HYDROGEN MULTIPLE UNIT, 950 MM GAUGE

FDC, Calabria Italy

In June 2023, following a public tender, FdC (Ferrovie della Calabria) awarded Stadler a Framework Agreement for the supply of up to 15 hydrogen vehicles and signed the first contract for the supply of 6 HMUs. A five-year Full Service option is also foreseen. Each HMU consists of two passenger cars and a central 'Power Pack' unit containing the fuel cells and hydrogen tanks. Each car is equipped with a motor bogie and a carrier bogie, both with reduced axle load. To enable completely safe operation, the HMUs are equipped with the SCMT automatic train protection system. Static converters and high-performance traction batteries are positioned above the motor bogies to ensure excellent adhesion and optimum tractive effort in all weather conditions. All major components are easily accessible for routine maintenance.

Two doors per car and low-floor vestibules allow an easy access on board of all passengers including those with reduced mobility. Dedicated sliding steps allow as well a comfortable boarding from 250mm height platforms. One end-car is equipped with a universal PRM toilet. The air conditioning system features a set of air purifiers, aimed to increase the air quality, by effectively removing harmful particles and bacteria.

The train also features areas for passengers with bikes and wheelchairs. Comfortable seats, wide panoramic windows, efficient energy-saving LED lighting, 220V and USB plugs at each seat, a modern Wi-Fi and an integrated passenger information system, complete the feature set-up to make the passenger travel pleasant and enjoyable.

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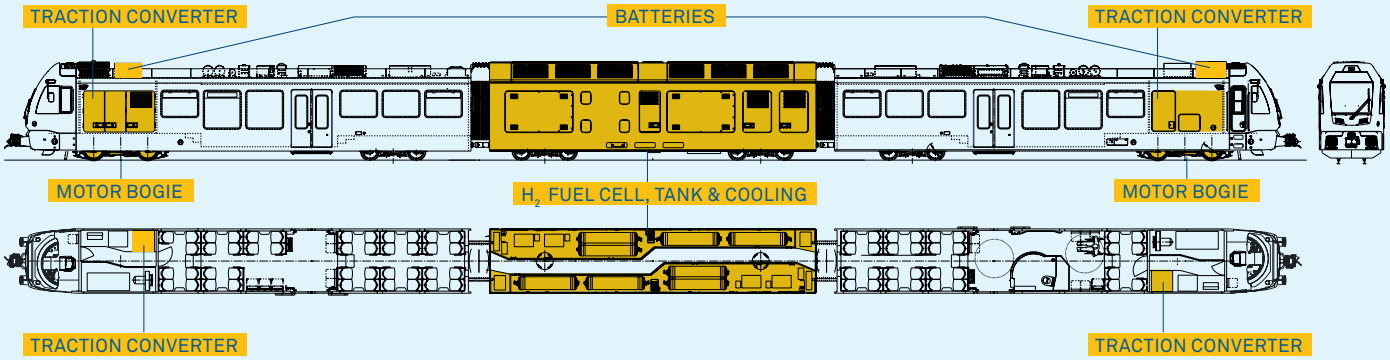

Technical features

Technology

- Emission free drive based on hydrogen and fuel cell
- Contemporary, modern design with functional and bright interiors and lightweight aluminum alloy carbodies
- LTO Batteries for high recuperation
- Sealed modular H2-storage in the Power Pack
- Suited for Sardinia climate conditions
- Embedded multiple-unit control (up to two units)
- SCMT automatic train protection

Comfort

- Large vestibules either side with low-floors provide easy access for passengers with reduced mobility and older travelers
- 1 PRM Toilet in the low floor section
- Independent HVAC systems in passenger cars and driver cabs
- Air suspension for bogies to ensure maximum running quality and optimum comfort for passengers
- Efficient energy-saving LED lighting
- Passenger information system and CCTV
- Connection to on board WiFi network
- 220V and USB power outlets at seats

Personnel

- Ergonomically designed, functional driver's cab complies with new EN 15227 crash standards and has independent access doors for the train drivers

Reliability/Availability/Maintainability/Safety

- Two independent propulsion chains, water-cooled electronic converter and high efficiency asynchronous traction motors
- High power, high capacity traction lithium battery for a safe and reliable operation
- Traction unit according to EN 45545 and UNI 11565 for fire detection and firefighting

Vehicle data

Rail operator	FdC, Calabria Italy
Operated line	Catanzaro - Cosenza
Gauge	950 mm
Drive system	Hydrogen and Fuel cells / Batteries
Axle arrangement	Bo' 2' + 2' 2' + 2' Bo'
Number of vehicles	6
Delivery	2026
Total seats	89
Flip-up seats	15
Standing capacity (4 pers./m²)	81
Floor height	
Low-floor at entrance	519 mm
High-floor	945/1039 mm
Door width	1300 mm
Length over buffers	50 000 mm
Vehicle width	2500 mm
Vehicle height	3820 mm
Bogie wheelbase	
Motor bogie	2100 mm
Trailer bogie	1800 mm
Wheel diameter (motor bogie)	810 mm (new)
Wheel diameter (trailer bogie)	685 mm (new)
Traction battery capacity (approx.)	318 kWh (new)
Max. traction power to wheels	800 kW
Tractive effort at start-up	120 kN
Acceleration at start-up	0.81 m/s²
Design speed	120 km/h
Operational speed	100 km/h