

PASSENGER TRANSPORT
innovative solutions



 **VALDUNES**

Passenger tra

VALDUNES EQUIPS THE EUROTUNNEL PASSENGER SHUTTLES AND THE EUROSTAR HIGH SPEED TRAIN.



As the European leader in railway running gear, Valdunes customises each of its solutions to its customers' requirements for safety, speed, economy, comfort and environmental protection. Its high quality and service, and ability to innovate have made the company a world-renowned force in the fields of both passenger and freight transport.

fulfil their customers' requirements for specialist as well as standard products with the same attention to detail and careful observation of international specifications.

VALDUNES: CORPORATE STRENGTH

Today, one of Valdunes' major assets is indubitably its membership of a global group. This privileged position affords:

- mastery of raw material quality through the selection of recognised suppliers including Ascométal, the leader in special steels,
- technical mastery through the pooling of expertise throughout the Group's highly skilled workforce,
- mastery of technological innovation, optimised by the synergy created within the Group,
- economic mastery based upon adaptability and responsiveness to customer requirements.

IN ADDITION TO HIGH SPEED SERVICES, THOUSANDS OF TRAINS RUN EVERY DAY ON VALDUNES' PRODUCTS.

VALDUNES: THE APPROPRIATE SOLUTION

At Valdunes, flexibility and adaptability are the key words for effecting progress. Flexibility in the ability to manufacture small batches or large quantities. Adaptability in the knowledge that Valdunes' products





VALDUNES' PRODUCTS OFFER BENEFITS FOR EVERY TYPE OF TRANSPORT: HIGH-SPEED TRAINS, MAIN-LINE AND SUBURBAN TRAINS OR MOTOR TRAIN SETS FOR REGIONAL SERVICES.

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The areas of technological progress in the field of railway wheels and axles relate principally to improved performance and operational profitability. In the passenger transport sector, speed, weight-reduction of rolling-stock, wear-resistance and increased axle load, noise-damping and the protection of wheels are fields that are at an advanced stage of research and implementation at Valdunes.

From standard products to customised solutions

ECONOMIC SOLUTIONS

Advances made in the fields of high and very high speed trains have led to significant increases in the service life of wheels. Before mastering very high speed, Valdunes paved the way by participating in the development of 160km/h main lines. The excellent wear-resistance of the

wheels reduces their life cycle cost which is an added benefit for the operator. Valdunes has developed a design programme to reduce the risk of wheel fracture. The toughness and cleanliness of the steel and in-service conditions are taken into account to devise the optimum web and wheel profile.

As sole supplier of wheelsets for the TGV high-speed trains, and holder of the world rail speed record of 515.3km/h (322 m.p.h.), Valdunes works closely with a number of constructors to ensure continuous improvements in the fields of high and very high speed rail transport.

The wheels fitted to these trains are all produced from ultra-clean steel. Similarly, the service life of these wheels is directly related to the quality of the forging and heat treatment operations. The benefits derived from these metallurgical improvements also translate to conventional running gear.

