

*Talgo*



PRESS KIT

## RZD Talgo Moscow – Berlin service. Press kit

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Starting December 17<sup>th</sup> 2016, JSC Russian Railways (RZD; Rossiyskie Zheleznye Dorogi) has put into revenue service a unique rail route in Europe: the Moscow-Berlin overnight train that cuts by 4.5 hours the current travel time between the two capital cities and which allows passengers to cross four countries in comfort and without having to disembark the vehicle.

### **The service**

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- The trains have been manufactured by Talgo and are operated by RZD from Moscow-Kursky to Berlin-Ostbahnhof.
- The service is operated under an agreement between two huge public undertakings: RZD in Russia and Deutsche Bahn (DB) in Germany.
- Along the route, the train crosses no less than three borders: Russia-Belarus; Belarus-Poland; Poland-Germany.
- Intermediate stops are (from NE to SW): Smolensk, Krasnoe, Orsha, Minsk, Brest, Bug, Terespol, Warsaw, Poznan, Rzepin and Frankfurt (Oder).
- The distance from Moscow to Berlin will now be served in 20h14', as compared to the 24h49' made by non-Talgo trains.
- As the route uses four different rail networks (German, Polish, Belarusian, Russian) the vehicles have been certified by each of the corresponding railway administrations and thus have been homologated according to two different technical standards (EU and GOST).
- The service will initially depart every Saturday and Sunday from Moscow; every Sunday and Monday from Berlin.
- The new trains save time because of:
  - The automatic track-gauge changing system, which takes only 2 minutes per train; with conventional trains the used to take over 2 hours per train because of the need to change the bogies.
  - The natural tilting system, which increases up to 25% the maximum speed in curves and thus reduces travel times without investing in upgrading rail infrastructure.
- The service has been branded "Swift" by RZD ("Strizh" in Russian), in reference to two of the main features of the service: as the bird, it is fast and it is agile.
- The train numbers assigned by RZD are 13 (Moscow->Berlin) and 14 (Berlin->Moscow).
- From Moscow to Brest (Russian track-gauge) traction is assured by RZD's locomotives; from Brest to Berlin (European standard track-gauge) the locomotives used are those of Polish train operator PKP.



### **Technical features of the train**

- Talgo trains for RZD have been certified to operate at a maximum speed of 200 km/h (124 mph)
- Each train has 18 passenger coaches, plus two technical wagons
- The train configuration is as follows (from end to end):
  - 1 technical wagon
  - 5 first class coaches, equipped with suites (two beds and one bathroom per suite)
  - 4 first class coaches, equipped with compartments (two berths per compartment)
  - 1 restaurant car
  - 1 bistro car
  - 2 first class coaches, with seats
  - 5 second class coaches, equipped with compartments (four berths per compartment)
  - 1 technical wagon
- Total passenger capacity is 216.
- Russian track-gauge is 1,520mm and European standard track gauge is 1,435mm. The train automatically adapts its wheels in a gauge-changing facility built at Brest (Belarus)
- Trains have been fitted with a system designed to avoid ice formation on wheels and rods during the harsh Eurasian continental weather. The system recycles the wasted air used in the passenger cabins, and therefore its energy consumption is minimal
- This system has been designed entirely by Spanish and Russian engineers working for Talgo
- To reach high speeds over the German rail network the trains are equipped with electromagnetic track brakes: a metal shoe is held against the rail by means of electromagnetic attraction and the ensuing friction helps to slow down the train
- Maintenance of Strizh (Swift) units is undertaken both in Moscow and Berlin

### **The variable-gauge system**

- Across Europe three main track-gauge standards are used:
  - European standard: 1,435mm. It is used in most countries of Europe, from France to Poland
  - Russian standard: 1,520mm. It is used in Russia, Finland and the countries formed after the fall of the USSR
  - Iberian standard: 1,668mm. It is used only in the Iberian Peninsula (Spain and Portugal)
- To be able to cross the interoperability borders between those zones, there are only a handful of solutions available:
  - Make passengers disembark a train, and board a different one
  - Detach and lift each coach, to change every single bogie
  - Use an automatic variable-gauge system, like Talgo's
- Talgo variable-gauge system enables a train to adapt its wheel gauge in just a few seconds and without stopping
- It was the world's first system to be used in a regular passenger service, starting on June 1969 in the Barcelona (Spain)-Geneva (Switzerland) route
- In Spain the Talgo variable-gauge system is currently used more than a thousand times per day without glitches, and allows trains fitted with it to indistinctly use the high-speed (standard track-gauge) and conventional (Iberian track-gauge) networks; Renfe S130 and Renfe S730 Series connecting dozens in cities across the country
- The system works thanks to three basic mechanisms:
  - A set of lateral guides lifts each of the coaches slightly; the wheels no longer hold the weight of the coach
  - A set of vertical rails acts on the wheels, to passively unblock them
  - A set of horizontal rails acts on the wheels, to passively adapt their gauge to a new position
- Those three processes act in sequence: wheels are freed from the weight -> locks are opened/unblocked -> wheels gauge is adapted -> locks are closed/blocked again -> the train rests again over the wheels

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### **Talgo in Russia and Central Asia**

- Along the newest Moscow-Berlin service, Talgo has hundreds of its coaches already in revenue service across Eurasia:
- Moscow-Nizhni Novgorod high-speed service; since June 2015 it has transported more than 2 million passengers
- Kazakhstan; a service network so huge it could cover most of Western Europe: from the Pyrenees to the Baltic Sea; from the North Sea to the Balkans
- High-Speed trains in Uzbekistan

### **Talgo in Germany**

The Spanish manufacturer has had a continued presence in Germany since the early 90s, when the overnight Talgo-Nachtzüge started serving cities like Berlin, Bonn, Frankfurt, Hamburg and Munich. In its Germany facilities (located in Berlin) around 110 people work to maintain Talgo trains and to market one of its less-known but more effective products: the Talgo maintenance machinery used to maintain all kinds of rail vehicles, from trams to freight locomotives.

