed in the basement of the gatehouse where low ceilings and narrow passages favored a compact design.

Timo Kleinsorge sees the benefits of the new solution in an

increased flexibility, availability and cost-effectiveness: "The systems are optimally designed for the required performance and not over-dimensioned. Through modular technology, we can easily expand the systems without having to purchase a new UPS system. Furthermore, the N+1-concept provides maximum availability".

To find out more about ABB's UPS solutions for the food and beverage industry, please visit:

Web: www.abb.com/ups



Timo Kleinsorge (left) and Area Sales Manager Andre Kostka of ABB (right) in front of the new DPA UPScale ST120 in the filling and logistics center.



Powering the railways

Reliable UPSs for railway applications

Power disruptions in rail networks are not just inconvenient; they are also serious threats to health and safety. ABB's UPS systems are designed to keep rail networks moving safely and promptly, and to provide maximum reliability in a way that is energy-efficient and cost-effective. ABB has delivered rail-specific power protection solutions for many years, and has extensive experience designing, delivering and supporting standard and specific UPS solutions for above-ground and underground rail installations around the world.

Power disturbances come in many different forms. In addition to outages and blackouts, power voltage can sag or swell over short periods – or over longer periods, resulting in brownouts and overvoltages. Electrical noise can appear on lines, or frequency variations, or harmonics in the voltage, but a UPS system reconciles any of these problems by conditioning incoming power to eliminate spikes, swells, sags, noise

and harmonics. ABB's has a wide range of UPS systems that are used in rail networks and metro systems to ensure reliable, stable and continuous power for many different rail applications.

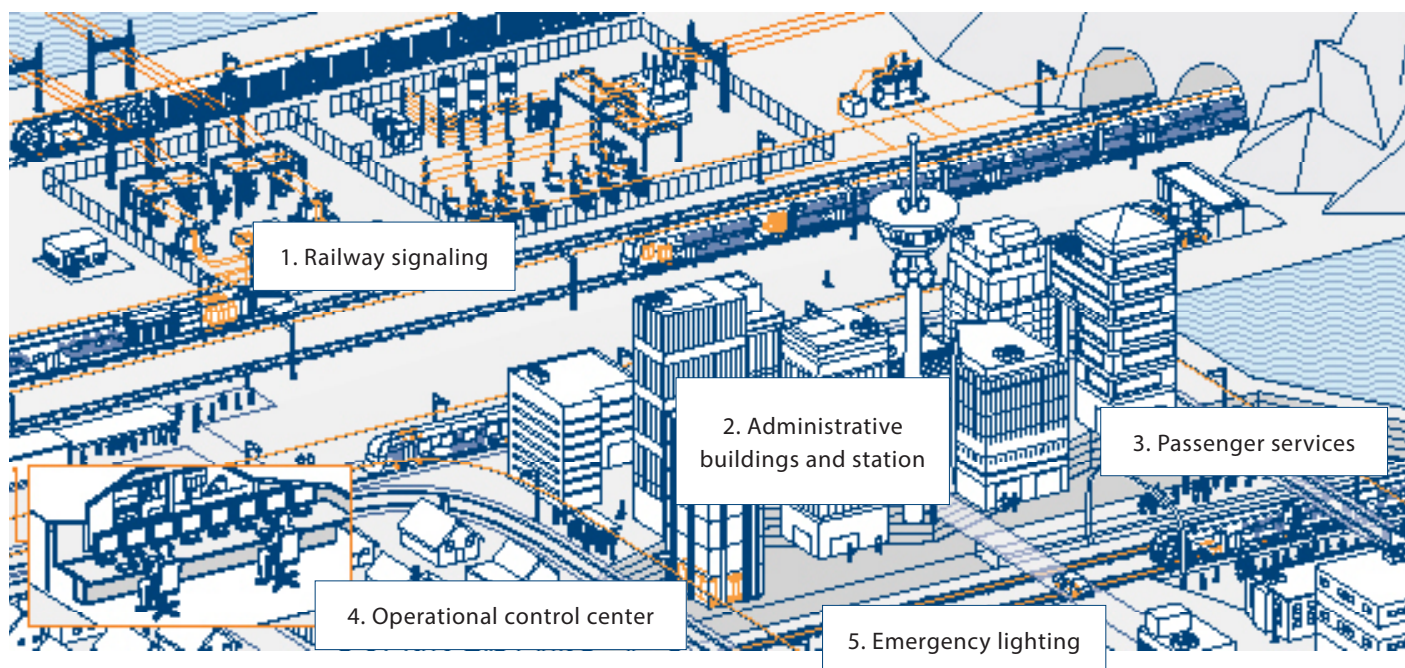
1. UPS solutions for railway signaling

Modular, redundant UPS systems ensure the safe and continuous flow of rail traffic. Optimized investment in control and signaling systems maximizes the use of rail networks, and lowers the cost of new infrastructure and railway lines. UPS systems ensure rail networks deliver efficient, punctual, secure and reliable service, providing uptimes in the range of 99.9999 percent. The highest uptime capacity is essential because rail infrastructure is running 24 hours per day, 365 days a year, and high-speed rail traffic must be able to move in different directions without creating disruptions. This makes reliable signaling systems and accurate transit management key factors in the profitability of a railway system. ABB's UPS systems for rail are designed to reliably protect the rail network's power supplies, often from two redundant sources – the public power network and a private railway power supply.

