MAFEX
Mafex corporate magazine
Spanish Railway Association
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EUROPEAN SMEs

They are the basic structure of productive activity and, Spanish SMEs in particular, play a decisive role in the value chain of the rail industry worldwide

MIDDLE EAST AND OMAN FAIR
Active participation of Mafex and its members during March

SINGAPORE, AUSTRALIA AND MALAYSIA
Three destinations with a strong rail investment for the coming years

INTERVIEW: PHILIPPE CITRÖEN
The General Director of UNIFE analyses the European railway situation

The important role of SMEs in the railway sector

Dear friends,

As the year progresses, the Spanish rail industry remains a world leader. Our participation during this first quarter, Exporail Mexico, Middle East Rail and Asia Pacific Rail, has recorded the interest in our industry in the world. Also, the visit of a representative of Metro Delhi to Spain, and our participation in an institutional delegation to Sweden, have made it clear once again that the international railway industry relies on technology and Spanish rail services.

For example, in the section Members News of this number, you can see some of the most important contracts awarded in recent months to Spanish companies, such as access control and ticketing on trains of Buenos Aires, the access doors for passengers in Metro Panama or the design consultancy for the high speed section of Texas, among others.

In addition, this time, we wanted to dedicate the In Depth section to the important role that small and medium-sized European companies play within the value chain of the rail industry worldwide. In the case of Spanish SMEs, over the last decade, more than 50% of its exports were destined to the European Union countries, market in which there is the highest concentration of the largest and most demanding rolling stock manufacturers in the world.

In this sense speaks Philippe Citröen, General Director of UNIFE, the European Association of the Rail Industry, whom we interviewed in this issue. According to him, half of the railway world market is supplied by the European industry, which is also leading the industry worldwide.

The section Destination focuses on three major markets: Singapore, Malaysia and Australia. Countries that are undertaking a major investment in rail infrastructure, and where some of our members have been working for several years.

Finally, I anticipate that in the next issue, to be published in September on the occasion of InnoTrans, we will include an article with the most important technological advances that the 50 Spanish exhibitors will be presenting at the fair.

Again, we hope that this issue is of your interest and you enjoy reading it.

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Spanish exhibitors at the XV Exporail Mexico 2016

XV Exporail Mexico 2016

MAFEX WAS PRESENT AT THE MOST IMPORTANT RAILWAY EVENT IN MEXICO, ATTENDED BY A LARGE GROUP OF SPANISH COMPANIES

Mafex coordinated for the first time the group participation of Spanish companies in the XV International Exhibition and business meeting of the railway industry organized by the Mexican Railway Association (AMF). The event was held in Acapulco from the 10th to the 12th of February. Spanish companies like Amurrio Ferrocarril y Equipos, Azvi Group, CAF, GMV and Luznor, among others, attended as exhibitors.

The event, which was opened by the head of the Secretariat of Communications and Transportation (SCT), Gerardo Ruiz Esparza, brought together more than 750 professionals and exhibitors from 16 countries in an area of 2,000 square meters, including Austria, Germany, France, Italy, USA, China, Canada, Brazil, Chile, Argentina, Colombia, Guatemala and, of course, Mexico and Spain.

The National Infrastructure Program 2014-2018, conducted by the SCT with the Spanish consulting firm Idom, includes 12 major railway projects in the country, among which we highlight, as mentioned by the Secretary of Communications and Transport at the opening of Exporail, the new railway terminal in Durango, the international railway crossing Matamoros-Brownsville, and the construction of a railway tunnel in Manzanillo.

Mexican freight rail is positioned in the eleventh place at a global scale, with steel, automobile and cement the main products transported. As for passenger traffic in Mexico, more than 7.5 million people per year use rail passenger transport.

In addition, participation in Exporail was complemented by several meetings in Mexico City on February 9, coordinated by the Spanish Railway Association, Mafex. During this day they held meetings with the head of Passenger Train Mexico - Toluca of the Secretariat of Communications and Transportation (SCT), the Director of Engineering and Technological Development of the Public Transport System of Mexico City and the Coordinator of the Program for Federal Support for Mass Transport in Banobras. They all shared with the delegation of Mafex the development plans and needs of their respective organizations.


Opening of the Fair/ Congress Exporail 2016 in Acapulco

Middle East Rail Fair 2016 and visit to Oman

MAFEX EMPASHIZED LAST MARCH ON THE SPANISH RAILWAY SECTOR RELATIONS WITH THE MIDDLE EAST

Spanish Railway Association, Mafex, in collaboration with ICEX Spain Export and Investment, organized for the second time the Spanish group participation in the Exhibition and Congress Middle East Rail 2016 held in Dubai during March 8-9.

A total of 8 Spanish railway companies: ArecelorMittal Comercial Perfiles España, AQUAFRISCH, Caf, Idom, Patentes Talgo, Sener, Tecnatom and Typsa, presented their latest technologies and innovative services in one of the most important platforms in the Middle East, which covered the various railway fields: Infrastructure, Rolling Stock, Signalling and Control and Intermodal Transportation, among others.

The exhibition, organized by Terrapin, was attended by over 9,000 participants from 62 countries and about 2,000 companies, of which 218 exhibitors were spread over an area of 9,000 square metres of exhibition space.

During the event, technical seminars and conferences were held on various topics in the railway sector and the maintenance of rolling stock and infrastructure, tunneling or different technological developments, in addition to the presentation of the latest projects in the Middle East, which were covered on issues 5 and 6 of this magazine.

Under the framework of the Congress, the Director of Mafex, Mr. Pedro Fortea, along with a small group of Spanish companies members of UNIFE, the Association of the European Rail Industry, had the opportunity to attend the meeting between the Director General of the Transport Directorate of the European Commission (DG MOVE), Mr. Henrik Hololei; the Executive Director of the European Railway Agency, Mr. Josef Doppelbauer and the Director General of UNIFE, Mr. Philippe Citroën. The purpose of this meeting was to discuss the opportunities and challenges of the railway sector in the Middle East as well as the opportunities for European companies against competitors from other continents.

Mafex booth at the Middle East Rail Fair in Dubai


Openng of the Middle East Rail Congress

Study Mission to Oman

In addition, taking advantage of the celebration of this Congress and its geographical location, Mafex organized a visit to Oman in order to know the current situation of the railway projects that the country plans to face in the coming years, as well as transmit the collaboration that Mafex members can provide for the development thereof. Meetings were held with the leaders of Oman Rail and the Ministry of Transport and Communications of Oman.

Asia Pacific Rail 2016 and visit to Taiwan

Asia Pacific Fair 2016 in Hong Kong

THE SPANISH RAILWAY ASSOCIATION LOOKS TOWARDS SOUTH ASIA AND DURING THE FIRST HALF OF THE YEAR PERFORMS VARIOUS ACTIONS TO PROMOTE THIS REGION

Mafex first attended the Asia Pacific Rail 2016 Congress, held in Hong Kong during the 22nd and 23rd March. In its 18th edition, this conference organized by Terrapin included presentations on innovations in four areas: metro systems, high-speed, passenger and freight transport; all of them were focused mainly on improving the traveller experience and operational excellence.

The event, which attracted more than 2,000 visitors and the presence of 500 authorities of the main rail operators in the region, has been growing in the last editions, due in large part by the relevance of the projects that will take place in the region in the coming years. For example, the High Speed project from Kuala - Lumpur to Singapore, the Urban Transport System of Klang Valley in Malaysia, or Metro Ho Chin Ming, are some of the developments in which the Spanish railway companies could provide great value.

Study Mission to Taiwan

Taking advantage of the visit to the Congress, Mafex conducted a study mission to Taiwan with the aim of holding meetings with Taiwanese authorities, including the Ministry of Transport and Communications and the main railway actors in Taipei, such as Taiwan Railways Administration, the Railway Reconstruction Bureau and MRT Taipei Rapid Transit, among others, establishing relationships that enable Mafex members to establish partnerships with the railway sector of this country.

Rail Solutions Asia Exhibition and Workshop in Singapore

Also, as part of the efforts to promote Mafex in the region, the Association will coordinate for the fourth consecutive year, the joint participation of several Spanish companies, including major manufacturers of rolling stock, CAF and Talgo, in the fair Rail Solutions Asia to be held in Kuala Lumpur from May 11th to 13th.

This Fair-Congress, organized by ADHD, celebrates its 17th edition with the Annual Congress of the AROA, Asian Railway Operators Association, during which the Spanish railway companies will have the opportunity to meet with the main railway authorities of countries like Malaysia, Hong Kong, Vietnam, Singapore, Thailand and the Philippines, among others.

In addition, Mafex will organize the day before the fair Rail Solution Asia, a workshop with the Land Transport Authority (LTA) in Singapore, which will be attended, in addition to the directors of the main technical departments of the LTA, by a large group of Spanish railway companies.

