SIEMENS

Fact sheet: Velaro D – New ICE 3 (Series 407)

Velaro D profile

- The Velaro D is the fourth generation of high-speed trains that Siemens has developed on the basis of the Velaro platform. Deutsche Bahn AG (DB) classifies the train as the new Series 407 ICE 3 (predecessors: Series 403 and Series 406 ICE 3).
- While the Series 403 and 406 ICE 3 were built by a consortium with Bombardier, the Velaro D was fully developed by Siemens. For the first time, the manufacturer is in charge of the official approval process for the trains.
- In December 2013, Germany's Federal Railway Authority (EBA) approved the trains' operation – also in multiple-unit or so-called double-traction mode – on the Deutsche Bahn rail network.
- The Velaro D is also intended for cross-border operation in Belgium and France. The approval process in these countries is still in progress.

Technical data of the Velaro D (per train)

Maximum operating speed	320 kilometers per hour (alternating current)
Length	200 meters
Number of cars per train	8
Seating (excl. 16 bistro seats)	444 / 111 / 333 (total / 1st class / 2nd class)
Curb weight	454 tons
Operating temperature range	-25 °C to +45 °C
Traction power	8,000 kilowatts (11,000 hp)

Velaro platform

- Since 2007, trains based on the Velaro platform have operated with high reliability for more than 500 million kilometers in China, Russia and Spain – equal to roughly 12,500 times around the globe.
- The Velaro trains consume the equivalent of only 0.33 liters of gasoline per passenger for every 100 kilometers – about the amount held in a can of cola. With a recycling rate of 98 percent, the trains are also especially environmentally friendly.
- In the ICE 1 and ICE 2, locomotives are located at the front and rear ends of each train; in the ICE 3, the traction motors are distributed beneath the length of the train. This distributed traction enables the ICE 3 to accelerate rapidly and provides around 20 percent more space for passengers with the same train length.

Exemplary energy efficiency

- In order to reduce energy consumption, the aerodynamics of the Velaro D were further optimized – though a new front-end contour, streamlined coverings of roof-mounted components, and optimized bogies and gangways. This optimization reduces the train's aerodynamic drag by around 20 percent compared with its predecessor.
- Thanks to their intelligent energy management, all Velaro D trains are highly efficient and reduce CO_2 emissions by an equivalent of 14 grams per passenger/kilometer. For comparison: average airplane CO_2 emissions are ten times higher.
- The braking system in the new Series 407 ICE is also energy efficient: an electric brake allows energy to be fed back into the power system. The effect: ten percent less energy consumption and reduced mechanical wear and tear.
- The new Velaro D has substantially lower lifecycle costs than its predecessor thanks to its high energy efficiency and lower maintenance costs. These savings are due in part to wear-free eddy-current brakes and longer service intervals made possible with intelligent diagnostic systems.

Greater passenger comfort

- The Velaro D is DB's first high-speed train equipped with a hydraulic lift for wheelchairs on each side of the train. Moreover, passengers with reduced mobility can reach their seats as well as the bistro safely and independently thanks to the wide entrances and aisles.
- For visually impaired passengers, signs, seat numbers and car numbers are provided in Braille.
- Aisle seats have a handgrip on the aisle seat back to provide passengers with a firm hold when moving through the train.
- Monitors on the ceiling keep passengers in all classes of the Velaro D informed of the train's progress via GPS.

A more flexible and quieter interior

- Thanks to a new type of mounting elements, the interior of the Velaro D can be quickly and flexibly changed. Luggage racks or vis-à-vis seating arrangements with tables can even be supplemented overnight.
- When the train enters a tunnel at high speed, the aerodynamic front-end contour with its higher roof section located further back reduces the so-called tunnel boom effect.