STADLER

METRO CLASS 777 IPEMU

Merseytravel, Liverpool (UK)

Stadler has developed an innovative Independent Powered Electrical Multiple Unit (IPEMU), based on the Merseytravel Class 777 and equipped with a battery-based energy storage system. The new battery traction equipment is mounted in the underframe and the cooling system is located on the roof. The interior, the high levels of passenger comfort, and the number of passengers it can carry, are the same, with the IPEMU retaining all the basic functionalities of the Class 777. IPEMU trains can operate beyond the electrified third rail network on non-electrified systems, preventing costly infrastructure changes for clients, who can extend the network beyond the third rail. This provides greater flexibility and means more services for passengers. While an IPEMU is running on the electrified network, the batteries can be charged from the third rail, as well as through regenerative braking. IPEMUs have the potential to replace diesel powered units, which helps clients and local and national governments meet decarbonisation targets. The ride quality is smooth and passengers will not notice the transition from EMU to IPEMU mode. Furthermore, IPEMUs avoid passengers having to change trains, enhancing the journey experience and reducing travel time.
IPEMUs can be recharged in less than 15 minutes. The IPEMU battery can undergo more than 10,000 charge/discharge cycles.

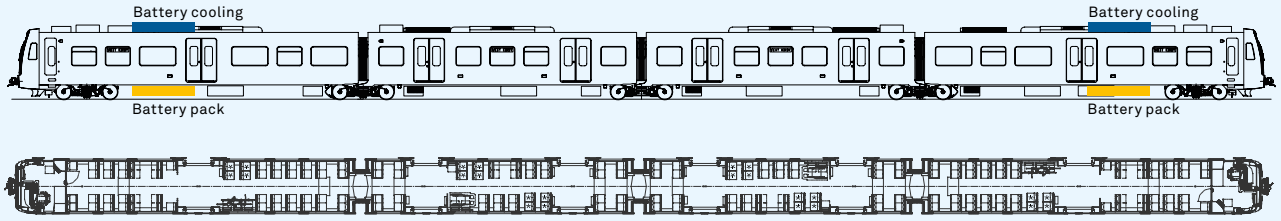
www.stadlerrail.com

Stadler Rail Group

Ernst-Stadler-Strasse 1
CH-9565 Bussnang
Phone +41 71 626 21 20
stadler.rail@stadlerrail.com

Stadler Rheintal AG

Neudorfstrasse 8
CH-9430 St. Margrethen
Phone +41 58 595 50 00
empfang.star@stadlerrail.com



Technical features

Technology

- Lightweight carriage body made of extruded aluminium profiles
- Electrical front door combined with a sliding step for front evacuation and detrainment between two units (patented solution)
- Newly developed Jacobs motor and trailer bogies with internal bogie frames and pneumatic suspension
- Plug sliding doors and automatic sliding steps
- Prepared for later retrofit of ERTMS equipment
- Meeting highest fire protection requirements EN45545 Level HL3
- Powerful traction battery equipment allowing to serve non-electrified networks and decarbonise the public transportation

Comfort

- Bright, passenger-friendly interior with an iconic design
- Wide entrance doorways for rapid passenger flow
- Level access at all entrances
- Spacious multifunction areas and wheelchair spaces
- Advanced passenger information system, CCTV and TCIS (Train Connectivity and Information System)
- Powerful HVAC system
- Transition between electrified and non-electrified networks without interruption, reducing travel times
- No exhaust gases and noise pollution

Personnel

- Spacious cab with enhanced driver sight lines
- Ergonomically designed driver's desk
- Automated cab side doors for comfortable access

Reliability / Availability / Maintainability / Safety

- Redundant drive equipment with maintenance-friendly air-cooled
- IGBT power converters
- Remote vehicle diagnostics to support condition-based maintenance

Vehicle data

Owner	Merseytravel
Operator	Merseyrail
Area served	Liverpool, UK
Track gauge	1,435 mm
Axle load	16.9 t (full load)
Supply voltage	750 V DC
Axle arrangement	2'(Bo)'(Bo)'(Bo)'2'
Seat capacity	184
Standing capacity (4 pers./m2)	302
Starting tractive effort	162 kN
Starting acceleration	1.1 m/s²
Maximum speed (EMU mode)	120 km/h
Maximum speed (IPEMU mode)	100 km/h
Energy consumption (IPEMU mode)	1 kWh/100 km/pass.
Traction power	6x350 kW (2.1 MW)
Battery technology	LTO-NMC
Installed battery capacity	320 kWh
Battery operation voltage	386 V DC
Battery expected lifetime	min. 8 years
Range in normal operation	55 km
Recharging time	< 15 min.
Floor height	960 mm
Entrance width	1,300 mm
Coupler compression load	1,500 kN
Unit length	64,980 mm
Vehicle width	2,820 mm
Vehicle height	3,828 mm
Bogie wheelbase	2,400 mm
Wheel diameter	760 mm