Opening of the 18th edition of the Asia Pacific Rail Congress 2016.

Mafex meeting with the Metro Taipei.

Institutional delegation to Sweden

MAFEX, WITH A DOZEN OF RAILWAY COMPANIES, FORMED PART OF THE INSITITUTIONAL VISIT OF THE VICE-COUNSELOR FOR ECONOMIC DEVELOPMENT AND COMPETITIVENESS ORGANIZED BY THE BASQUE COUNTRY TO SWEDEN

An institutional delegation led by Mr. Javier Zarraonandia, Deputy Minister of Industry of the Basque Government, travelled to Sweden during April 6-7 to strengthen trade and institutional links between the two regions.

The railway sector was one of the main issues that the Basque Administration included in its agenda which, accompanied by the Director of Mafex and a delegation of Basque railway undertakings, the Deputy Minister held meetings with leading Swedish railway entities, such as the public operator SJ and the infrastructure manager Trafikverket.

Thus, this visit has proved to be the prelude to a sales office organized by Mafex in Sweden and Denmark in the month of November this year.

Currently, the Swedish market is of great interest to members of Mafex, some of which are already working in the Nordic country in projects like the trams of the cities of Lund, Helsingborg and Stockholm, as well as the Metro of this last city. In addition, the Basque and Spanish rail industry has the world's leading companies in the sector, with capacity more than demonstrated to undertake projects that are planned to be carried out in the coming years in Sweden, such as the High Speed connecting Stockholm, Gothenburg and Malmö or the E4 bypass in Stockholm, among others

Metro Delhi visit to Spain

A REPRESENTATIVE FROM METRO DELHI VISITED SEVERAL SPANISH RAILWAY COMPANIES WITH MAFEX

During April 4-6, Mafex received the visit of Mr. SS Joshi, Executive Director of Rolling Stock Delhi for Metro Rail Corporation (DMRC) whose objective was to see in first hand the solutions that the Spanish rail industry is currently implementing on both national and international markets. The operator of urban transport in the city of New Delhi demonstrated the competitiveness of Spanish railway companies in this field.

During three days, Mr. SS Joshi visited the 7 railway companies, mainly manufacturers of rolling stock, components and material shipped, who showed, through their technological innovations, the service they are able to provide for the operation of one of the most important systems of the world's urban transportation.

The Executive Director for Rolling Stock in Metro Delhi visiting Mafex offices in Bilbao.

With this action the Association aims to deepen trade relations with India, and in particular promote the establishment of relations between Spanish companies and Delhi Metro Rail Corporation.

Cetest: new contracts for Bombardier and Alstom units tests

Cetest

During 2015, CETEST has been awarded with several contracts for two of the main rolling stock manufacturers in the world (Alstom and Bombardier).

These contracts reinforce CETEST position as a global strategic supplier for these manufacturers.

For Alstom, CETEST has performed a test to characterize the rotational resistance between the bogie and the body (X-factor test) for the new units that Alstom is manufacturing in its plant in Shanghai for the North East Line and Circle Line (NEL/CCL) in Singapore.

With regard to Bombardier, CETEST has been awarded with two contracts in 2015. An on-track test will be performed for the new Zefiro High Speed train which is in operation in Northern Italy.

Separately, CETEST will perform a test to evaluate the batteries of the new EMUs manufactured by Bombardier for the Swiss national train operator SBB.

Design consultant in the South stretch of the Texas High Speed Train

Getinsa Payma Group

The High Speed Railway of Texas will connect the cities of Houston and Dallas in the State of Texas, US. The Line will have a length of 386 km approx. with a speed of 330 km/h. The rolling stock will be the "bullet train" with Japanese technology N700-I and will be the international version of the train that operates the line Tokio-Osaka.

Euroestudios, company member of TPF group associated to Getinsa-Payma, is in charge of the South Section design, a section with a total length of 120 km that starts at Houston and circulates northerly direction to the surroundings of Singleton. The Project of Euroestudios includes the civil work, superstructure as well as the power supply system.

Alstom certified as Top Employer 2016 in Spain

Alstom España

Alstom has received the Top Employers Spain 2016 certification for the outstanding working conditions offered to its nearly 2.000 employees in Spain. The HR Best Practices Survey measures close to 600 practices, in order to evaluate the company's employee conditions. This international independent audit covers nine different topics: Talent Strategy, Workforce Planning, On-boarding, Learning and Development, Performance Management, Compensation and Benefits, Career and Succession Management, Leadership Development and Culture. The Top Employers Institute has been globally certifying excellence in the working conditions created by employers since 1991.

"Our human resources policy aims at attracting and retaining talent. Motivation of our team is key to provide most innovative, reliable and efficient transport solutions to our clients. This award encourages us to continue improving", underlines Jose Antonio Rodriguez, Alstom's Spain and Portugal Human Resources Director.

Tramlink: Rollout and beginning of commercial services in Gmunden

Stadler Rail Valencia

First metre-gauge Tramlink V3 LRV for Austrian local railway operator Stern & Hafferl Verkehrsgesellschaft (StH), designed and built at Stadler Rail Valencia, entered regular services on the Traunseebahn local railway between Gmundner Klosterplatz and Vorchdorf after the rollout ceremony on March 12.

On January 2014, StH awarded the consortium formed by Vossloh Kiepe and Vossloh España (today Stadler Rail Valencia) to supply 11 five-sections multi-articulated 100% low floor LRVs of the type Tramlink V3.

The 32m-long and 2.4m-wide bi-directional vehicles, with 75 seats and multi-function areas for wheelchairs, bikes or prams offer a bright and pleasant air-conditioned passenger compartment equipped with infotainment screens.

A safe and comfortable trip is assured by the light and resistant steel structure of the Tramlink and its innovative bogies with real axles that allow an easy access, the maximum capacity of seats without ramps and steps and a smoth ride even on narrow curves.

Faiveley Transport Iberica S.A., new supplier of passenger access doors for Metro Panama

Faiveley Transport Ibérica S.A.

Alstom Barcelona has designated Faiveley Transport Iberica, S.A. as a supplier of the passenger access doors of the Metro Panamá Line 1 extension, consisting of 40 intermediate cars - to complement existing units - 6 new trains (5 cars). The supply and manufacture of a total of 560 doors - 70 cars, 8 doors per car - be held between the end of 2016 and first of the 2018, and carried out from FT Ibérica plant in La Selva del Camp (Tarragona), very close to the factory that Alstom owns in Santa Perpetua de la Mogoda (Barcelona).

Siemens connects Barcelona to its airport through the longest driverless line in Europe

Siemens Rail Automation

Last February, the new section of Line 9 in Barcelona Metro between Zona Universitària and Aeroport de Barcelona - El Prat, 19.6 kilometers long, with fifteen stations and Siemens signaling systems and automatic driverless operation was inaugurated. After opening this new section, Line 9 in Barcelona Metro becomes the longest driverless line in Europe.

Siemens has developed and installed the signaling and traffic control system in this line, Trainguard MT; a CBTC (Communications-Based Train Control) system for automatic driverless operation, based on communication between train and trackside via radio. This automatic driving system by Siemens has already been commissioned in Paris, New York, Sao Paulo and Budapest metros, among others.

The Trainguard MT system automatically performs functions such as start-up, speed supervision, traction and brake control, stop and turnover in terminals, as well as doors opening and closing in units and platforms.

Currently, a 25 % of the entire Barcelona Metro network already operates driverless (Grade of Automation, GOA 4) thanks to Siemens technology.

Siemens also developed the first phase signaling of this line, along 11 kilometers and 12 stations, which entered into commercial operation in December, 2009.

Indra equips the Buenos Aires train network with access control and ticketing technology

Indra

Argentina's national rail operator has awarded Indra a contract worth 35 million euros, under which the firm will deploy its access control and ticketing technology across the Buenos Aires Metropolitan Area (BAMA) rail network, one of the world's largest with more than 200 stations. The contract also includes system maintenance during a two-year period.

Indra will equip eight lines with 1,400 access control machines, known as turnstiles; 170 disabled entrances; 200 automatic recharging machines for contactless SUBE cards, which are used to access all public transport in the city; as well as 150 on-board validators and 230 on-platform validators, which passengers use to pay their travel fare. The company will also supply 160 in-station transaction hubs and 300 journey inspection terminals.

A monitoring and control solution, which compiles information from a number of different subsystems and helps improve service management, will also be developed and implemented by Indra. The new technology will speed up passenger control and fare collection, while also helping to combat fraudulent use of the rail network.

