



NARROW GAUGE HMU

ARST, Sardinia Italy

Stadler delivers 8 narrow gauge Hydrogen Multiple Units for Sardinia.

In July 2023, following a public tender, ARST awarded Stadler a Framework Agreement for the supply of up to 10 hydrogen vehicles (HMU). With the first and second call-off ARST ordered to Stadler a total of 8 vehicles of this type. 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, while the «Power Pack» rests on two trailer bogies, all with reduced axle load. The HMUs are equipped with the SCMT automatic train protection system. Static converters and 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 maintenance.

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 250 mm height plat-forms. 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, 220 V 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.

Stadler Rail Schweiz AG

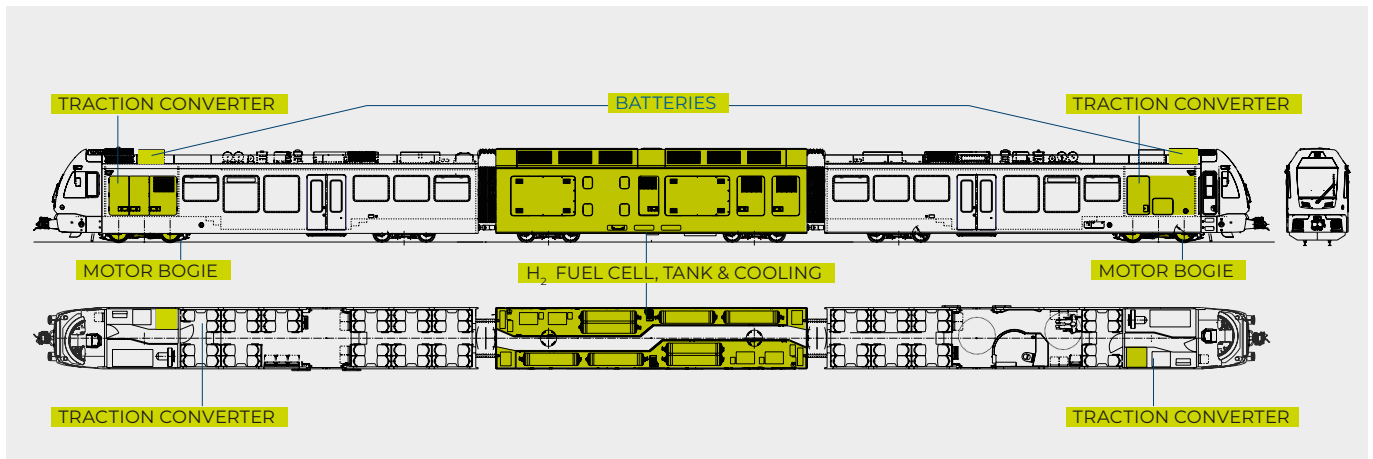
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STADLER



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 Italian 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
- 220 V 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 / Serviceability / 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	ARST (Azienda Regionale Sarda Trasporti), Sardinia Italy	
Operated line	Alghero Sassari/Sorso Alghero Aeroporto	
Track gauge	950 mm	
Drive system	Hydrogen and Fuel cells / Batteries	
Axle arrangement	Bo' 2' + 2' 2' + 2' Bo'	
Number of vehicles	8	
Delivery	2026	
Total seats	89	
Flip-up seats	15	
Standing capacity (4 pers./m²)	81	
Floor height	Low-floor	519 mm
	High-floor	945/1039 mm
Door width	1,300 mm	
Length over buffers	50 m	
Vehicle width	2,500 mm	
Vehicle height	3,820 mm	
Bogie wheelbase	Motor bogie	2,100 mm
	Trailer bogie	1,800 mm
Wheel diameter (motor bogie)	810 mm (new)	
Wheel diameter (trailer bogie)	685 mm (new)	
Traction battery capacity (approx.)	318 kWh	
Max. traction power to wheels	800 kW	
Tractive effort at start-up	120 kN	
Acceleration at start-up	0,81 m/s ²	
Design speed	120 km/h	
Operational speed	100 km/h	