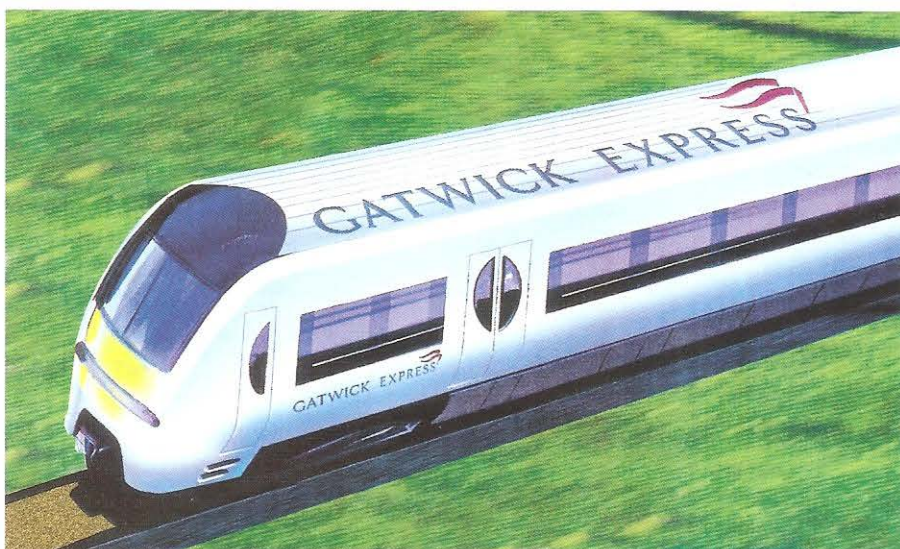


London – Juniper Gatwick Express EMU's ... ONIX 800



ONIX for Gatwick Express EMU's

- 8 new trains
- 40 IGBT ONIX inverters
- 8 car trainsets

Contract overview

In 1997 ALSTOM won the contract to supply 8 new luxury trains to the National Express Group for operation on the London Gatwick Express. ALSTOM won the contract against several other competitive manufacturers.

The new 8 car trainsets had to be reliable, capable to operate on a standard system, but with the flexibility to meet the operators exacting requirements.

ALSTOM advanced design

ALSTOM analysed the requirements of Gatwick Express and offered the Juniper system which had been specially developed for the UK market.

A flexible package

The flexibility of the Juniper system allows adaptability to the requirements of each individual customer.

The traction package offered in the Juniper system is truly versatile, capable of operating on a wide range of networks, with a wide range of performance characteristics.

This flexibility is evident in the differing performance requirements of the contracts on which Juniper is being supplied. The system is available with the option of dc equipment, or ac equipment or alternatively, the design offers a simple modification to dual-voltage operation should the customer require this option in the future.

Signalling compatibility

Safety and compatibility with Railtrack, signalling and other, lineside electrical or control infrastructure is a fundamental design principle of the Juniper system.

Power and reliability

The trains will be powered by the latest hi-tech IGBT ONIX 800 traction drives which offer the following benefits:

- Cost effective – economical/viable.
- Light, compact – weight sensitive.
- Reliable – well proven design.
- Flexible – adaptable – switchable to suit requirements.
- High performance – ensuring good journey times.
- Safe – adherent to the stringent requirements of Railtrack and UK legislation.

ALSTOM and the customer

ALSTOM has developed new partnerships with its customers worldwide, and is committed to providing them with the highest possible service.

ALSTOM

Operational specification

Operator: Gatwick Express
 Carbuilder: ALSTOM Transport
 Line gauge: 1435 mm
 Line voltage range: 450V-900V
 Line length: 42.7 km
 Number of trains: 8
 Number of cars: 64
 Number of IGBT converters: 40

Traction range: ONIX 800
 Number of stations: 2
 Type of vehicle: EMU
 Train consist: 8 cars
 (5 motor cars/3 trailer cars)
 Axle load: 11 Tonnes
 Power collection: 3rd rail
 Maximum tractive power per motor car: 490 kW

Maximum braking power per motor car: 730 kW
 Maximum starting tractive effort: 20 kN/motor
 Maximum design speed: 160 kmh⁻¹
 Maximum design acceleration: 0.55 ms⁻²
 Maximum design braking: 0.9 ms⁻²

PROPULSION

1 ONIX IGBT Inverter with rheostatic chopper
 Regenerative braking capability

CONTROL

AGATE 32 bit microprocessor
 Equipment performance monitoring
 Slip/slide control

TRACTION

2 x ONIX 3 phase AC motors

HIGH VOLTAGE

Line inductor
 Signalling compatibility units
 Anti-regeneration diode
 High speed circuit breakers
 Soft crow-bar
 Brake resistor

Technical characteristics

IGBT Inverter

Nominal dc input: 750 V
 Peak accelerating current, rms: 834 A rms
 Cooling: self-ventilation
 Motor/inverter ratio: 2:1
 Modulation frequency: 2400 Hz
 ± 40 Hz

Auxiliary Converter

Nominal dc input: 750 V
 Rating: 75 kVA +
 15 kW battery charger
 Cooling: force cooled

ONIX AC Motor

Supply voltage: 485 V
 Nominal power rating: 225 kW
 Rated speed: 1960 rpm*
 Maximum speed: 3675 rpm
 Cooling: self-ventilation
 Motors per axle: 0.5
 *Rated @ min. wheel diameter (776 mm)

Dimensions and mass

Traction equipment case

Length: 3522 mm
 Width: 2120 mm
 Depth: 625 mm
 Mass: 1450 kg

Motor

Length: 675 mm
 Width: 380 mm
 Depth: 547mm
 Mass: 390 kg

Propulsion performance