This contract sees Indra reinforce its position as a smart technology provider for transport in Buenos Aires, where commuter train passengers, who make more than 1.4 million journeys each day, will use the company's systems to access the network and pay travel fares. Indra was involved in deployment of the city's bus fare system, using the contactless SUBE card, as well as converting existing turnstiles to the new payment system.

Bombardier´s engineering is now part of Barcelona´s suburban rail network

Bombardier Transportation

Bombardier, in consortium with Alstom, is to oversee the provisioning of the signal systems ERTMS Level 2 for a section of Barcelona´s suburban rail network. The deal also includes twenty years of maintenance service for the 56 kilometres stretch of rail track, which connects L´Hospitalet de Llobregat and Mataró. The project, awarded by Adif, is worth 72.7 million euros (81.9 million dollars).

Bombardier Transportation will be specifically responsible for the electronic interlocking system with their product BOMBARDIER EBI Lock 950, the most advanced technological solution of this range. This technology is commonly used for public transport thanks to the CBI systems for long-haul journeys. The EBI Lock 950 CBI administers and oversees all aspects of the journey from the signals to the needle drives to the level crossing security.

Metro of Ho Chi Minh "Award for best Engineering Project Abroad 2015"

Idom

In late 2015, the College of Civil Engineering, Canals and Ports of Spain, in recognition of the growing importance of the Spanish Engineering in the international arena, awarded IDOM the "Award for Best Engineering Project Abroad" for line 5 of the Ho Chi Minh Metro.

The merits for this distinction to IDOM are based on the technical, manufacturing and design quality of the project and its contribution to improving quality of life and respect for the environment.

1. social significance and improving the quality of life

The project impacts on the lives of more than two million people, reducing travel times, mitigating environmental pollution and contributing to the process of modernization of the entire city.

2. Technical and functional excellence: sustainable and efficient

The project, based on its functional suitability and technical suitability, rests on a strict use of resources and a choice of solutions and processes, not seeking to be iconic or singular, but the most necessary and efficient.

3. Relevance of the contribution in a multicultural setting

The Spanish contribution is especially significant as it forms part of a small group of countries such as Japan, China, Korea and Germany, cooperating in the design and financing of the metro in Vietnam.

DANOBATGROUP exhibits its railways maintenance solutions at the American Passenger Rolling Stock Congress in Washington D.C.

DanobatGroup

DANOBATGROUP co-sponsors the American Passenger Rolling Stock 2016 congress that was hold in Washington D.C. from 16 to 17 March. This congress was focused on implementing asset management and enhancing state of good repair to minimize cost, reduce downtime and increase reliability.

Ander Azkarate, head of the department research and innovation for solutions in the railway sector, explained the procedure the company follows when a new project for the railway sector is started and how the final delivery goes far beyond simply supplying a machine

Philippe Citröen, General Director of UNIFE ((Union of the European Railway Industries)

"The European rail industry supplies almost half of the world"

"UNIFE has played a role in the increase in influence of the European Railway Agency as well as the elimination of many barriers to interoperability between the Member States."

BRUSSELS. SPAIN.

The General Director of UNIFE analyzes the European market and explains the achievements of the Association.

UNIFE was established in 1991 with the main aim of defending the interests of the rail industry within the newly created European Single Market. What assessment would you make of the objectives achieved by UNIFE over more than two decades of existence?

UNIFE has, indeed, been advocating for the interests of its members, European rail supply companies, for over two decades. From my perspective, UNIFE's work both in the technical domains of European research coordination and standards and regulation development as well as the public affairs domain promoting investment and policy favourable to rail has certainly had a positive impact on rail systems in Europe and abroad across the decades. As a staunch advocate of the creation of a single European railway area, UNIFE has played a role in the increase in influence of the European Railway Agency as well as the elimination of many barriers to interoperability between the Member States. The fruits of these labours are apparent more than ever in 2016 as we are now on the verge of the adoption of the 4th Railway Package's Technical Pillar; which will boost the role of ERA even more by making it the one-stop shop for vehicle authorisation and safety certification for rolling stock in the EU.

The successful adoption of the regulation creating the Shift2Rail Joint Undertaking in June 2014 was a major milestone for UNIFE, as the Association, our members and other partners defied all odds in trebling the EU funding for rail research. All in all, we're seeing a lot more action at the EU-level in favour of the rail system. I'm not going to attempt to quantify the impact of UNIFE's efforts since its inception; but I'll just say that it is evident when you reflect on what has been accomplished even in the past decade. This brings me to another important initiative that illustrates the important role that UNIFE plays in Brussels—the European Parliament's Resolution for the Competitiveness of the European Rail Supply Industry, which is expected to be fully adopted by the EP in the coming months and will serve as a guiding document and impetus for further EU activities in support of our industry. Faced with rapidly increasing competition on the global market (and even in Europe), it became apparent to UNIFE and our members that a broader industrial strategy had to be embraced at the EU level (as set out for other industries). With the proactive and capable leadership of MEP Martina Werner, the Resolution has become a reality and outlines, holistically, the challenges and possible solutions to these challenges facing the European rail industry as a job-creating, export-oriented and strategic industry for Europe.

We encourage MAFEX and its members to support this important Resolution encouraging action from Spanish MEPs and transport officials to ensure that there is a strong follow up to this work.

In fact, I'd like to take this opportunity to express that we really need a more significant official involvement of Spanish stakeholders on many topics at the EU level. In the end, UNIFE occupies a strategic position in influencing EU policy in favour of rail and our industry.

As for the negotiations of the Free Trade Agreements (FTAs) with third countries like Japan, USA and China. Could you briefly explain the achievements realized so far? In particular, in relation to the US market, in what stage is the TTIP (Transatlantic Trade and Investment Partnership) and how much will it benefit the European rail industry?

While the European rail industry has a strong home market in the European rail system—it is also an export-oriented industry and currently supplies nearly half of the accessible global market for rail equipment. However, in recent years, we have noticed that the accessible market has been decreasing while non-European rail suppliers are growing in size and becoming increasingly present in Europe and on global markets. This is especially the case in China where the newly formed state-supported CRRC Corporation emerged last year as the largest rail manufacturer in the world and with significant international ambitions. The World Rail Market Study, the next edition of which will be released and presented at InnoTrans in Berlin this September, will certainly give us precise information on these global market accessibility trends.

Therefore, boosting access to foreign markets has become, more than ever, a priority for UNIFE and our members. We expect a level playing field when it comes to accessing these markets, which is why we ask the European Commission to ensure that market access and procurement discussions result in a wide and by all means reciprocal access to foreign markets for EU rail suppliers.

For this reason, UNIFE has been very active on the EU-Japan Free Trade Agreement (FTA) negotiations and we are aggressively pushing for concrete signs of market opening and reduction of non-tariff barriers to entry such as the Operational Safety Clause. Likewise, UNIFE is pursuing fair terms for accessing Chinese and US markets in the EU-China Investment Agreement and the Transatlantic Trade and Investment Partnership (TTIP) negotiations, respectively. We hope that Spanish companies and MAFEX will continue to be proactive on these negotiations and will push for a support of the Spanish government of the new version of the Interna-

tional Procurement Instrument.
With regard to the TTIP discussions—the twelfth round of EU-US trade talks took place in Brussels in late February. Negotiators discussed all three main parts of the agreement, namely market access, regulatory cooperation, and rules. Following the round, there was a first exchange of offers on public procurement, which is the main focus of UNIFE and its members, and three full days of negotiations. UNIFE will continue to follow the TTIP negotiations closely and advocate for an improvement of the US public procurement system.

Since more than a year, the JU (Joint Undertaking) of Shift2Rail is a reality. What progress has there been since then? What would you say to small and medium enterprises who see this program out of reach, as an initiative that benefits only large multinational companies?
Shift2Rail represents great promise for the broader European rail sector and industry in general. We also know that many Spanish companies are very interested and involved in this Joint Undertaking. In order to modernise and continue to compete as a mode—the rail system needs to offer better technology that boosts the capacity and reliability of the current system and reduces overall costs. Similarly, so that the European rail industry can maintain its leadership of the world rail market—a step change in the technology brought to market must be achieved in order to compete with significant state-sponsored investments in R&D available to large Asian competitors.
The approval of the regulation setting up the Shift2Rail Joint Undertaking (JU) in 2014 was a major achievement for the sector. While the JU is just now finalising its set up and expects to begin official R&D activities later this year; the Shift2Rail lighthouse projects, Roll2Rail, IT2Rail and In2Rail kicked off last spring and are already carrying out preliminary research activities which will feed into the main Innovation Programmes of the JU.
Furthermore, the Associated Members of the JU were selected in December 2015 and the open calls for proposals for non-JU members were launched in December 2015 with a deadline of mid-March 2016. We have learned that the official JU research activities are expected to begin this autumn. The Shift2Rail open calls provide a good opportunity for SMEs to benefit and participate in the JU. Nevertheless, we encourage Spanish SMEs to be proactive and persistent in their outreach to the Joint Undertaking.

