

TRACTION
innovative solutions





Traction

As the European leader in railway running gear, Valdunes customises each of its solutions to its customers requirements of safety, speed, economy, comfort and environmental protection. Its high quality, service and ability to innovate have made the company a world-renowned force in equipping power cars as well as passenger and freight rolling stock.

HIGH SPEED TRAIN POWER WHEELSET. THE BRAKE DISCS BOLTED ONTO THE WHEELS REPLACE SHOE BRAKING. THIS METHOD INCREASES THE WHEELS SERVICE LIFE AND REDUCES NOISE POLLUTION.



VALDUNES PRODUCTS COMPLY WITH WORLD-WIDE STANDARDS AND SPECIFICATIONS.

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 skill based upon adaptability and responsiveness to customer requirements.

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 fulfil customers' requirements both for specialist and standard products with the same attention to detail and



The areas of technological progress in the field of railway wheels and axles relate principally to improved performance and operational profitability. In the field of traction, speed, wear-resistance, increased payload, noise-damping and protection of wheels, improved braking performance and solutions to rim displacement are at an advanced stage of implementation at Valdunes.

From standard products to customised solutions

EXPERTISE IN DESIGN AND ASSEMBLY

Valdunes forged wheels, axles and wheelsets are produced in accordance with customers' specifications. In this context, one of Valdunes' strengths lies in its ability to design and produce wheels of various dimensions, with diameters up to a maximum of 1440 mm (56.5 inches).

With its precision machining centres, Valdunes also performs complex drilling operations to very close tolerances for brake discs or drive crank pins to be attached to its wheels. These products can be manufactured in accordance with all general standards, such as Euronorm, UIC and AAR, or to networks' or manufacturers' own specifications.

More generally, Valdunes can offer mounting of all transmission components on its power axles: for example, gear-boxes, final drive units and canon boxes (hot- or cold-shrunk onto the axle), in accordance with industry standards and

the specific recommendations of the transmission unit manufacturer.

THE NUMBER ONE CHOICE FOR HIGH SPEED

As the 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 manufacturers to ensure continuous improvements in the fields of high and very high speed rail transport.

The driving 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.

SHUNTING LOCOMOTIVES FITTED WITH VALDUNES WHEELSETS.



ECONOMIC SOLUTIONS

Advances made in the field of high and very high speed trains have led to significant increases in the service life of the wheels. The spin-offs from these developments, whether in metallurgy, manufacturing processes or production equipment, directly benefit products for conventional rolling stock. Their excellent wear-resistance and high load capacity increases their service life which is an advantage for the operator.

LIGHTER RUNNING GEAR

In order to reduce the unsprung mass of locomotives and railcars fitted with our equipment, Valdunes offers weight-saving wheels and hollow axles. Just as reliable in operation, they offer the same service life as solid axles. Forging near to net shape, efficient heat treatment and minimal machining of the quenched zone all help to extend the wheel service life leading to lower life cycle costs. This approach has been adopted for the double-decker TGV Duplex and Eurostar train sets and is based upon optimised steel metallurgy and wheel designs suited to high axle loadings.

ADAPTING TO EXTREME TEMPERATURES

Valdunes offers "cold climate" grade wheels that limit the consequences of loss of adhesion. The sliding of a wheel on the rail, combined with the effect of the load, leads to a metallurgical transformation of the steel at the surface due to thermal reaction which results in spalling. This phenomenon is accentuated in winter when the rail is lubricated by a mixture of snow and ice. The grades of steel recommended by Valdunes withstand large variations in ambient temperature, from -40°C to over 40°C.



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.





Valdunes offers driving wheels up to 1440mm diameter. Our machining facilities enable us to perform all types of drilling.



Driving wheels with special drilling.



Locomotive wheel with noise damping ring.



Driving axle with several seats.



Shunting locomotive wheelset.



Power wheelset with final drive unit and brake discs bolted onto the wheels.



THE FIGHT AGAINST NOISE POLLUTION

Noises generated by wheel-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 solution 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.

Improved braking system performance also contributes to the reduction of noise emitted into the environment. The TGV Duplex power wheelsets are equipped with brake discs bolted onto the wheels. This technique preserves the wheel tread surface by eliminating shoe braking and achieves a reduction of several decibels.

VALDUNES ENSURES OPTIMUM PROTECTION OF ITS PRODUCTS

As part of Valdunes commitment to quality, each wheel coating is selected according to specifications relating to 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), extreme weather conditions or environmental 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 customers' requirements, Valdunes supplies its components 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.



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