



Saft delivers innovative LTO traction batteries to power Siemens Mobility's hydrogen trains

- Saft LTO traction batteries enable hydrogen fuel cell propulsion on Mireo Plus H trains that will operate on routes in Germany
- Lithium titanate oxide (LTO) technology offers significant performance, safety and lifecycle advantages
- Delivery of the batteries to Siemens Mobility started in summer 2024

Paris, 27 September 2024 – Saft, a subsidiary of TotalEnergies, is supplying its innovative lithium titanate oxide (LTO) traction batteries to Siemens Mobility to power seven next generation Mireo Plus H hydrogen trains operating in Germany. The lithium-ion (Li-ion) batteries form a hybrid power system with fuel cells to provide a smart alternative to diesel multiple units (DMUs). This enables the Mireo Plus H trains to blaze the trail for emission-free autonomous operation on long-distance routes without an overhead supply.

“This prestigious project for the Mireo Plus H trains is an important breakthrough for Saft as it is the first time that our LTO batteries are featuring on a major commercial rail project”, said **Cedric Duclos**, CEO Saft. “The contract is the successful culmination of a long-term development project with Siemens Mobility. Adopting this innovative technology for traction applications offers significant advantages over previous generations of Li-ion batteries including improved safety and reliability, lower CO₂ emissions, an increased lifespan and more power”, he added.

«Siemens Mobility is committed to reduce emissions in mobility and the development of our Mireo Plus H trains are an important step forward in the decarbonization of rail transport. While



they are primarily powered by hydrogen, the traction batteries are crucial to their success. We are proud that Siemens Mobility and Saft have cooperated and developed an adapted version of the LTO technology that is ideal for our hydrogen trains,” said **Albrecht Neumann**, CEO Rolling Stock, Siemens Mobility.

The batteries and fuel cells on the Mireo Plus H trains are controlled so that hydrogen is the primary power source. The batteries are mainly employed during acceleration to compensate for the power limitations of the fuel cells, and during braking to recover kinetic energy. When the train is cruising the batteries perform load leveling to enable the fuel cells to operate with maximum efficiency. A Mireo Plus H train is equipped with two LTO batteries - one for each two-car trainset.

LTO is a key solution added to Saft’s growing portfolio of lithium-ion (Li-ion) chemistries. It offers 10 times the cycle life of other technologies, a high level of safety due to its stable electrochemistry, and the high-performance charge and discharge capability, 10 times superior to traditional Li-ion batteries, essential for traction applications.

Saft is one of the few companies to develop its own chemistries, enabling it to tailor its products to the specific needs of each of its customers. The development of LTO batteries for Siemens Mobility drew on the strength of Saft's global presence. The LTO technology was developed in the Saft research center in Bordeaux and is assembled in Nersac, France. Deliveries of the LTO batteries to Siemens Mobility started in summer 2024.



*For more information
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About Saft

Saft specializes in advanced technology battery solutions for industry, from the design and development to the production, customization and service provision. For more than 100 years, Saft’s longer-lasting batteries and systems have provided critical safety applications, back-up power and propulsion for our customers. Our innovative, safe and reliable technology delivers high performance on land, at sea, in the air and in space.

Saft is powering industry and smarter cities, while providing critical back-up functionality in remote and harsh environments from the Arctic Circle to the Sahara Desert. Saft is a wholly owned subsidiary of TotalEnergies, a broad energy company that produces and markets energies on a global scale: oil and biofuels, natural gas and green gases, renewables and electricity.

We energize the world. www.saft.com





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