



Saft compact batteries meet demanding high power backup needs of Karlsruhe tram-trains



Case study

Bombardier Transportation's new FLEXITY Swift tram-trains to rely on Saft MSX batteries for reliable dual-system operation, braking performance and emergency backup in all weathers.

Safety-critical performance

Innovative new tram-trains that will serve the German city of Karlsruhe are being fitted with Saft MSX high-power, compact rail batteries to provide safety-critical onboard backup power.

Bombardier Transportation is supplying 30 ultra-modern, dual-system FLEXITY Swift tram-trains to the city – the first in Germany to link its street tramway (750 V DC supply) and the mainline railway (15 kV AC supply) by running urban trams on both networks.

The Saft battery systems provide the high-power backup power needed to:

- ensure continuous operation of all electrical loads on the tram-trains as they traverse 50 to 250 metre cut-off sections between the two networks without external power,
- reliably deliver very high emergency braking loads, even in winter temperatures that can fall as low as - 25°C,
- provide over 30 minutes of emergency backup power for critical systems if external power is interrupted.



SAFT

Compact, lightweight power delivery

The battery package comprises 19 Saft MSX 200 batteries with a nominal capacity of 200 Ah. Key features include:

- 24 V roof mounted system,
- very low lifecycle cost since Saft's superior nickel-based technology is field-proven to last more than 15 years with no risk of sudden-death failure,
- capability to support all vehicle electrical loads for up to 25 seconds,
- 30 minutes of backup power for critical circuits such as lighting communication and door opening,

- Even after the 30 minute backup period, additionally delivers at least 80 A for up to 12 seconds to operate the electron-magnetic braking system.

The FLEXITY Swift tram-trains are being introduced in Karlsruhe to provide additional passenger capacity, to replace some of the older tram-train vehicles and to extend the route coverage of the existing network. The new 37 metre long vehicles consist of three modules, with the capacity to carry 244 passengers, and the interior is walkable throughout its entire length.

“High power performance and optimizing the overall size and weight of the roof mounted battery package were critical factors and the Saft MSX nickel based batteries have proved to be the ideal solution in every respect, says Uwe Donath, Bombardier Transportation's project leader for electrical integration. By switching from lead acid batteries we saved around 30 kg in weight and reduced the size by 25%, with complete confidence that the compact Saft batteries will deliver the very high braking loads we require even in winter temperatures that can fall as low as 25°C.”



Saft MSX specialized nickel-based rail batteries - key benefits

- 30% lighter and 40% smaller than conventional Ni-Cd batteries, offering significant increases in passenger-carrying capacity, while enabling OEMs and operators to specify the optimum battery system for the installation,
- robust, lightweight Sintered/Plastic Bonded Electrode (S/PBE) construction, resistant to shock and vibration,
- resistant to heavy cycling applications,
- wide operating temperatures range of - 30°C to + 50°C; resistant to extreme temperatures from - 50°C to + 70°C,
- topping-up with water only required at two-year intervals under normal conditions,
- centralized water filling system makes maintenance fast and easy.



Saft

12, rue Sadi Carnot
93170 Bagnolet - France
Tel. : +33 1 49 93 19 18
Fax : +33 1 49 93 19 64
www.saftbatteries.com

Document N°21835-2-0712
Edition: July 2012

Data in this document is subject to change without notice and becomes contractual only after written confirmation.

Photo credits: Saft, Fotolia, Bombardier Transportation.
Attitudes design&communication - C246/6

© Saft - Société par Actions Simplifiée au capital de 31 944 000 €
RCS Bobigny B 383 703 873