

Fact sheet – The Sapsan high-speed train

The Sapsan symbolizes Russia's progress. With top speeds of up to 250 km/h, the train is based on the Velaro platform from Siemens – the world's leading-edge technology. Linking Moscow with Saint Petersburg and Nizhny Novgorod, the Sapsan boasts a punctuality rating of 99 percent.



The Velaro RUS high-speed train: The Sapsan (peregrine falcon)

- In May 2006, Siemens concluded a contract with Russian Railways (RZD) to develop and build high-speed trains based on the company's Velaro platform.
- The project scope comprised the delivery of eight multiple-unit trains, the components and systems of which were to be adapted to the climatic conditions and railway standards of the Russian Federation.
- All eight trains have been in service since December 2009, operating on the route between Moscow, Saint Petersburg and Nizhny Novgorod with a punctuality rating of about 99 percent. With a maximum operating speed of 250 km/h, which can be upgraded to 300 km/h, the Sapsan has reduced the travel time from Moscow to Saint Petersburg by 45 minutes.
- In December 2011, RZD awarded Siemens an order for eight further Velaro RUS high-speed trains. Worth about €600 million, the contract also comprises the maintenance of the rolling stock over a period of 30 years. Delivery of the trains, which are being manufactured at the company's plant in Krefeld, is scheduled to begin in January 2014.

Technical data for the Sapsan

Maximum operating speed	250 km/h
Train length	250 meters
Number of cars.....	10
Seating capacity.....	604
Railcar body material.....	Aluminum
Laden rolling stock weight	662-678 metric tons
Operating temperature	From -40°C to +40°C
Annual distance traveled	500,000 km
Service life	30 years

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Designed for extreme climatic conditions

- All elements of the train – such as the technical equipment, insulation and lubricants – have been adapted to the extreme climatic conditions in Russia. The Sapsan can therefore operate at outdoor temperatures as low as -40°C.
- To protect the traction components from ice and snowdrifts while at the same time cooling them sufficiently, the cooling air is conducted through special air ducts leading from the roof to virtually air-tight floor pans. The bogie material has also been further enhanced, and its strength at extremely low temperatures has been verified.

The Velaro platform from Siemens

- As a driving force in technology, Siemens has always provided tremendous momentum for the development of high-speed rail transportation. Now the Velaro – developed entirely by Siemens itself – is one of the world's fastest series multiple units, with a top speed of up to 350 kilometers per hour.
- Thanks to its standardized platform concept, the Velaro can be adapted to suit the needs of different rail networks and customers. Rolling stock from the Velaro series is in service all over the world: for the Spanish national rail network (RENFE) since 2007, for the Chinese Ministry of Rail Transport since 2008 and for Russian Railways (RZD) since 2009.
- In 2008, the German national rail company Deutsche Bahn also ordered high-speed trains of this type, and in 2010, Eurostar International Limited chose the Velaro for Eurotunnel service between Britain and mainland Europe.

The multiple unit technology of the Velaro platform

- The Velaro has been leading the field in terms of technology for more than ten years. The revolutionary leap forward was made in the late 1990s, when Siemens switched to distributed traction.
- With multiple unit technology, the drive components and technical modules (such as the traction motors, brakes and transformers) are distributed underneath the entire train and not – as is the case with conventional trains – concentrated in locomotives coupled at the front and rear of the train.
- This allows about 20 percent more room to be used for passengers in the same length of train. In addition, the train can accelerate faster and climb steeper sections of line.
- Furthermore, the uniform distribution of weight reduces the load on each individual wheelset. This decreases wear and tear, not only on the rails but also on the wheels of the train.