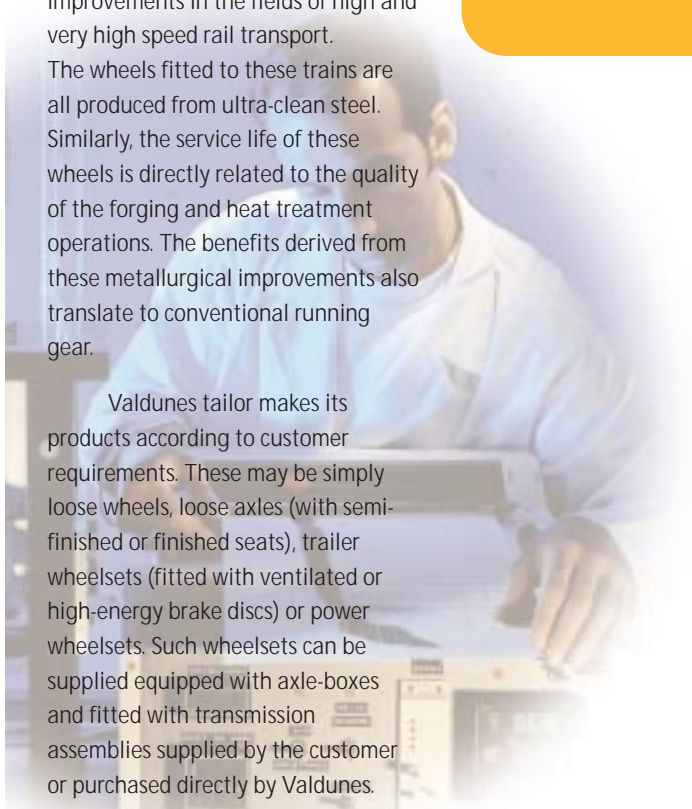
Valdunes tailor makes its products according to customer requirements. These may be simply loose wheels, loose axles (with semi-finished or finished seats), trailer wheelsets (fitted with ventilated or high-energy brake discs) or power wheelsets. Such wheelsets can be supplied equipped with axle-boxes and fitted with transmission assemblies supplied by the customer or purchased directly by Valdunes.



Design

Research and development play a vital role at Valdunes. Within the Technical Department, specialist teams work closely with experts in metallurgy, mechanical engineering, acoustics and vibration analysis from research laboratories such as IRSID (Steel Industry Research Institute); CREAS (Special Steels Research Centre), or from universities.

The synergy of their expertise accelerates and consolidates the technological progress achieved.



CONVENTIONAL ROLLING STOCK BENEFITS FROM THE PROGRESS ACHIEVED IN THE HIGH SPEED SECTOR.



Trailer axle.



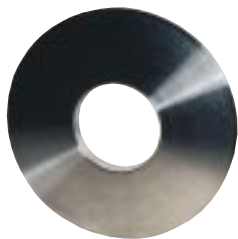
TGV trailer wheelset equipped with four brake discs.



Wheelset for the Eurotunnel shuttle.



Wheelset designed for speeds up to 160 km/hour.



High energy brake disc for high speed trains.



DOUBLE DECKER TGV DUPLEX: WEIGHT SAVING WHEELS AND HOLLOW AXLES REDUCE THE WEIGHT OF THE UNSPRUNG MASS.

VALDUNES ENSURES OPTIMUM PROTECTION OF ITS PRODUCTS

As part of Valdunes' commitment to quality, each wheel coating is selected according to the specifications and in-service conditions. Temporary coatings (varnishes and greases) are taken into consideration at the component design stage, and ensure perfect protection up to delivery and final assembly. Other coatings, such as paints or resins, guarantee maximum ongoing protection against mechanical impacts (ballast kick-up) or environmental and climatic attack (salt deposits in the case of the Channel tunnel Eurostar High Speed Passenger train and freight rolling stock).

On the same principle, the packing of components produced and supplied by Valdunes is designed to suit the individual user's transport and assembly arrangements. According to customer requirements, Valdunes supplies its components loose, on pallets, in crates or in reusable racks. This customised approach is complemented by refined logistics, lead times optimised by means of a synchronous flow management system, and particularly efficient after-sales service.

COMBATING NOISE POLLUTION

Noises generated by wheel-to-rail contact are generally the loudest and therefore the most difficult to combat. Nevertheless, Valdunes offers an effective solution in the fight against flange squeal, achieving a reduction of 15 dB tested on both monobloc and tyred wheels. The noise-damping technique recommended by Valdunes consists of dissipating acoustic energy by friction between a stainless steel ring, held in a groove, and the wheel. Other avenues for improvement are being explored to reduce running noise: damping of vibrations by varying the mass and the shape of the wheels, the fitting of absorbent screens on the wheel. In this field, Valdunes' Technical Department collaborates with Sogérial and participates in international study groups.



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