

CAF's 250 km/h variable gauge train

Recent developments in the field of rolling stock manufacture in Spain include CAF's Alvia train, Talgo and Bombardier's 102 train, Siemens' 103 and Alstom's 104. The Alvia is a variable gauge train unit with distributed traction that reaches a maximum speed of 250 km/h. It is Renfe's series 120 train. In September 2001, Renfe awarded the CAF-Alstom consortium a contract for the manufacture of 12 train units equipped with the automatic gauge change system known as Brava (Bogie de Rodadura de Ancho Variable Autopropulsado - Self-Propelled Variable Gauge Wheelset Bogie), whose technology was developed by CAF. In February 2004, a further contract was awarded for another 45 units, raising the number of Alvia trains purchased by Renfe to 57. The displaceable wheelset allows this train to run on European normal gauge tracks (1,435 mm) and on Iberian gauge lines (1,668 mm). The train was presented internationally at Eurailspeed 2005 in Milan, Italy.

The minimum composition consists of four power cars, which are capable of collecting current both from the 25 kV and 50 Hz alternate current catenary and from the 3,000 V direct current catenary. The unit's output is 4,000 kW when it runs under AC catenary and 2,700 kW under DC catenary. It has 8 three-phase asynchronous motors, a maximum speed of 250 km/h and can carry up to 238 passengers. The motors are suspended from the underframe of the cars and they transmit the propulsion effort by means of a cardan shaft. The 512 kW motors are of the self-ventilated, squirrel cage, three-phase asynchronous type, with IGBT converters. All the bogies are motor bogies. Each car rests on two A-1 Brava bogies, with a single driving axle, which means there are 8 driving axles and 8 trailer axles to be able to perform the gauge change manoeuvres at a speed of 30 km/h. The brake systems permit the following braking distances: 1 kilometre at 100 km/h, 2 km at 220 km/h, and 2.7 km at the maximum speed of 250 km/h. □