

SAFT



MRX battery systems to replace lead-acid batteries on SNCF's entire TER 2N NG fleet

Saft is migrating SNCF's entire fleet of over 200 TER 2N NG (double-decker new generation) trainsets to state-of-the-art MRX nickel-based batteries that ensure improved performance and reliability over a long service life.

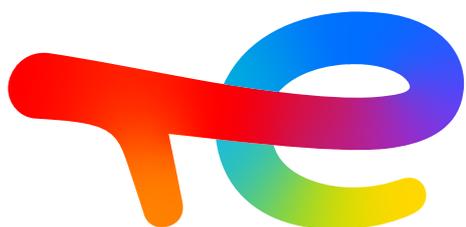
Upgrading backup for critical systems

SNCF's TER 2N NG trainsets that first entered service in 2000 are based on the Alstom Coradia Duplex electric multiple unit (EMU) platform.

These trains, which are capable of speeds up to 160 km/h, are ideally suited to densely loaded intercity or suburban services and are deployed by SNCF, France's national state-owned railway operator, on regional routes across the country.

The onboard batteries play a critical role for SNCF by providing the backup power to support control, safety and communications functions should the main power supply be interrupted.

As part of a general upgrading programme SNCF is replacing the existing time-expired lead-acid batteries with Saft's specialized MRX nickel-based batteries.



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► MRX batteries - key benefits

- No risk of sudden death failure common in lead acid batteries
- Reliable backup power in harsh railway environment
- Saves 90 kg - the same weight as a passenger
- Facilitated maintenance
- Service life of up to 15 years
- Operation at temperatures from - 30°C to + 70°C

Nickel-based batteries deliver predictable and reliable performance

The switch to nickel-based technology is delivering a number of performance and reliability advantages for SNCF. Primarily, unlike lead-acid batteries, the MRX design does not suffer from 'sudden death'. Instead, it has been developed specifically for the

intensive usage typical of rail backup operations, where it offers predictable and reliable performance over a long service life of up to 15 years that contributes to an optimized Total Cost of Ownership (TCO). Furthermore, MRX batteries offer a higher energy capability at extreme temperatures, ranging from - 30°C to + 70°C, to ensure continuity of train services especially for routes in locations in France that experience severe winters.

Compact lightweight design provided significant weight saving

The MRX batteries feature a compact, lightweight design that has enabled each SNCF battery system to be reduced in weight by 90 kg - equivalent to the average weight of a single

passenger. The battery systems feature Saft's innovative patented design, based on a riveted battery box that is extremely simple and cost-effective to manufacture as it eliminates welding.

As well as reduced maintenance requirements, an important advantage for the train operator is the integrated water filling system that makes topping-up fast and simple.

► MRX batteries for SNCF - key facts

- Over 200 trainsets to be equipped with MRX batteries
- Total of 284 battery systems
- Systems housed in innovative riveted construction boxes
- Integrated water filling system

“ SNCF has switched from lead-acid batteries to our nickel-based MRX batteries. It is a further, very important European reference for the performance, reliability and total cost of ownership advantages of our well-proven nickel-based rail battery technology. ”

Milan Sima, Saft's General Manager Rail Segment



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