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CUTTING-EDGE TECHNOLOGY FOR HIGH SPEED TRAFFIC CONTROL
ADIF IN A NUTSHELL

/ Adif, the Spanish railway infrastructure manager, is a public entity attached to the Ministry of Public Works and Transport.

/ We manage and maintain a 15,000 km rail network and 2,000 stations and freight facilities. Over the last 25 years all of our facilities have been significantly renovated and modernized through major investments.

/ We designed, build and maintain one of the largest high speed networks in the world, using state-of-the-art technologies and meeting the most demanding safety and reliability international standards.

/ Commuter lines and medium and long distance circulations are also capital to ensure mobility. Adif has the largest expertise constructing new conventional lines or upgrading the existing ones. Including for this purpose items such as the electrification; more reliable and safety-guaranteeing signalling systems and new traffic operations systems.

/ We rely on a team of 13,000 professionals.

/ We are leaders in every field of railway systems development.

/ We cooperate closely with the world-renowned Spanish rail industry and technological companies.

/ According to the World Economic Forum, Spain’s railway infrastructures ranked among the world’s top four.
The extension of the Spanish High Speed network required newly adapted control centres that meet the most advanced standards and would also adapt to continuing technological progress.

From the OCCs, Adif monitors High Speed traffic through large LED technology screens representing all trains running in real-time and its interaction with the railway infrastructure key elements like tunnels, viaducts, stations etc. This control system also allows for an integrated management and supervision of all communications, power, signaling etc...

OCCs are operational 24/7, all year long.
ADIF OCCS MAIN FIGURES

/ High Speed OCC’s supervise 500 trains per day running 49 million km/year. This traffic represents 25% of total rail traffic on Adif’s network. The same amount as travelling 1,223 times around the Earth.

/ From OCCs, Adif supervises
  / 2,500 km of High speed lines
  / 31 stations
  / 14 track gauge changeover facilities
  / 493 viaducts (151 km)
  / 203 tunnels (273 km)

/ We can highlight the management of Guadarrama tunnel, on the Madrid- Valladolid- Leon line, one of the longest in the world and therefore especially relevant for traffic management. The twin tube tunnels are 29 km long with connecting galleries every 250 meters.
Adif manages 4 OCCs controlling the following High Speed lines:

**MADRID – ATOCHA OCC:**
- Madrid - Sevilla
- Madrid - Toledo
- Madrid - Valladolid - León
- Madrid - Zamora
- Ourense - Santiago

**ZARAGOZA OCC:**
- Madrid - Barcelona - frontera francesa

**ALBACETE OCC:**
- Madrid - Valencia / Alicante

**ANTEQUERA OCC:**
- Córdoba - Málaga
DAVINCI

All systems and applications are centralized in a single technological platform, whose intellectual property belongs to Adif, called DaVinci. It is designed for the integration in one single workstation of all management tools that previously required different equipments. This represents an easier manageability and allows for a global vision of all railway operations.

DaVinci is suitable for all kind of railway networks.

TRAFFIC MANAGEMENT SYSTEMS

ERTMS (European Rail Traffic Management System) and LZB:

- Speed up to 300 km/h and above, according to the implemented level
- Continuous speed monitoring
- High frequency of trains

ERTMS is the system adopted by the European Union in order to ensure interoperability among rail networks equipped with this technology.

LZB is the traffic control system that was deployed in Spain’s first High Speed line, between Madrid and Seville. It is also deployed in the Madrid-Toledo line. All other lines are equipped with ERTMS, except Córdoba - Málaga line, which is equipped with both systems.

SAFETY, PUNCTUALITY, QUALITY

Through the implementation of the most advanced traffic management systems in OCCs, we can guarantee both safety and reliability in our network. Moreover, all systems are redundant and therefore, in case of any incident, traffic safety can be managed from the OCC or from other ancillary facilities.