High speed from Bombardier – ZEFIRO

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UIC High Speed Congress
March 19th, 2008

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Bombardier – Worldwide experience in high speed rail

Bombardier is a key player in all international high speed projects for speeds of 200-330 km/h

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ICE 3 – Very high speed in Germany

- Developed in a consortium with Siemens
- Full operation since 2002 in Germany, Belgium, Netherlands, Switzerland and in France
- 67 trains delivered and homologated for 330 km/h
- Joint development where Bombardier led in the following key areas:
  - Bogies (incl. riding comfort / Interface bogie-carbody)
  - Structures engineering
  - Aerodynamics
  - Break integration (mechanical)
  - Couplers
  - Pantographs
  - Gangways
  - Production of all end cars and 2 intermediate cars

Bombardier owns key technologies developed and implemented on the ICE 3

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AVE S-102 – Very high speed in Spain

- Developed in a consortium with Talgo
- 16 trains delivered and homologated for 330 km/h, plus 30 additional trains in production
- Service operation since February 2005 with high proven reliability and availability
- Train sets consisting of 2 power heads and 12 low floor coaches
- Bombardier scope includes 100% of:
  - Traction (power head)
  - Powerhead bogies and running dynamics
  - TCMS
  - 14 years maintenance contract

Bombardier owns key technologies developed and implemented on the AVE S-102

AVE is a trademark of Renfe

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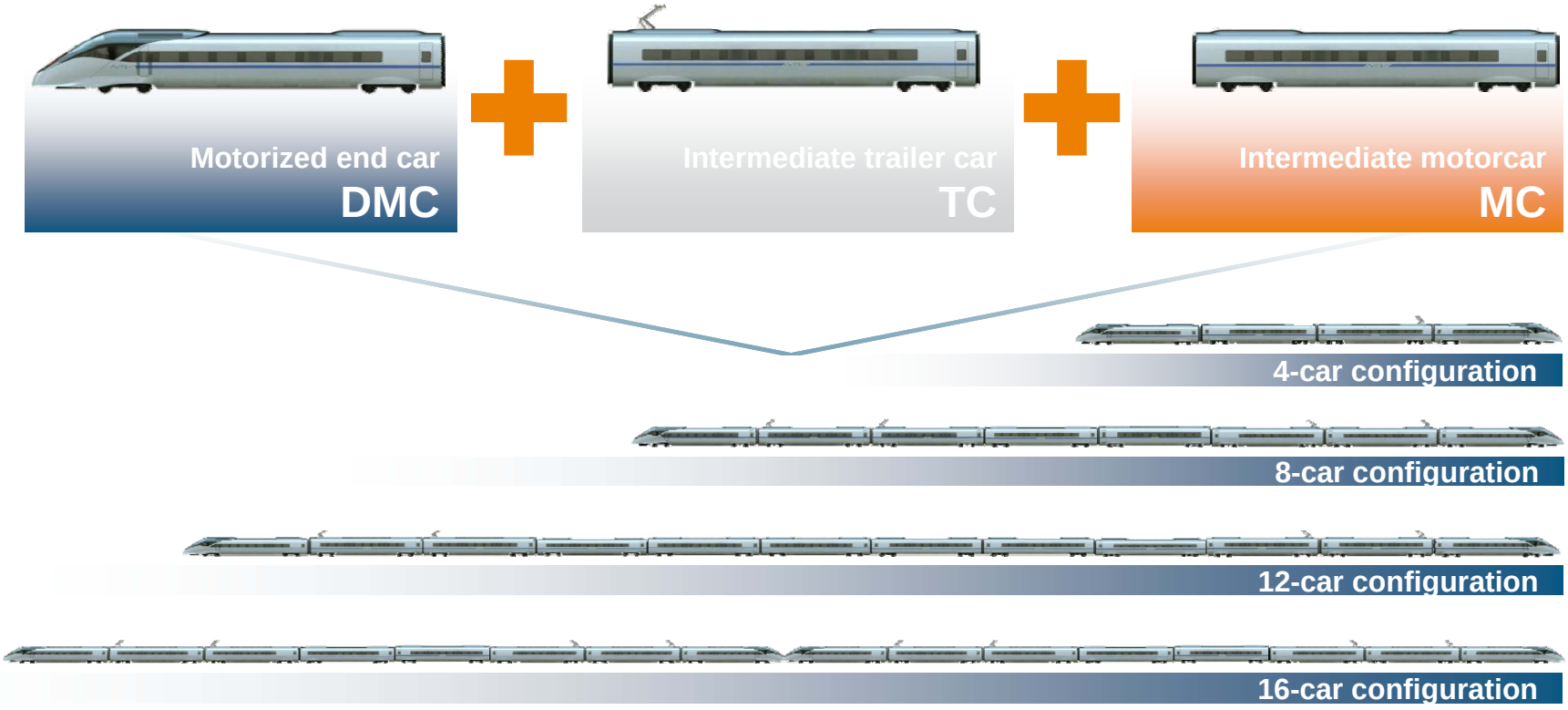
Bombardier ZEFIRO – Modular technology from 250 to 360 km/h

