



Introducing the EURO 4000

Europe's most powerful diesel-electric locomotive *powered by* **ELECTRO MOTIVE®**

The new EURO 4000:

Starting 2007 the EURO 4000 will be the most powerful diesel-electric locomotive available on the European market. The EURO 4000 features Co'-Co' axle configuration, bi-cabin design and AC/DC traction. EMD's most fuel efficient turbocharged 16-V two-stroke diesel engine (16-710) with electronic fuel injection serves to power the locomotive with an impressive 4,250 HP DIN. In conjunction with the optimum performance of the traction chain, the engine is capable of hauling heavier and longer freight trains, increasing operator competitiveness and efficiency. Thanks to its high power capacity and technical characteristics the EURO 4000 runs at high operational speeds. This enables the joint circulation of other traffic, such as passenger trains, ensuring constant speeds can be maintained on all track lines.



3178 kW, 123 m.t., 120 km/h

Flexible Operation

As the EURO 4000 is not dependent on overhead power to operate, it guarantees a high degree of operational flexibility. The locomotive's enhanced traction capacity means it can both be used to haul heavy trains up steep grades as well as lighter trains at high speeds. Moreover, the rail operator is free to circulate the locomotive on all of the network's electrified and non-electrified lines. As a result, optimum use can be made of less saturated lines and destinations can be reached more quickly. In addition, the multi-operational EURO 4000 is also fully compatible for use for cross-border operations since it is easily adaptable to suit different European signalling systems and, last but not least, is fully prepared for ETCS installation.

The EURO 4000 is also fitted with a state-of-the-art communication system and GPS, the latter of which permits the operator to keep track of each train at all times, choose the most favourable route and optimise logistics and intermodal activities. Furthermore, the locomotive is also suited for use with a GSM data transmission system, which ensures all that required operations are relayed to the maintenance stations, thereby minimising down time.

In line with all European standards

The EURO 4000 was designed by the world's leading specialists in the railway sector – Vossloh and EMD. These two companies have already supplied hundreds of customers around the world with diesel locomotives that guarantee a high degree of availability, optimum life-cycle cost and the added assurance of a ready supply of spare parts for the locomotive's service life. The EURO 4000 naturally also complies with all European norms (for example: emissions, noise, crash, fire), is suitable for UIC-gauge lines and capable of running on all European railway networks.

Low operational cost, easy maintenance and eco-friendly

Minimum maintenance costs due to:

- modular design permitting easy assembly, disassembly and complete module changes
- amply dimensioned components with a long service life and low maintenance needs
- maximum standardisation of spare parts and maintenance processes
- easy access to components
- a reduced-wheelbase bogie with a high adhesion factor and low maintenance cost

As maintenance needs have been reduced to a few simple operations, the locomotive can be in service for long periods of time. Its low fuel consumption is furthermore due to the highly efficient diesel engine, traction system and optimised auxiliary systems.

Thanks to this low fuel consumption and a fuel capacity of 6,700 litres the EURO 4000 can cover distances of up to 2,000 km without having to refuel, depending on the service characteristics. And it does all this without making a big racket about it – the locomotive complies with the noise levels established in the HS Conventional Rolling Stock standards.

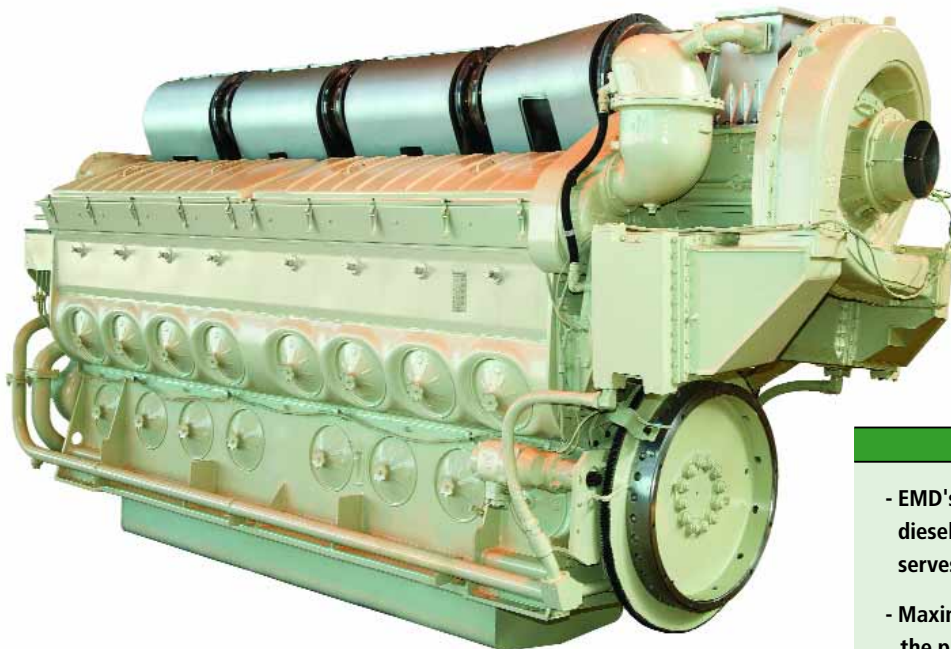


Comfort and Safety

In addition to this impressive set of technical features, the EURO 4000 also provides optimum driving conditions with a spacious cab offering increased visibility. The driver's cab was designed in accordance with the UIC 651 and DIN 5566 standards and includes a state-of-the-art, European-style driver's desk. Finally, the cab is separately air-conditioned, assuring isolated and optimised thermal conditions for the driver.