installation cost of the entire system, and, because it takes up

considerable space, on system power density. ABB's solution not only aims to remove the backup diesel electric generator (and associated greenhouse emissions and noise), but to also increase the level of redundancy by adding a battery pack.

Where an independent second mains network is available, it can also be used in the backup power scheme. An ABB dual-frequency UPS converter makes it possible to harness the power networks of different frequencies, so the load can utilize either, or both, as appropriate. If a fault develops in one, the dual-frequency UPS feeds the critical load through the other. In the event of a fault in both independent networks, a third energy storage option – the UPS battery pack – would provide power needed, for example, by a control system like ETCS, ensuring zero downtime for the entire system.

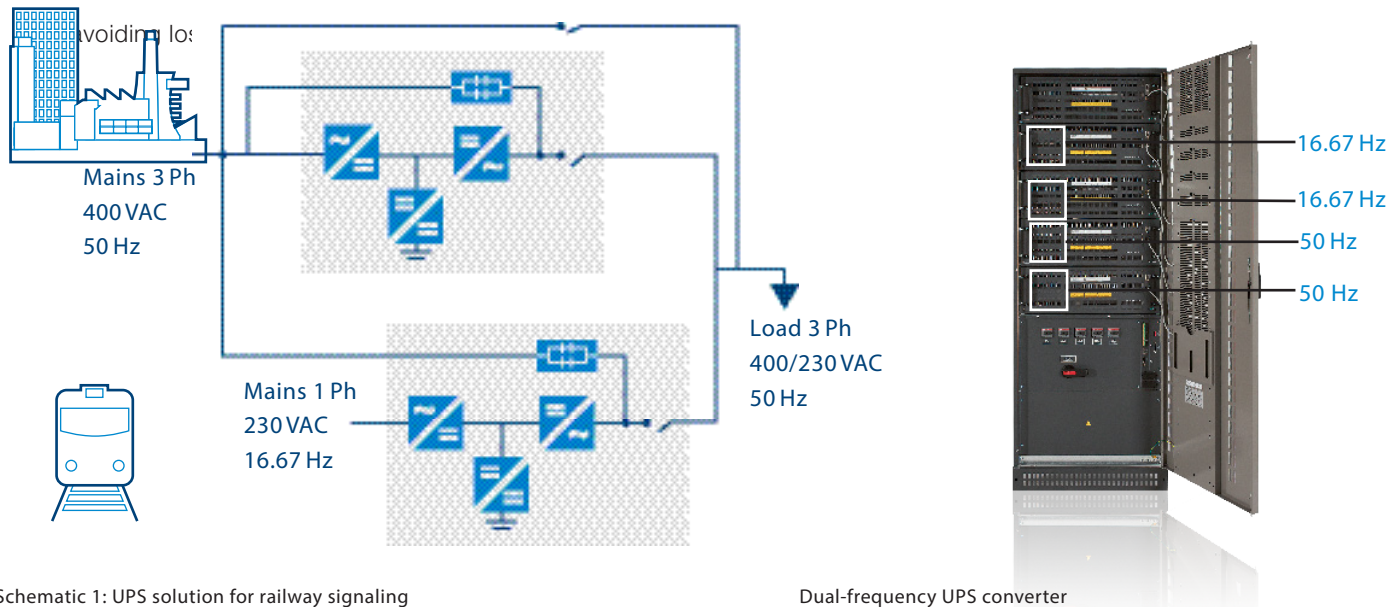


A unique feature of ABB's UPS systems is the interchangeability of modules, which radically reduces spare part count and simplifies servicing. A defective UPS module can be online swapped (removed or inserted) in 20 minutes, without risk to the critical load. This directly addresses continuous uptime requirements, significantly reduces mean time to repair (MTTR), reduces inventory levels of specialist spare parts, and simplifies system upgrades.