Philippe Citröen during Mafex Convention.

In relation to the 4th railway package (4RP) it is expected to create a single European railway area. What is the current state of negotiations regarding the Technical and Political Pillars? What benefits will this initiative offer the European rail industry?
To provide a little context for your readers, the Fourth Railway Package has now been hotly debated for over three years starting with the European Commission's proposal of 30 January 2013. For UNIFE and European rail supply companies—we have focused on the Technical Pillar of the Package which addresses the complex and expensive authorisation procedures for rolling stock in Europe. It has been estimated that these procedures currently immobilise assets worth up to €1.2 billion. At present, rolling stock must go through the lengthy authorisation and safety certification process in each EU Member State where it will operate—creating significant regulatory obstacles to cross border traffic at a time where the EU is endeavouring to create a Single European Railway Area. The Technical Pillar of the Fourth Railway Package, once implemented, will create in the European Railway Agency (ERA) a one-stop-shop for vehicle authorisation and safety certification valid in all EU Member States. This will drastically reduce the costs and time necessary to put rolling stock into operation, which in turn will make the rail industry and rail transport mode much more competitive.
Regarding the ongoing status of the Technical Pillar, in March the European Parliament's Transport Committee gave its final green light on the Technical Pillar of the 4th Railway Package, on the basis of an inter-institutional agreement reached between the Council and the Parliament in June 2015. Spanish MEPs were particularly active during this vote. The Committee vote on the Interoperability and Safety Directives and ERA Regulation will now allow the Technical Pillar to be officially adopted during a Plenary Session in Strasbourg. According to the EP official schedule, this final step should be accomplished during a Plenary Session (in April), although there is, once again, some speculation that some MEPs may want to delay this vote in order to speed up the progress on the Political Pillar, on which Trialogue discussions are still ongoing.
As the principles of the Technical Pillar were agreed last June, we are hoping for a swift adoption by the European Parliament this spring so that the three-year implementation period can begin and its benefits realised by the entire sector as soon as possible!

Regarding the Juncker Plan (EFSI) and the cost reductions that this Plan aims to implement in Shift2Rail and Connecting Europe Facility (CEF), what is UNIFE's position? How will these cuts affect the Trans-European Transport Network (TEN-T) and the two freight corridors passing through Spain?
UNIFE has been very supportive towards the newly created European Fund for Strategic Investments (the so-called Juncker Plan), even though, as you rightly point out, it came with a cost for the Horizon2020 and CEF. When analysing the EFSI impact on the rail sector, we have to take into account that it is both an opportunity and a challenge. At present, we haven't been able to ascertain the position of the Spanish government on the EFSI.
First, it is an opportunity for those rail projects that have a potential to attract private financing. For a project to receive the EFSI guarantee (via the European Investment Bank), the project needs to commercially sound, economically and technically viable, contributing to EU objectives, mature enough to be bankable. We have seen in Spain that railway projects can benefit from EFSI, as the EIB is in the process of assessing financing for construction and improvement of rail access to ports. Another project that has already received EFSI financing is a €300 million loan to Trenitalia for acquisition of new rolling stock. This means that the potential is there, but all stakeholders need to work together in order to prepare a good project pipeline. Therefore, UNIFE is working closely with the European Commission and the EIB in order to ensure that the rail sector would benefit from the EFSI as much as possible. In fact, in a letter I received in March, European Transport Commissioner Violeta Bulc expressed her hope that our members and stakeholders would submit projects to the European Investment Project Portal, stating, "The transport sector is well positioned to benefit from this new initiative [EFSI]… I strongly encourage the members of your association to upload your projects on the Portal in the spirit of a shared goal to revive investments in transport infrastructure, contributing to bringing the European economy on the path of growth."
Second, EFSI poses a significant challenge, because there is no geographical pre-allocation or sectoral distribution of resources. This means that rail projects have to compete with all other good projects at the EU level. In this sense, there is no guarantee that the money taken away from the CEF (€2.2 billion) will be proportionately returned to the railway sector under the EFSI. Moreover, the main rationale behind EFSI is different than that of the CEF, which was created to support the implementation of the TEN-T Policy. For the EFSI, the main task is to mobilise at least €315 billion of additional investment in 3 years and the political stakes are extremely high to achieve this target, so there is no consistent evaluation whether all TEN-T Core Network Corridors will receive the much needed support. By mid-March, there were only two EFSI projects in the railway sector, with the majority of transport projects concerning construction, upgrading and widening of motorways.

How do you assess the cooperation of Mafex as an associate member of UNIFE?
We are very happy to work with MAFEX and we know that we can rely on the MAFEX association and its members when necessary to contact the Spanish public authorities and Members of European Parliament on the many important European and international dossiers.

Infographic showing Bedok Station in Singapore's Downtown Line 3.

Singapore, Malaysia and Australia improve their railway network

THE THREE COUNTRIES HAVE DESTINED MOST OF THEIR RESOURCES TO INVESTMENTS FOCUSED ON METRO AND RAILWAY. WE ANALYZE THE MOST IMPORTANT DEVELOPMENT PROJECTS CURRENTLY.

SINGAPUR

In 2013, the country announced an ambitious project to double the existing MRT kilometres by 2030 as part of the Master Plan for Land Transport. This way, new lines will be built and others expanded.

With a network of 142 stations across the island, the MRT (Mass Rapid Transit) is one of the most popular modes of transport in Singapore with a number of users of more than 2 million passengers a day.
Thanks to the projects that have been carried out or are planned, such as the Circle line, fully operational, or the future Thomson-East Coast line, these will further expand the rail network.
The goal for 2030 is to double the rail network until a length of 360 kilometres. By then, eight out of every 10 households will live in an area of no more than 10 minutes away from a train station. With this doubling of the rail network, Singapore will have a total length of rail that is superior to big cities like Tokyo or Hong Kong today, and comparable to the city of New York.

Improvements planned for 2030

Meanwhile, LTA (Land Transport Authority) is committed to improve the service levels of the existing network:
The main objectives of the Master Plan 2013-2030 are:

- 75% of the trips are made at rush hour on public transport
- 85% of trips by public transport within 20 kilometres are made in less than 1 hour
- 8 out of 10 households are less than 10 minutes' walk from a train station.

In order to carry out these purposes, the LTA has provided a budget of 42,000 million euros, of which 26,000 are for civil works, 9,000 to electromechanical works and 5,000 will go to specialized contractors.

SINGAPORE

THOMSON-EAST COAST LINE

TEL is a line between the Thomson Line and the eastern region line. With 43 kilometres, it will add 31 new stations to the existing rail network, and will have 7 exchange ones, which will join the East-West line, the North-South line, the East-North line, the circular line and the centre line of the city.

Travelers will start enjoying TEL at different stages since 2019.

This will be the sixth railway line from Singapore, to be known as the Thomson-East Coast (TEL) line.

The 13 kilometres stretch of the east coast of TEL will connect passengers living in the eastern part of Singapore and which are not directly served by the rail network today, such as Tanjong Rhu, Siglap, Marine Parade, Upper East Coast and Bedok South in the heart of the city.

The stretch of the east coast of TEL will be completed in two stages. The first seven stations from Tanjong Rhu to Rayshore will be ready in 2023, while the remaining two stations, DTL3e and the terminal will be completed in 2024.

When fully operational in 2019, it is expected that the 31 stations forming TEL will serve about 500,000 commuters in the early years, reaching one million passengers a day (in the long run).

TEL stations are designed with more inputs and outputs and some of these inputs are connected to internal steps up to 4000 meters.

"Four-in-one" Terminal

This network will have the first "four-in-one" train and bus terminal. It will host various bus and train lines as TEL (Thomson-East Coast), EWL (East West) and DTL (Downtown). With 36 hectares, the "four-in-one" station will accommodate about 220 trains and 550 buses.

Although the construction of a terminal of this type involves a complex planning and significant engineering challenges, 44 hectares of land will be spared.

The LTA (Land Transport Authority) will also build the first underground bike parks in Singapore MRT stations. Located in four stations along the stretch of east coast TEL, these bike parks will be useful for travellers wishing to cycle to subway stations from their home or workplace.

CANBERRA STATION

Canberra Station is a new metro station in the North-South line. It is the first line of Singapore subway - parts of it were in operation in 1987 - but a new station in Canberra will be added to it in 2019. Works began in April 2015.