The shock-resistant (and UIC 651-compliant) wind-shield not only further enhances the driver's safety, but also ensures minimum noise levels in the cab, which also features fire-protection in accordance with DIN 5510. Finally, the integrated anti-crash system makes sure both the driver and the locomotive are protected in the event of a collision (prEN 15227).

The locomotive complies with the standards governing the UIC 518 gauge in terms of strain on the track, safety aspects and performance quality. In addition, the engine also conforms with the EN 12299 comfort category.



powered by
ELECTRO MOTIVE

BENEFITS

- Most powerful diesel-electric locomotive available on the European market
- Cross-border capability as the locomotive can run independently of overhead power
- Problem-free haulage of heavy trains up high slopes and light trains at higher speeds, thus improving operator competitiveness and efficiency
- Optional state-of-the-art telemetry system, including GPS and GSM data transmission
- Prepared for ETCS train control
- Guaranteed supply of spare parts for the locomotive's entire service life
- Modular design
- Two air-conditioned cabs
- Maximum standardisation of spare parts and maintenance processes
- Covers distances of up to 2,000 km without having to refuel thanks to low fuel consumption and high 6,700-litre fuel deposit capacity

- EMD's most fuel efficient turbocharged 16-V two-stroke diesel engine (16-710) with electronic fuel injection serves to power the locomotive with 4,250 HP DIN
- Maximum speed of 120 km/h (160 km/h for the passengers version); six D43 traction motors
- Exhaust emissions remain below the levels stipulated by EU 97/68, stage IIIA

Two leading partners set new standards

Vossloh – a key player on the European market for designing and manufacturing diesel locomotives – is set to increase its locomotive range in co-operation with the world's most successful manufacturer of diesel-electric locomotives, Electro-Motive Diesel, Inc. (EMD). The high-powered EURO 4000, which is fitted with an EMD high-yield diesel engine, electric traction chain and proven auxiliary equipment, has been designed and will be built by Vossloh España to satisfy the specific needs of passenger and freight railway operators throughout Europe. Both Vossloh España and EMD boast an excellent international reputation thanks to their 50-year history of supplying locomotives together to countries such as Spain, Israel, the UK and the USA.

Vossloh Motive Power

As part of the Vossloh Group, Vossloh Motive Power is the largest manufacturer of diesel locomotives in Europe. Together with its subsidiaries – Vossloh Locomotives in Kiel, Germany, and Vossloh España in Valencia, Spain – the company is dedicated to the design and production of new and innovative products that provide sustainable solutions to growing international requirements.

EMD – Electro-Motive Diesel, Inc.

Throughout its long history, EMD (formerly known as the Electro-Motive Division of General Motors) has supplied over 59,000 EMD-powered locomotives worldwide. EMD engines are reputed to be the best locomotive engines in the world, consistently delivering superior reliability, durability and low life-cycle costs. The extremely powerful and fuel-efficient engine that EMD has supplied for the EURO 4000 is based on proven solutions for North American clients such as Union Pacific, Canadian National, Norfolk Southern, BNSF and CSX.

EURO 4000*: Power at your command

General characteristics		Emissions		Diesel Engine	
Axle arrangement:	Co'Co'	Noise:	TSI Conventional Rolling Stock	Manufacture:	EMD
Gauge:	1435 mm			Model:	16-710 G3B-T2
Loading Gauge:	UIC 505-1	Exhaust:	EU97/68 Stage III A	Power rating:	3178 kW
Weight:	123 m.t			Number of Cylinders:	16
Axle load:	20,5 m.t			Rate Speed:	950 rpm
Maximum Speed:	120 km/h				
Start: Tractive Effort:	400 kN				
Cabs:	Two Air-Conditioned				
Buffers-Draw Gear:	UIC type				
Crash:	prEN 15227				
Fuel Capacity:	6700 l				
Multiple Unit:	Yes (27 pin)				
Brake Equipment		Electrical Transmission		Bogie	
Pneumatic:	UIC Electropneumatic	Type:	AC/DC	Frame:	Fabricated steel
Dynamic Brake:	Yes	Traction Motors:	6 x D43	Axle:	Hollow, EA1N
Wheel Slide Protection:	Yes	Main Generator:	AR20	Wheel:	1067 mm, R7T
Compressor:	Gardner Denver WLU 4270 l/min - 10 bar at 900 rpm	Dynamic Brake:	600 Amp.	Suspensions:	Primary: Coil Springs Secondary: Rubber-metal Vertical, Horizontal Dampers
Air Capacity:	1000 l			Traction Motor:	Nose suspended
				Brake:	One Disk per Wheel

* Freight Version. Technical data and performance curves also available for the passengers version.



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