

CASE STUDY

Project METRO Merseytravel, UK



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THE BEST**



Stadler, Liverpool, United Kingdom

In February 2017, Merseytravel ordered 52 new EMUs from Stadler for a complete fleet renewal on the Mersey rail urban network serving the Wirral and Northern Lines within Merseyside.

The modern Stadler EMUs provide an additional boost to an intensively used network that already is one of the most punctual and reliable railway networks in the UK, with consistently high ratings for customer satisfaction. Stadler has conceived a vehicle that addresses the specific needs of the customer and provides worldclass facilities for Mersey rail's passengers. The lightweight articulated four-car units allow for an efficient and cost-effective operation. The low-floor vehicle solution combined with standardized platforms offers level entrance throughout the network, a novel feature for UK mainline rail systems. The units are future proof, having been prepared for the retrofit of ERTMS and dual voltage equipment, and thus comply with the Liverpool City Region Long Term Rail Strategy. The interior of the vehicles is bright and open. Optimum use has been made of the space available and dedicated areas have been created for wheelchairs, prams, luggage, and bicycles. This interior concept will enhance the passenger's perception of safety, with full CCTV coverage, protective systems for door operation and clear warning indicators. Power is supplied via third rail at 750 V DC. The vehicles are designed for a maximum running speed of 120 km/h. Efficient thermal and acoustic isolation ensure a comfortable passenger environment, and newly developed bogies with pneumatic suspension contribute to a smoother ride.

Wiper system characteristics:

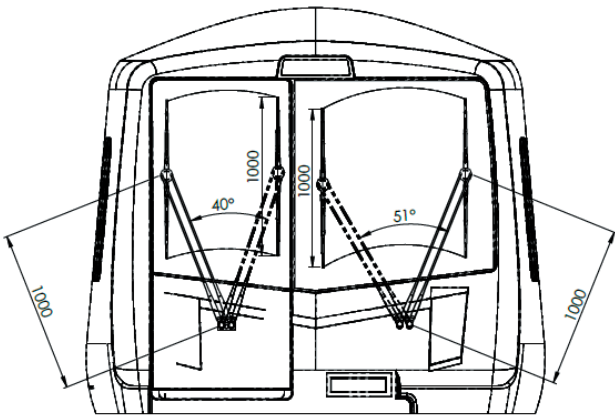
Because of very limited space in the front of the cabin and especially one wiper motor in the door, Exalto designed a special fitting solution that will accept the rest of the long list of requirements. Exalto already have a long experience in limited space envelopes in the marine industry. This expertise is utilized for this project. Also, the weight of the two complete systems has been minimized. Together with 10/12 mm square wiper arm legs and 45 Nm/24VDC electric motors the system will fulfill the customers and local climate requirements. The 20-liter wash tank is specially designed to fit in the limited space available. The tank is equipped with a wash pump and a low-level sensor.

Standards:

- All welding to the system components is in accordance with EN 15085 CL-2
- Fire safety in accordance with EN 45545-2
- Electromagnetic compatibility 94/54/EC

Environmental testing:

- Vibration: broadband random guidance IEC 60068-2-64:2008
- Shock: guidance IEC 60068-2-27:2008
- Test spec: IEC 61373-2010 Railway applications – rolling stock-shock and vibration tests



Technical Description

Wiper Drive Unit

The WDU consists of a electric motor (25 Nm/24VDC/IP23) built in a steel galvanized housing. The rubber sealing block allows the glass fitting. This allows a force less drive of linkage system with shafts for a pantograph wiper arm (700 mm) and a 610 mm wiper blade. The wiping pattern will be achieved with a multi spindle system. Most components of the spindle sets are 304 stainless steel. Wiping arc is only 30 degrees.

The system contains of durable components to reduce maintenance activities to a minimum.

Wiper arms and blades:

The stainless steel (304), 10- and 12-mm box section, wiper arm is straight to obtain the requested wiping area. The arms are fitted with brass heads to provide a maximum fitting onto the spine shaft of the WDU. The wiper arm is treated, and coating is standard black matt powder coating. The material base is SS 316. With special surface treatment procedure, the paint is resistant to weather end mechanical impact to ensure a long life. The end of the wiper arm is equipped with multiple spray jets. The Exalto wiper blades have proven a durable life and high performance under a variety of circumstances. The base backing of the blade is of 304 stainless steel

Wash system:

Exalto will provide a 304 stainless steel liquid tank (20 liter) with a 24VDC pump. The liquid detergent replenishment shall be made easily feasible from the cab interior or from the outside. Hoses will be provided to connect the liquid tank with the spray jets on the wiper arms. All return valves and bulkhead fittings are included. Water tanks can be designed for the perfect fit in the train.