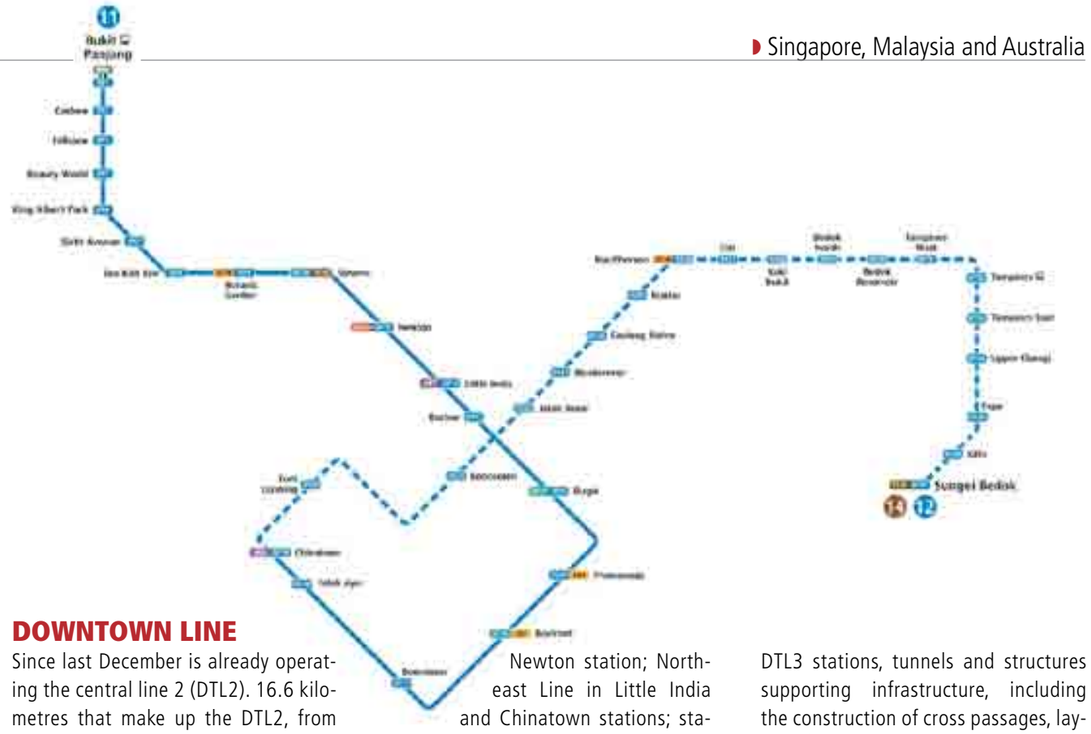
Located between Sembawang and Yishun stations along the link of Canberra, Canberra station will offer services to passengers who live in nearby farms, as Sembawang Springs and Comoa suburbs.

This is the second MRT station in Singapore and will be built on an existing railway line. The construction of a station on an operating line is difficult because work hours and work space are limited to construction activities.

When the new station opens, residents will no longer have to take a bus to travel to Sembawang or Yishun MRT stations.

With this direct connection to the underground network, residents traveling to the city center or Jurong East will have a travel time saving of up to 10 minutes.

For the ease of movement of passengers and accessibility, Canberra station is designed with five entries with links to new housing estates in Canberra.



DOWNTOWN LINE

Since last December is already operating the central line 2 (DTL2). 16.6 kilometres that make up the DTL2, from Bukit Panjang, through the School District in Bukit Timah Road. The opening of the lines DTL2 and DTL1 have provided direct travel from areas of north-western Singapore to the Central Business District (CBD) and the Marina Bay area. Passengers will benefit from better accessibility to other parts of the island with connections in eight interchange stations. There are connections with the East-West line in Bugis station; North-South line in Newton station; North-east Line in Little India and Chinatown stations; stations in the circular line in the Botanical Garden, Bayfront and Promenade; and Bukit Panjang LRT in Bukit Panjang station. A trip to Bukit Panjang in Bugis until today had a time of 50 minutes. With DTL, it will take about 30 minutes.

With the end of the works of the tunnels of the central line 3 (DTL3) in June 2015, came the end of the tunnel works for the 42 km that make up the centre line. Project teams will focus on DTL3 stations, tunnels and structures supporting infrastructure, including the construction of cross passages, laying of roads and installation of cables inside them. Within stations, installation of electrical and mechanical works and works of architecture, will proceed simultaneously in the next two years. Finally, the trains will go through a rigorous testing process and implementation to ensure the smooth operation of the line. The DTL3 is forecasted to be completed in 2017. After its commissioning, there will be 18 stations and a total length of 20.7 kilometres.

EAST-WEST LINE

It connects the East with the West through the 49 km and 35 stations that make up the East-West line. Today, it is the longest line in operation in Singapore. It runs through schools (Nanyang Technological University, National University, Singapore Polytechnic and Ngee Ann Polytechnic), entertainment areas (Jurong Bird Park) and the last enclaves of famous food (Tiong Bahru market and Geylang). In February 2002, the MRT extension to Changi Airport was added for connecting passengers from Tanah Merah Station to the Singapore Expo, Changi Business Park, South Industrial Changi and Changi Airport. Jurong East Modification (JEMP) is a project targeted to improve infrastructure and adds a new platform to Jurong East MRT station. This will be one of the busiest interchange stations and terminals of the East-West (EW) and North-South (NS) line.

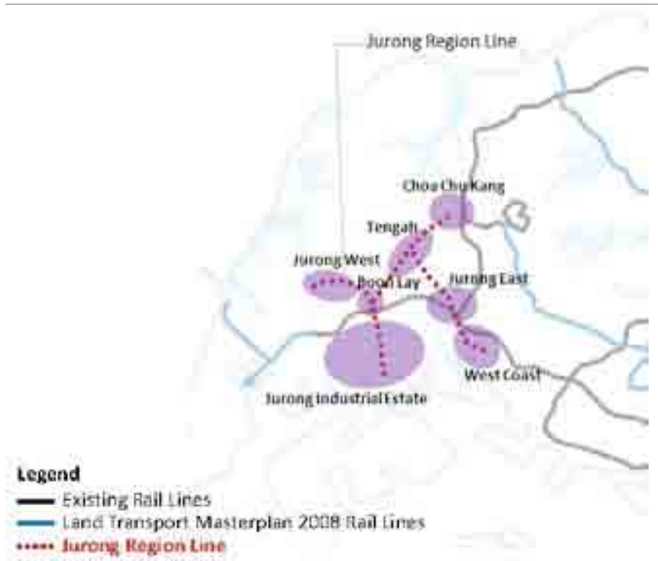
SINGAPORE

CIRCLE LINE 6

The 4 kilometres long CCL6 line, will connect Harbourfront station with Marina Bay station. When the three stations of Keppel, Prince Edward and Cantonment are completed in 2025, CCL will have a total of 33 stations, including 12 exchange stations with other MRT lines. Today, travellers have to make several transfers to move from Telok Blangah to Marina Bay Station. With CCL6, travellers can do it only with one train trip, saving a third of the time. As an orbital line, CCL will improve connectivity and overall capacity and strengthen the resistance of the underground network, connecting existing radial lines.

NORTH-EAST LINE

The Northeast line, 20 kilometres long, will offer service to Punggol North, including the new center of Punggol. It is expected to be completed in approximately 2030. The future residents will have access by train to the downtown and other parts of Singapore. With 16 stations, the Northeast line (NEL) is the first fully automated subway line in the world, with driverless rapid transit trains.
Being totally underground, it guarantees the safety of all passengers, providing platform doors throughout the stations. The stations also have air conditioning to provide a better travel experience to all users.
The NEL line is also the first metro line with Art in Transit, a public art project organized by the LTA. Art in Transit is now a regular feature in all MRT stations in Singapore.



JURONG LINE

The 20 km line of Jurong (JRL) will connect the region to the existing rail network for faster access to the rest of the island. It is expected to be completed approximately by 2025 and will provide service to the residents of Choa Chu Kang, Boon Lay and the future neighbourhoods in the area of Tengah. It will connect the main centres of activity in Jurong West, such as the Nanyang Technological University and Jurong Industrial Estate.

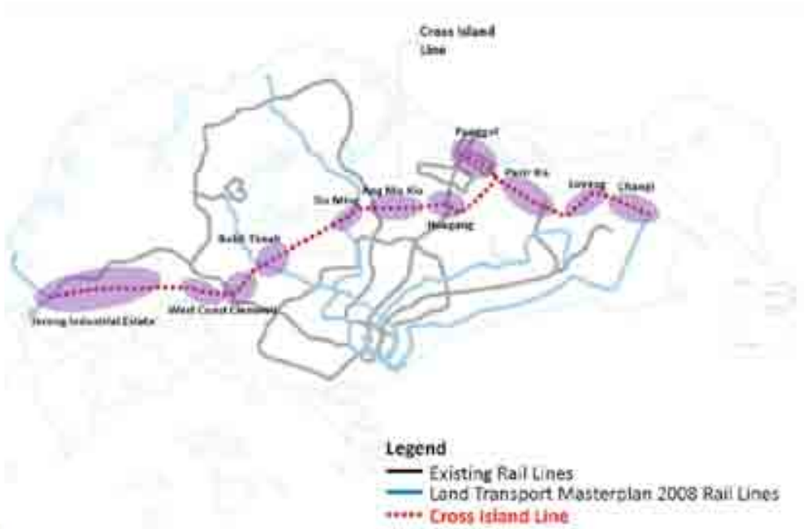
SINGAPORE

CROSS ISLAND LINE

The Cross Island (CRL) line will be about 50 kilometres long and is expected to be operational in 2030.

