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# The signalling sector opens the door to the Spanish industry

**Signalling and telecommunications systems represent key technological support for rail operations in a number of ways including both the management and control of traffic signals and remote controls. Technological developments in these fields contribute in an essential way to the advancement of modern railway lines, especially in high-speed operations.**

In Europe, industry-contribution to signalling is especially useful to achieve the goal of technical interoperability through the implementation of a common European system, compared to the 20 systems that exist today. In this way, the current operational barriers along different corridors could be completely eliminated. These developments play a key role to allow railways to compete more successfully against other means of transport. In the last decade, the growing use of modern high-speed lines in many European countries has been made possible by the techniques used – among these we must highlight the mobile radio

system GSM-R as a communications support for voice and data to the European signalling system ERTMS.

On 19 May 2006 – a milestone date in Spain – the first circulations took place between the cities of Madrid and Lerida with series 102 trains running at 250km/h operating ETCS level 1. Since then, the high degree of progress made in this area, and specifically the ERTMS system in this country, is having an exponent of first orders that makes its rail network a true example of interoperability.

At present, Spain has 1,974km of track equipped with ERTMS in service, of which

656km are also equipped with Level 2 and it is the system that is implemented in new lines.

Apart from the great achievements in high-speed, networks such as the Madrid commuter line is also a pioneer at European level with the implementation of an ERTMS signalling system – a facility which results in improved safety.

We must highlight that the operation of systems such as ERTMS/ETCS offer a number of advantages based on its versatility, allowing operation in the same line with different levels, with different scenarios of occupation and the ability to adapt to each case. Nevertheless, its implementation is a delicate process that

requires special planning and the intervention of highly specialised companies.

Indeed, the adaptation and coexistence of the signalling and communication systems that are registered in Spain has provided the industry with a unique experience that is now exported to Europe and those emerging markets where there exists a commitment to rail as a means of territorial and interurban mobility. Bulgaria, Romania, Lithuania, Saudi Arabia, Turkey, Morocco and Algeria are just some of the countries that have taken this great know-how to improve traffic management and traffic safety.

### Spanish advances in worldwide railway signalling projects

The engineering sector has created specialised teams that have allowed them to work in the most important high-speed lines developed in Spain and around the world, with an intense activity on railway systems, primarily focused on the management, supervision and monitoring of GSM-R projects, as well as signalling and train protection projects.

Getinsa Ingeniería, after providing its experience in numerous high-speed sections in Spain, is at present active in international projects such as on lines 1 and 2 from the branch 'Dammam-Hofuf-Riyadh/Dammam-Hofuf-Al Kharj-Riyadh' in Saudi Arabia – the first network of its kind in the area.

Ardanuy Ingeniería has also made its way internationally. Among the most prominent works, this Spanish company is responsible for the study report of the high-speed railway line project between Qued Tlelat and the Moroccan border on the branch Tlemcen-Akkid Abbas – a report which includes signalling through ERTMS systems, levels 1 and 2.

The high specialisation in the field of signalling and telecommunications has also opened the door to Spanish renowned groups



A CAF Signalling CTC system

such as Idom ingeniería y consultoría and TYPSA. After their leading roles in the national network such as the high-speed Madrid-Barcelona line or the Madrid-Galicia line, they also carry out works abroad of special magnitude in terms of technical assistance, planning and coordination of facilities, etc.

With them, companies like Invensys Rail Dimetronic have contributed to the implementation of signage solutions in many countries. Invensys Rail Dimetronic has coordinated associated signalling systems of the new high-speed railway line between Ankara and Konya (Turkey), equipped with ERTMS Level 1. It is also present in the Spanish consortium in charge of the high-speed network between Mecca and Medina (Saudi Arabia), which includes the implementation of ERTMS Level 2 in track to the 34 trains on the line, the Traffic Control Centre, electronic interlocks and LED signals.

Beyond high-speed, awards have been made for relevant projects such as the signalling of the metropolitan area of Auckland (New Zealand), with the installation of ERTMS.

Another technological exponent is CAF Signalling who has carried out works in this field for the upgrade of signalling with ERTMS Level 1 for the new rail corridor between Bulgaria and Romania, as well as the section around the city of Pehlivan koy within the by-pass linking several lines between Turkey and Greece.

Thales Spain has also managed to strengthen their presence worldwide with numerous contracts – for instance winning a recent award for the signalling modernisation of the railway line between Cairo and Alexandria. In this area of activity the company is already

present in Turkey, Algeria, Slovenia, Morocco and Malaysia.

Bombardier Spain and SEMI provide other examples of technological strength in railway signalling and communications that join this long list. Along with on-going projects, we must highlight the role of Public-Private Partnership in R & D. The company Indra have signed agreements with the Railway Infrastructure Administrator (ADIF) to create specialised GSM-R laboratories for the communications technology RBC-Train and the development of engineering data for ERTMS, among others.

### MAFEX

The greatest technological bet of the rail industry to become a leader in the fields of signalling and communications is supported by the intense international outreach of the Spanish Railway Association – MAFEX. In its programme of activities, the most important are the trade delegations and visits to the main forums for industry professionals to publicise the contributions of member companies in this field, as well as the range of services and products with which these companies have contributed to the development of rail in recent years.

#### About MAFEX:

The objective of the Spanish Railway Association (MAFEX) is to carry out promotional activities in other countries, as well as to defend their general interests. Created in 2004, MAFEX currently has 71 members representing more than 85% of Spanish rail industry's exports, according to official figures in 2012. Known as the official collaborating organisation of the Spanish Ministry of Economy and Competitiveness through its Subsecretariat of Trade, the Association is supported by GRUPO AGEX, to which it belongs, and by different national and international organisations and institutions.

[www.mafex.es](http://www.mafex.es)



After spending some years as the Assistant Manager at Fundigex – the Castings Exporter's Association of Spain – **Pedro Fortea** became the Director of MAFEX in 2004 and has helped to develop its professional activity. Pedro has studied at ESADE Business School, Escuela Universitaria (Cámara de Comercio de Bilbao) and Deusto University.