

**Exalto**  
WIPER TECHNOLOGIES

CASE STUDY

# Project Greateranglia United Kingdom



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## Stadler, East Anglia, United Kingdom

**Greater Anglia has been awarded the East Anglia franchise which will oversee a large investment into local rail services, including a planned order for 58 FLIRT bi-mode and electric multiple-unit trains which will operate on various railway lines in East Anglia.**

The bi-mode order involves 24 four-car and 14 three-car trains. The FLIRT developed for Greateranglia is a member of the service proven FLIRT, which was built for several different service operators in various mission profiles, and will be adapted for the UK infrastructure and the Greateranglia requirements.

The FLIRT for Greateranglia complies with the new technical specifications for interoperability, including the legislation for persons with reduced mobility. Its low floor design enables a level boarding on every passenger door, and therefore optimises the passenger flow and minimises the dwell times. The bi-mode units enable an interruption-free service on electrified and non-electrified lines.

The necessary power is generated by diesel engines, which are arranged in a power pack car separated from passenger saloon. This will reduce the noise and vibration impact on passengers. When running under catenary the diesel engines can be shut off, thus saving fuel, reducing the exhaust and noise emissions as well as improving the comfort for passengers in the train and of persons standing at stations.

The trains are equipped with air-conditioning, multifunctional zones with bike compartments, modern passenger information systems and Wi-Fi internet connection. The new trains will commence commercial service in 2020.

### Wiper system characteristics:

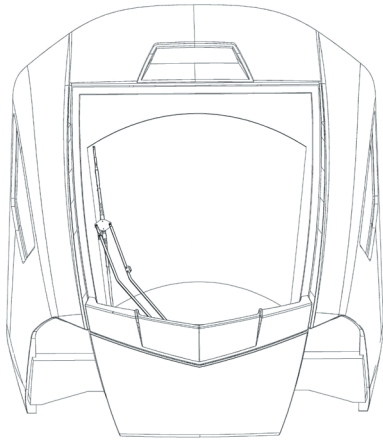
Exalto supplied a standard wash and wipe system. The extra for this system is an industrial type of rain sensor that can be used by the driver to increase comfort and safety. Together with strong 16 mm square wiper arm legs and a 85 Nm/24VDC electric motor the system will fulfill the customers and local climate requirements.

### 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 an electric motor (85 Nm/24VDC/IP23) built in a mild steel frame (corrosion protected by galvanization) to drive a linkage system with shafts for a pantograph wiper arm (1211 mm) and a 1200 mm wiper blade. The wiping pattern will be achieved with a multi-spindle system. Wiping arc is 69 degrees. All components of the spindle sets are 304 stainless steel.

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

### Wiper arms and blades:

The stainless steel (304), 16 mm box section, wiper arms are cranked to obtain the requested wiping area. The arms are fitted with bronze heads to provide a maximum fitting onto the spine shaft of the WDU. The wiper arm is treated and coated with standard black matt powder coating. The material base is SS 304. With special surface treatment procedure the paint is resistant to weather and mechanical impact to ensure a long life. The wiper arm is equipped with two multiple spray jets, at the end. And on 75% of the arm.

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 316 stainless steel.

### Wash system:

Exalto provided 304 stainless steel liquid tanks (total 30 liter) with an ultrasonic level indicator and 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.

***The rain sensor is an integrated part of the system.***

