



## ERTMS DEPLOYMENT IN SPAIN

### FROM AIR TO RAIL— INCREASING THE SPANISH RAILWAY'S PERFORMANCE WITH ERTMS



**With more than 3,500 km of rail tracks contracted (almost 2,000 km of lines), and over 1,000 km of lines already in service, Spain clearly emerges as a pioneer in terms of ERTMS deployment. Whilst ERTMS has contributed to the success of iconic lines, such as the "AVE" Madrid-Barcelona High Speed line, where rail is gradually replacing air as the transport of choice (over 48% of market share after 12 months of service), the Spanish experience is also a showcase for the effective interoperability of ERTMS, with no less than 6 companies involved in various projects on the Spanish network.**

#### *What is the status of ERTMS deployment in Spain?*

Under the strong leadership of infrastructure manager ADIF, Spain has embarked on a major program of railway investments, identifying ERTMS as the signalling system of choice. The first contracts were signed in the early 2000s and ERTMS now covers the major part of the Spanish High Speed network. Indeed, the "AVE" network has become a phenomenon in Spanish society and is the clear paradigm of speed, punctuality and efficiency. Travelling in AVE is fast, safe, environmentally-friendly and even "trendy".

At present, the following major lines are running using ERTMS:

- Madrid - Barcelona High Speed line (650 km route)
- Cordoba - Malaga High Speed line (155 km)
- Madrid - Valladolid High Speed line (197 km)
- Madrid - Toledo High Speed line (21 km)
- Madrid Atocha High Speed By-pass (12 km)
- Zaragoza - Huesca (80 km)

Other major projects are currently under construction, with several lines scheduled for commercial service within 2012:

- Madrid - Valencia – Albacete High Speed line (500 km)
- Barcelona - Figueres High Speed line (130 km)
- Figueres - Perpignan High Speed international connection (45 km)
- Madrid "Cercanías" suburban network (320 km)

Additionally, there are several major projects in the pipeline (planned and already in the civil work phases) such as:

- Madrid - Galicia High Speed axis (via Valladolid)
- Vigo - Porto High Speed line
- Madrid - Lisbon High Speed line
- Basque "Y" Project (High Speed line linking the 3 Basque capitals with each other and with Madrid via Valladolid)



#### *Which ERTMS suppliers are involved?*

The six UNISIG suppliers of ERTMS are involved in the Spanish railway network, and full interoperability between their products (both on-board and trackside) has been achieved. In other words, the trains supplied by any of the 5 on-board units suppliers in Spain (see picture below) are able to run on trackside equipment built by any of the others, which represents a major technological achievement. This brings significant advantages to the Spanish infrastructure manager ADIF, who have the guarantee that several suppliers will respond to tenders which will lower the cost of the signalling equipment through basic commercial and healthy competition.





### *What are the benefits brought by ERTMS in Spain?*



Infrastructure manager ADIF is viewed as a pioneer in ERTMS deployment in Europe. Whilst the Spanish ERTMS network is to expand in the coming years, the use of ERTMS has already brought considerable benefits:

- From an infrastructure manager point of view, choosing ERTMS means enlarging tendering opportunities, since any ERTMS supplier may respond to tenders;
- In just one year, passenger transport recorded considerable growth on Madrid- Malaga (88%), Madrid-Valladolid (109%) and Madrid-Barcelona (see below) lines;
- On these three lines, punctuality rates were averaging more than 98% (second only to Japan)\*, attracting a considerable number of customers. New lines coming on stream will prove equally attractive;
- As a consequence, ERTMS also has considerable environmental benefits, since passengers are knowledgeably opting for the train instead of the plane when travelling between these cities, therefore producing on average one sixth of the carbon footprint emissions as opposed to air or road traffic.

*\* (Source: ADIF)*

### *From plane to train: the example of the Madrid - Barcelona line*

The Madrid-Barcelona line went into commercial service in February 2008, and is acknowledged to be one of the most successful examples of modal shift from plane to train, with the only equivalent to be found in the Paris-London (Eurostar) and Paris-Brussels (Thalys) lines.

Thanks to the use of ERTMS level 1, trains enjoy record punctuality rates (see above), whilst travelling between the two cities takes only takes 2hr38' - compared to the 6 hours tolerated in the past. Future service in ERTMS level 2 will even reduce the current travel time.

Spanish operator RENFE estimates that the line has attracted 1.4 million passengers that were previously using air transport. In August 2008, the average number of passengers had already increased by 84.5% as compared to January 2008! After the first year of service, the AVE Madrid Barcelona has taken a share of 40 % of all trips between the two cities.

The line is set to be connected with France in 2012, opening exciting new opportunities for cross border high speed traffic. Moreover, the opening of the Atocha by-pass in December 2008 has considerably reduced travelling time between Barcelona and the South of Spain. Indeed, there are now new High Speed connections between Barcelona and Seville and Barcelona and Malaga that don't need to pass by and stop in Madrid Atocha station, reducing travelling time by more than 50 minutes.



## SUPPLIERS