Every train is configured according to customers' business targets, using the three basic types of cars with one or two doors:



ZEFIRO technology is fully adaptable to customers' needs, from 4 cars to 16 cars and from 1 to 4 power supply systems

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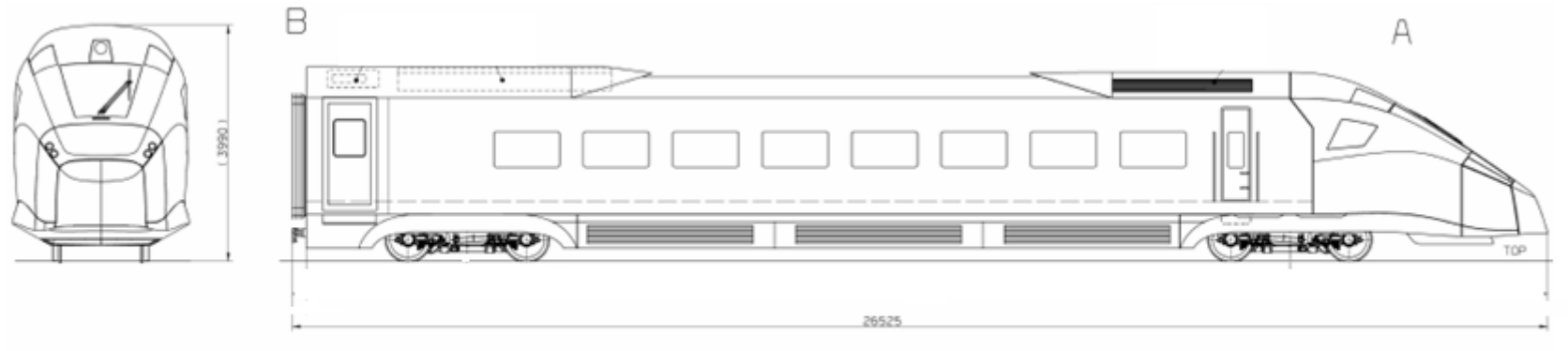
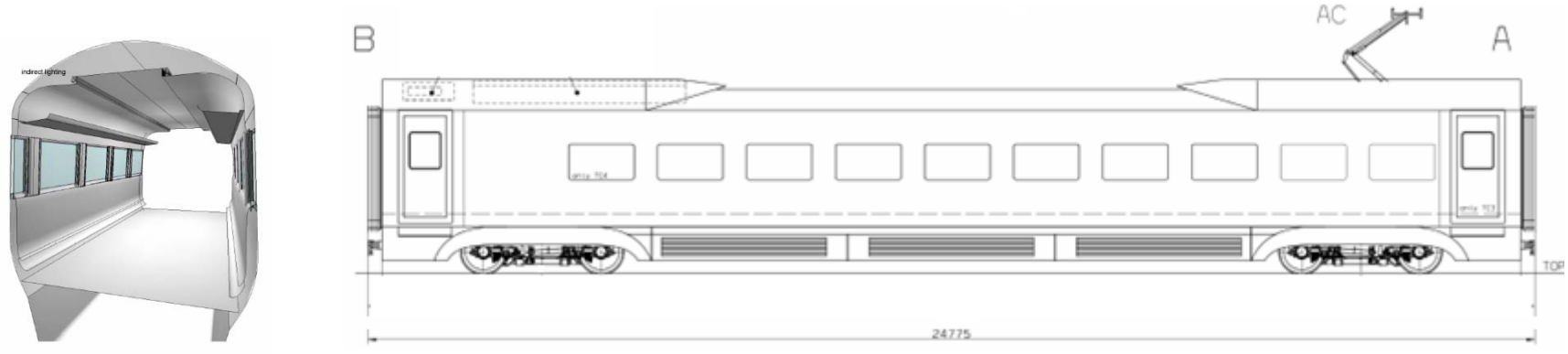
Bombardier ZEFIRO – high capacity





- Conventional architecture
- 500 to 700 seats for a 200m train

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ZEFIRO: Technology for profitable operations

- **CAPACITY: From premium to low cost seats arrangement**
- **FUTURE-PROOF: Designed for multiple life**
- **RELIABILITY & AUTONOMY: Designed for improved O&M efficiency**
- **ENERGY EFFICIENCY: The lowest consumption/passenger**


Thank you for your attention
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