From Changi, the LCR will pass through Loyang, Pasir Ris, Hougang and Ang Mo Kio up to Sin Ming. Continuing westwards, it will offer services in areas such as Bukit Timah, Clementi, the West Coast and the Jurong Industrial Estate.

As part of the planning process of the CRL, LTA is considering two possible metro alignments near the CCNR (Central Catchment Nature Reserve). This requires an EIA, site research, engineering and feasibility study. In addition to the results of these studies, the Government will take into account other factors, such as transport connectivity, travel time, costs and impact on homeowners.



The two possible CRL alignments under consideration

The report of Phase 1 of the EIA happened after extensive study by the private company Environmental Resources Management (S) Pte Ltd (MTC). It conducted between August 2014 and December 2015, an assessment of the existing ecosystem and physical conditions of the CCNR in the vicinity of the two CRL alignments proposals included.

While research progress, which will begin in the 3rd quarter of this year, the MTC will conduct Phase 2 of the EIA to study and evaluate the potential environmental impacts on CCNR.

As in Phase 1 of the environmental impact assessment study of the work site, the MTC will propose mitigation measures and environmental management and monitoring plans to address the potential environmental effects.

Since 2013, the LTA has been consulting stakeholders such as health food associations and advisers and leaders around the area, to address their concerning parts.

HIGH SPEED KUALA LUMPUR-SINGAPORE

The project is still under study. It aims to connect Kuala Lumpur with Singapore via a high-speed train and the trip would last about 90 minutes. The original route would be about 330 kilometres, with 4 or 5 stations: in Malaysia, the station would be in Bandar Malaysia, and it will end in Singapore, in Jurong East.

Today, the main challenge for the project is how to distribute the costs: 95% of the route goes through Malaysia, which wants the budget to be spread more evenly.

The initial objective was that the project was completed in 2020, but certainly this deadline will be extended.

Although initially a budget of 10,000 million euros was estimated, there are some conditions that could even double this amount, which will vary with the problems that engineers face for the construction of the track, possible restrictions on private credit, delays in obtaining land, shortages of labour and materials, consensus in the regulation of customs and passport control, deterioration of relations between Singapore and Malaysia and fiscal policy disagreements.

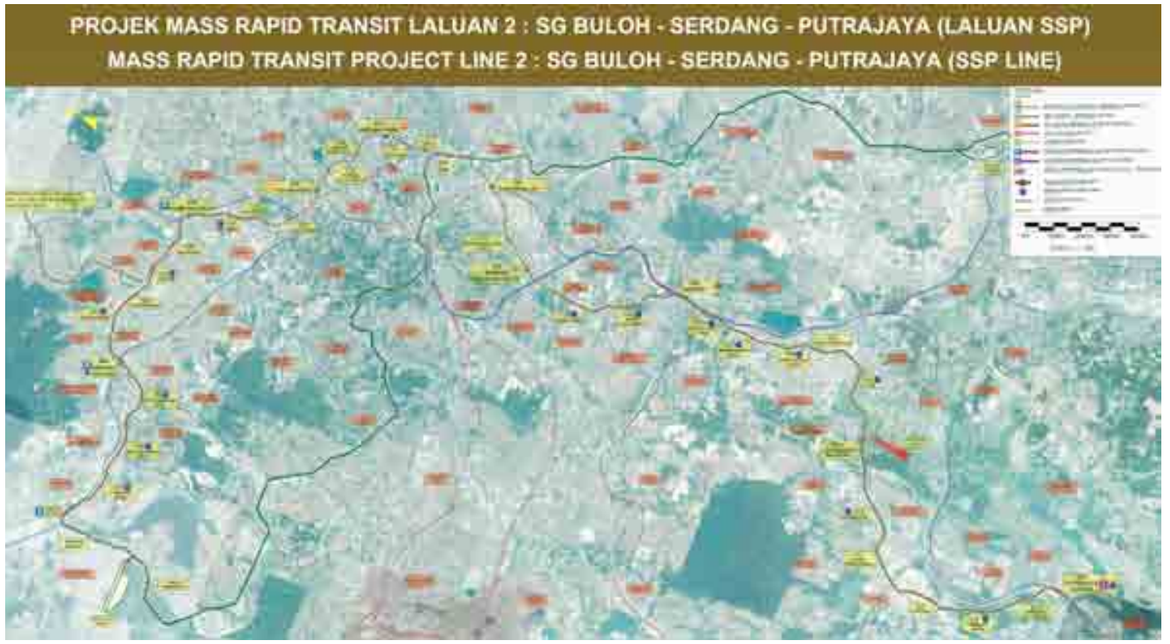
The construction of this project is agreed by the presidents of both countries, and thus was announced jointly by the two countries in February 2013. In addition, some aspects have been agreed by the parties but others are still missing, such as study track, line design and other technical specifications. Once determined these points, the next step is approval and then address funding issues that could be resolved in the second half of 2016.

MALAYSIA

With a strong process of improving its network of railway communication since 1990, the budget for the five years between 2015 and 2020 is expected to be €40,000 M, excluding projects for the metropolitan metro of Kuala Lumpur (MRT) and High Speed train between Kuala Lumpur and Singapore (HSR).

Despite the budget for 2016 was redesigned in January, the Prime Minister of Malaysia reported that large infrastructure projects would not be paralyzed. Malaysia has a network of 1,868 km of lines (332 km double track) but the width is 1,000 mm. There is only one train line with standard width (1435 mm) of 57 km in length, between Kuala Lumpur and the International Airport (KLIA Ekspres). The railway network covers most of the 11 states of the Malaysian peninsula.

In East Malaysia, only the state of Sabah has a railway network. The network is also connected to the network of the Thai railway, 1,000 mm to the north.



KLANG VALLEY MASS RAPID TRANSIT (KVMRT)

The KVMRT project involves the construction of a public transport network based on railway, which along with the existing light rail transit (LRT), Monorail, KTM Komuter, KLIA Ekspres and KLIA Transit Systems, form the backbone of the Greater Kuala Lumpur / Klang Valley. It will mean that 50% of all trips in the Klang Valley are made on public transport by 2020, in relation to the current 17%.

The project was approved by the Government in December 2010.

The first subway line to be implemented was the **Sungai Buloh -Kajang line**. The construction of the line was officially launched on July 8, 2011 by the Prime Minister of Malaysia, YAB Dato 'Sri Mohd Najib Tun Bin Abdul Razak. This is line 1 of Kuala Lumpur's metro, covering a distance of 51 km with 31 stations. It is expected to transport about 460,000 people daily and to be completed in late 2016 or early 2017, after an investment of 5,500 million euros.

Sungai Buloh - Serdang - Putrajaya line: Subway Line 2. It will cover a distance of 52 kilometres through 36 stations, which will transport 529,000 people every day. Investment in this line is estimated at around 5,750 million euros. Its construction has been approved by the Government and will begin during the second quarter of 2016 and the first phase is expected to be completed in 2021 and the second in 2022.

Line 3: all the parameters are yet to be defined, but it is intended that a third round in the future line is built.

MALAYSIA

EXPANSION OF THE KELANA JAYA AND AMPANG LINE

Investment in the expansion of both lines is around 1,750 million euros. The aim is to double the number of users, which currently stands at 200,000.

Ampang Line: 18.1 kilometres and 12 stations. It takes place in two phases:

- Phase 1: 4 stations (Awan Besar, Alam Sutera, Muhibbah), operational since October.
- Phase 2: Expected to enter service in June this year.

Kelana Jaya Line: dditional 17.4 kilometres with 13 new stations. It is expected to be completed in October 2016.

The proposed light rail line 3 (LRT3) is a project developed in accordance with the Development Plan for Urban Rail under the Public Land Transport Commission. It is part of the National Master Plan for Public Land Transport towards developing a public transport system that is efficient, effective, integrated and sustainable to improve the socio-economic development and a better quality of life. It aims to connect Bandar Utama Klang with a total distance of 36 km and comprises 25 stations. Construction works will begin in 2016 with the approval of the competent authorities and is expected to be completed in 2020.

