

REFERENCE CASE STORY

ABB's Conceptpower 120 for railway applications



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01 Today, any railway company is highly reliant on a constant supply of clean power.

Over the 120 years of ABB's involvement with railways, the complexity of the infrastructure necessary to support rail operations has increased dramatically. Where once manual intervention was used to control points, trackside signals, control center and station operations, electrical and electronic systems now reign supreme. This has the effect of making a modern rail network wholly reliant on a constant supply of clean power.

To ensure that power keeps flowing to essential equipment and that passengers are not inconvenienced or cargoes delayed, rail operators will employ an uninterruptible power supply (UPS). ABB has a range of UPS solutions that can be applied to the rail industry. For example, one recent installation in a national rail network employed ABB's Conceptpower 120 UPSs at 20 different sites, with units equipped with three or four 20 kW modules (30 or 40 kVA/n+1). An external Exide Marathon battery bank provides extended backup time. The modular and redundant UPS systems ensure the continuous functioning of the signaling systems and the safe control for trackway and rail crossing.

As any railway company is highly reliant on the operation of a control center, it is critical that operations and traffic controlling is available at all times. Therefore, ABB's Conceptpower DPA 120 guarantees also the flow of continuous, clean power to operative control centers and ensure an efficient, punctual, secure and reliable service. These various UPS applications maximize the use of rail networks, and lowers the total cost of infrastructure and railway lines.

The UPS was customized to the user's needs and one of the reasons ABB won the order ahead of two main competitors was that the company showed great responsiveness and flexibility throughout the whole evaluation and selection process, which took several months. The ABB center of excellence in Switzerland was able to support the local ABB organization with additionally requested product features by putting engineering resources into the project so that the UPS met all performance specifications and could function both as a normal three-phase UPS or with only one phase loaded.



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01 ABB's modular UPSs help rail companies in their quest to achieve zero downtime. .

The Conceptpower 120 is ideal for rail networks as it provides a high-power, modular and transformer-free UPS system that helps rail companies in their quest to achieve zero downtime. The UPS is built using online double conversion technology and provides an unparalleled low cost of ownership.

The result of a UPS failure can be expensive, or even catastrophic, especially in a railway system, and for this reason, the most critical loads should be protected by the very best UPS design – namely, decentralized parallel architecture (DPA™), upon which the Conceptpower 120 is based. DPA™ provides not only the best availability and reliability but also the best serviceability, scalability and flexibility. Each module contains all the hardware and software required for full system operation. They share no common components. Each UPS module has its own independent static bypass, rectifier, inverter, logic control, control panel, battery charger and batteries. With all the critical components

duplicated and distributed between individual units, potential single points of failure are eliminated.

The Conceptpower 120 can easily be scaled up to 600 kW of clean, reliable power. This scalability means that there is no need for the rail operator to over specify the original configuration as power modules can simply be added, as needed, in the future and the user only cables, powers and cools what is currently needed.

The UPS's standardized modules can be removed or inserted without risk to the critical load and without the need to power down or transfer to raw mains supply. This unique aspect of modularity directly addresses continuous uptime requirements, reduces inventory levels of specialist spare parts and simplifies system upgrades. This approach pays off too when it comes to serviceability as the service personnel do not need special skills and train operations can continue without disruption.

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