European Train Control System (ETCS) is a signaling, control and train protection system set up to replace incompatible safety systems in European railways, especially on high-speed lines. ETCS power supplies are typically backed up by a diesel electric generator, which has a significant impact on the

2. UPS solutions for administrative buildings and stations

ABB's UPS solutions are ideal for protecting critical applications such as building management systems (BMS). Large facilities such as railway stations and office areas are often provided with a BMS to control and monitor the building's mechanical and electrical systems such as ventilation, lighting, fire alarms and security. The BMS is designed to create and maintain a safe, productive and comfortable environment, thus increasing operational efficiency, decreasing the energy consumption and ensuring the safety of personnel and equipment. ABB's UPS offers clean backup power for sensitive electronic devices (controllers, I/O devices and user interfaces) designed to monitor and control the infrastructure, thus



3. UPS solutions for operational control centers

Control centers are major power users. As any railway company is often highly reliant on the operation of a control center, it is critical that operations and traffic controlling is available at all times and that the data is stored in a reliable and energy-efficient way. ABB's uninterruptible power supply (UPS) systems ensure this. A reliable UPS will guarantee a flow of continuous, clean power to the data center no matter what happens on the power supply side. No control center operates without an effective UPS. ABB provides a range of modular and standalone UPS solutions. All these UPS solutions are recognized as being at the forefront of power protection innovation and technology and are class-leading in terms of system reliability efficiency, availability, scalability and flexibility.

4. UPS solutions for emergency lighting

Emergency lighting requirements and related building codes are vital in public transportation structures to facilitate occupant egress during a building fire or other emergency situation. The emergency lighting UPS from ABB is designed in compliance with standard EN 50171 and is therefore the ideal solution for installation in buildings subject to fire safety regulations and in particular for the power supply of emergency lighting systems.

This is not all however, the emergency lighting UPS is also suitable for supplying power to other emergency systems such as automatic fire extinguishing systems, alarm systems and emergency detection systems, smoke extraction equipment and carbon monoxide detection devices as well as dedicated security systems in sensitive areas.

UPS systems make rail networks safer by protecting the power that feeds train signaling operations, level crossings and switches at rail junctions, and supply train control systems and sensors. Either standard UPS products or spe-

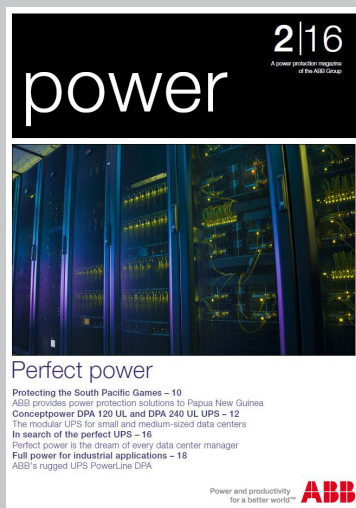
cial engineered solutions such as dual frequency UPS systems can be adopted to meet these application requirements. UPS power protection enhances rail network traffic control to ensure high reliability and the maximum use of trackway slots, guaranteeing continuous, reliable rail traffic management. UPS systems also protect the emergency and safety systems in train stations, by rail tracks and on board trains, which continually monitor operating conditions in the surrounding environment. Systems providing fire protection, radio communications, video surveillance and emergency lighting are just some of the safety-relevant, critical low-voltage loads that require uninterrupted power supply. ABB's standard products are tailor-made for such applications, providing the highest availability and reliability, and a low cost of installation, maintenance and service. ABB's power protection systems also support passenger services, such as information panels, ticketing systems, lift systems, lights and auxiliary services for rail personnel.

**Save the date:
September 20, 2016
ABB at the InnoTrans
2016 in Berlin**

Visit ABB at the largest international trade fair for transport technology :
ABB stand # 310 in Hall 9



Perfect Power



10. Protecting the South Pacific Games
ABB provides power protection solutions to Papua New Guinea

12. Conceptpower DPA 120 and DPA 240
ABB's The modular UPS for small and medium-sized data centers

16. In search of the perfect UPS
Perfect power is the dream of every data center manager

18. Full power for industrial applications
ABB's rugged UPS PowerLine DPA

Flexible Power Configuration



06. PowerLine DPA launches at Hanover Trade Fair

10. Conceptpower DPA UPS installed in Gotthard Base Tunnel
ABB provides power protection to the world's longest tunnel

14. Protecting a leading data centre service provider
PRONIX selects ABB's DPA UPS for the Czech Republic's TTC TELEPORT data center

18. Powering the Pharmaceutical industry
ABB's power conditioning solutions for the pharmaceutical manufacturing industry



Intelligence in a UPS?

Absolutely.



Availability is everything in a UPS, making ABB's Conceptpower decentralized parallel architecture (DPA) design the preferred choice, ensuring power is always on when you need it. Each highly reliable standardized module is self-contained and can be online-swapped at any time, ensuring 99.9999 percent availability, making routine maintenance safe and easy. With class-leading efficiency of up to 96 percent, your power consumption and cooling effort are minimized. And, by adding expansion modules only when required, you only pay for the power you need. www.abb.com/datacenters

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