LRT3 is probably the best of efforts to strengthen the efficiency of rail and support efforts to improve public transport in the proportion of trips to 40% in 2030 compared to the 21% there is today.

It will serve as a backbone for the provision of services between the West Corridor at Klang Valley to downtown Kuala Lumpur through the integration of 5 stations including One Utama, Sg MRT. Buloh-Kajang, Station 3 with the stadium of Jaya LRT Kelana and SIRIM with BRT Kuala Lumpur-Klang and Klang and the caves of Batu KTM Komuter Line-Port Klang.

OTHER PROJECTS

- **Electrification and splitting Gemas-Johor Bahru:** 197 kilometres long stretches. It was awarded in December to China Railway. It is expected to be completed in 2020.

- **Penang Transport Master Plan:** Under this plan, there is some interest in building a light urban railway on the island of Penang, namely the city of Georgetown. In 2015 the project Delivery Partner was elected, which has indicated that it expects construction works to begin in 2018 and will last about six years. It will have a length of 20 kilometres.

- **Kuala Lumpur Monorail Extension:** On several occasions, the possibility of extending the Monorail Kuala Lumpur in eight new stations has been present. Last year, Prasarana r (owner and operator of 2 lines of LRT, KL Monorail and bus services) received several proposals but there has been no news.

- **Line in the island state of Sabah:** Within the plan to boost economic growth in the area, the development of a 320 km railway line between Tanjung Manis and Similajau has been proposed.

- **East Coast Rail Route: :** the development of a line between Kuala Lumpur and the main ports and economic centres of the East Coast was proposed in 2009. In 2014 a feasibility study which estimated a cost of 15,000 million Euros and a length of 620 kilometres was performed.

- **Johor Bahru Commuter train:** The government of Johor Bahru has approved a proposal to build a commuter train (Rail Transit System) which will connect the main towns of the region and an intercity connecting with Singapore. The project is valued at 300 million Euros and is pending approval by various institutions, despite having been announced in 2011.

- **Rehabilitation and development of railway infrastructure in Sabah:** e objective is to improve transport services by rail and connect the major cities of Sabah.

AUSTRALIA

The Australian government plans to invest a total of 43.900 million Australian dollars through the Infrastructure Investment program in the coming years. The Ministry of Infrastructure and Regional Development is carrying out this investment through various plans and projects of roads and railways under the National Land Transport Network.

Australia A is the sixth largest country with 7,682,400 sq km, but only has a population of 24 million, which is concentrated in major cities. They are so far apart that each constitute a separate market often. This inevitably affects the trafficking of people, goods and services, since the distances between capitals are very long. In the last decade passenger transport by rail has had a remarkable increase in popularity, since many cities have obtained records of passengers. Demand has increased significantly over the past five years, which has caused congestion on the lines, but has also encouraged investment in transport infrastructure. In fact, public investment in rail networks will play an important role in the growth of this sector in the coming years.

Freight has also experienced a growth in recent years thanks to booming global demand for coal, iron ore and other natural resources and it is expected to continue to grow thanks to the productive phase of resource boom (not the mining phase). Freight transport by rail is especially competitive when it comes to moving large volumes over long distances.

The biggest challenge of the sector is currently to increase its competitiveness in the burden of non-bulk goods, dominated today by road transport. This difference has been accentuated by the fall in oil prices in the recent years, although the increase in investment and rising raw do provide an improvement in the competitiveness of rail.

The Australian government plans to invest a total of 43.900 million Australian dollars through the Infrastructure Investment Program in the coming years. The Ministry of Infrastructure and Regional Development is carrying out this investment through various plans and projects of roads and railways under the National Land Transport Network. The National Land Transport Network is a network of corridors of national and regional transport including rail and road connections through urban areas and connections to ports and airports that are considered critical for economic growth, development and national and regional connectivity.

This commitment of the Australian government for infrastructure investments and growing demand leads to many business opportunities.

PROJECT IN NEW SOUTH WALES

The **Sydney metro** infrastructure project is the largest of Australia's public transport system. Sydney Metro Northwest, formerly the North West Rail Link, is the first phase of Sydney's metro. It will include the construction of two tunnels of 15 kilometres from Bella Vista to Epping, the largest in Australia. It will cost 8,300 million Australian dollars (5,400 million euros). The second stage will be the Metro City & Southwest. Sydney Metro Northwest will be the first fully automatic subway in Australia. It will welcome its first passengers in the first half of 2019

CBD AND South East Light Rail Project. This new light rail will run from Circular Quay via George Street to Central Station, from Surry Hills to Moore Park, then from Kensington and Kingsford via Anzac Parade and Randwick via Alison Road and High Street. The project was approved on June 4, 2014 and works began in August 2014. The construction, maintenance and operation of the CSELR will be in charge of AlTrac Light Rail consortium which is part of Acciona.

South West Rail Link. This project, whose construction ended in 2014, consisted mainly in improving Glenfield station and creating a line of 11.4 km between Glenfield and Leppington. Currently, the extension of this line is being considered, in order to connect it with existing lines (South West Rail Link Extension Corridor). This way, the new lines would connect Leppington with Bringelly and then take two directions: to the north with the line T1 (Western Line) near St Marys; and south to Narellan. It is also being considered to extend the corridor further south, towards T2 (South Line).

Northern Sydney Freight Corridor (NSFC) Program is an initiative of the Australian Government and New South Wales to improve the capacity and efficiency of freight rail transport between Strathfield and Broadmeadow, Newcastle. The program thus aims to avoid bottlenecks on the East Coast interstate, which connects the three major cities of Australia (Melbourne, Sydney and Brisbane). While the Hexham Passing Loop Project was completed in 2012, it is expected that the construction of other projects (Epping to Thornleigh Third Track, Gosford Passing Loops, North Strathfield Rail Underpass) is completed during 2016.

Moorebank Intermodal Terminal Project Moorebank, In South Western Sydney, is the site chosen to locate the intermodal terminal that will cover container traffic from Interstate Rail Freight and Port Botany. The construction of this IMT (Intermodal Terminal) is the first step intended to provide an integrated transport solution needed to solve the increasing entry of goods into the city. It is expected that the first phase of the terminal starts operating in 2019.

AUSTRALIA

PROJECTS IN QUEENSLAND

Brisbane is preparing for the Commonwealth Games 2018 with the creation of **a new light rail** that will link Brisbane with Costa Dorada with a budget of 1,200 million Australian dollars (780 million euros). The first section of the so-called Gold Coast Light Rail System was awarded to the consortium GoldlinQ. The second section, covering a distance of 7.3 kilometres is still waiting to be awarded.

Another of the most important government projects is the **Melbourne to Brisbane Inland Rai**l, connecting South East Queensland directly to Melbourne via Toowoomba and Central West NSW. It will be approximately 1,700 kilometres long and with an estimated cost of 10,000 million Australian dollars. It will take about ten years to build and the project is expected to start soon.

Bus and Train Project. It is a tunnel of 5.7 km long for buses and trains which will run from Dutton Park in South Brisbane to Spring Hills in the north through the CBD (Central Business District) of Brisbane. The project will cost 5,000 million Australian dollars and is expected to be finished in 2021.

Moreton Bay Rail Link, en Queensland. Operations will begin in early 2016. This is a 12.6 km railway line between Petrie and Kippa Ring that includes six new stations. This project involves the construction of 13 km of railway north to the city of Brisbane. The total amount of the project is 1,147 million dollars and it will provide the following benefits:

- Provide a more reliable, cheaper and faster alternative to travel to the Central Business District of Brisbane during peak hours.
- It will help reduce congestion on the road network, including Bruce Highway, and free up capacity for those who can not travel by public transportation.
- Provide sustainable transport options to reduce carbon emissions
- Provide better access to major employment centres, both within and outside the region of Moreton Bay
- It will help attract investment to the area and create business opportunities
- Act as a catalyst for growth
- Moreton Bay's Railway will provide a focal point for the local community and will include a number of features, including:
- 14 km of double-track rail from Lawnton to Kippa-Ring
- Railway connection to Caboolture Line
- 22 bridge structures
- 6 new railway stations
- 2,850 parking lots
- Stabling (including installations of the train crew) for 10 trains of 6 cars in the vicinity of the station Kippa-Ring
- 3 m wide route made of concrete for cyclists and pedestrians along the entire length of the corridor.

Caboolture to Maroochydore Corridor is under study..

Central Queensland Integrated Rail Rail Project (CQIRP). It is a railway network linking the coal mines of Galilee and Bowen Basins with the eastern ports of Queensland. The project, which is estimated at about 2,000 billion Australian dollars, is still in the preliminary stages.

PROJECTS IN VICTORIA

Melbourne Metro Rail Project is a project of modernization and expansion of capacity of the Melbourne metro which includes the construction of a new double tunnel of 9 km, under the business district. It will extend from South Kensington, in the west, to South Yarra, in the southeast. The project will connect the lines of Sunbury and Cranbourne / Pakenham for the first time, connecting the city centre. Its onset is scheduled in 2018 and it will cost about 8500-11000 billion Australian dollars.

The **Melbourne Rail Link project** incorporating the Airport Rail Link, is one of the main projects within the infrastructure program of Victoria. This program, with a budget of 27,000 million Australian dollars, aims to improve the connectivity of the city. Also included in this project:

- Cranbourne Pakenham Rail Corridor project (2,000-2,500 million Australian dollars). The expected completion date is 2018.
- East West Link - Western Section (8,000-10,000 million Australian dollars). Date: 2015-2023.
- CityLink Tulla Widening (850 million Australian dollars). Construction began on March 16, 2016.

Another billion dollars will be destined for the elimination of eight level crossings as part of the government program to improve safety in these areas and the expansion of the Regional Rail Link Project and CranbournePakenham Rail Corridor Project.

Investments will be made in regional transport projects such as the **Murray Basin Rail Project** (180-220 million Australian dollars)

High Speed Rail (HRS). it is a high-speed train on the east coast of Australia, linking the cities of Brisbane, Gold Coast, Newcastle, Sydney, Canberra, Wollongong, Southern Highlands, Albury and Melbourne. The proposal is still under development.

Map of the metro line Melbourne proposal

PROJECTS IN ACT

Capital Metro Light Rail (Canberra). The light rail will also begin operation in Canberra in 2018. The first section, called Gungahlin tram, will have 12 kilometres and will cost 698 million Australian dollars (about €454 M); although this budget may vary up to 35 million Australian dollars (approximately €23 M). CAF and Pacific Partnerships, a subsidiary of CIMIC (Grupo ACS) are participating in this project.

AUSTRALIA

WESTERN AUSTRALIA

Perth Metro Area Express (MEX). Light rail of 22 kilometres long linking Mirrabooka in the north with the CBD, before splitting into two branches to the Victoria Park Transfer Station in the east (via the Causeway) and Queen Elizabeth II Medical Centre in the west (via West Perth). The construction works will begin in 2019 and are expected to end in 2022.

Airport Rail Link (Perth). Forrestfield-Airport Link is the new rail line linking Forrestfield with the city, connecting the eastern suburbs of Perth with train connections for the first time and allowing to arrive to the Airport 5 minutes before than by car. This line will connect the line of Mindland with Forrestfield through underground tunnels. This project will cost 2,000 million Australian dollars and is expected to be completed in 2020.

Oakajee Port and Rail. This project includes the Port of Oakajee (20 km from Geraldton) and a railway network of 570 km linking the mines of the central-western region with the position. The project has an estimated cost of 4,370 million Australian dollars and is under development.

Project Iron Boomerang. This project aims to revolutionize the world of manufactured steel connecting Pilbara's iron ore mines in Western Australia, with coal mines in the Bowen Basin of North Queesland, through a system of rails of 3,300 kilometres. It is included in one of the largest projects in Australia: the East West Line Parks. Construction works have already begun and are expected to end in 2022.

The top map shows the new rail line linking Forrestfield with the city, connecting the eastern suburbs of Perth with train connections for the first time - Down, an infographic showing how the line will look like.

MAFEX MEMBERS PRESENT IN PROJECTS IN SINGAPORE, MALAYSIA AND AUSTRALIA

ALSTOM ESPAÑA

Alstom to deliver to Sidney Citadis X05, the latest evolution of its tram range

The ALTRAC consortium [1], of which Alstom is part, will build the new tram line in Sydney, awarded by the Transportation authority of New South Wales.

Globally, Alstom is responsible for the integrated tramway system which includes the design, delivery and commissioning of 30 coupled Citadis X05 trams, power supply equipment (including APS –ground power supply- over two kilometers), signalling systems, the energy recovery system HESOP, depot equipment and maintenance.

The commissioning of the new line, 12 kilometers long and 19 stops, is scheduled for early 2019. It will go through the Central Business District and South East Light Rail and will be a vital element of the public transport system in Sydney, helping to decongest the traffic.

In this project, Alstom Spain, through its technological laboratories located in Madrid, is responsible for the development of security systems and signalling. Trams, also, will be manufactured in the industrial center of Santa Perpetua de Mogoda, in Barcelona.

Citadis X05 integrates new technologies such as permanent magnet motors to reduce energy consumption and easier sub-system integration and maintenance to decrease lifecycle costs. Citadis X05 for Sidney will offer high-end comfort, including double-doors for improved access and passenger flows, large balcony style windows, multi-purpose areas and ambient LED lightning. It also offers the highest levels of customer safety including constant CCTV [2] monitoring, emergency intercoms and the latest way-finding aids for real time passenger information.

DANOBATGROUP

DANOBATGROUP, signed major contracts with two renowned world leaders in the mining industry located in Australia, BHP Billiton and Rio Tinto.

The first contract is for the supply of a turnkey workshop for maintenance and repair of bogies and wheelsets of railway wagons; while the second is for an automatic line for maintenance of wheelsets. Both are for wagons for transport between a mine and port. The two contracts total 90 million Euro, a historical record in the order portfolio of DANOBATGROUP, which foresees excellent prospects for the coming years. These contracts result from focussing on sectoral specialisation, something DANOBATGROUP has been committed to in recent years; not only that, but also to offering added value that is not merely limited to machines, but includes major engineering for the design, integration and commissioning of these facilities.

Project features

These projects provide an answer to growing demand for automatic plants to perform maintenance on mining trains, usually located near the mining site in remote areas which therefore have a shortage of nearby labour. Disassembly, repair, reassembly and final inspection of all components must be performed fully automatically on these installations.

The need to integrate - in one case 28 units and in the other 22 - robotic handling devices and a computer system for full control of the entire line turn these workshops in the most advanced facilities in the world for maintenance of train components: the bogie and wheelset.

CETEST

Currently, CETEST is participating in the approval of new cars for Metro Singapore for the North East Line (NEL) and the Circular Line (CCL). These cars are manufactured at the plant of Alstom in Shanghai. Specifically, CETEST is participating in tests for the characterization of the rotational resistance to rotation between the bogie and the box. With this contract, CETEST strengthens its presence in the Asia-Pacific market. CETEST has also done work in Australia in the past year. It has been in charge for the dynamic testing of new trams for the city of Sydney. Through such evidence it is determined that the tram is roadworthy from the point of view of traffic safety.

CAF

CAF has become one of the leading suppliers of urban transport solutions in Australia. The company is the preferred bidder for the Canberra tram project. Specifically, CAF will supply 14 low-floor Urbos units for the new light rail line to be built in this city.

The new vehicles are 100% low-floor and are composed of 5 modules, with 4 doors on each side. These trams combine modern aesthetics with cutting-edge technology and maximum accessibility, with no compromise on comfort, performance and ease of operation and maintenance.

This line will be 12 kilometre long with 13 stops, providing a corridor between the area of Gungahlin and the centre of the Australian capital. First vehicles are scheduled for delivery in late 2017. CAF is one of the consortium members of Canberra Metro Consortium, along with Pacific Partnerships, John Holland, Mitsubishi Corporation, Aberdeen Infrastructure Investments, CPB Contractors, Deutsche Bahn International and the Bank of Tokio-Mitsubishi UFJ. This consortium is entrusted with the design, construction, maintenance and operation of the new light rail line for term of 20 years. In the event of execution of the project second stage by ACT (Australian Capital Territory) with the extension of the line to the Russell area, trams will be equipped with the energy storage system developed by CAF, world leader in this technology, for catenary-free running between stops.

This is not the first project of CAF in Australia. The company has supplied 12 Urbos units currently in operation in the city of Sydney. This is a 5-module tram, with the best accessibility rating that can be offered in this type of vehicle.

Both projects confirm the growing confidence of the Australian urban transport authorities in CAF.

INDRA

Control centre and ticketing for the Light Rail Transit and Monorail of Kuala Lumpur

Prasarana (Syarikat Prasarana Negara Berhad), the public company responsible for the modernization of the public transport system in Malaysia and the operator of different lines in the country, has entrusted Indra with the design, development and commissioning of a new integrated control centre for the Monorail, Ampang and Kelana Jaya lines of the Light Rail Transit of Kuala Lumpur. The project shall integrate all transport lines operated by Prasarana in the new control centre, adding the remaining contracts for the MRT lines (Mass Rapid Transit), the KTM Komuter railway line and other future transport systems for the country. Such an ambitious and innovating project consolidates Indra as Prasarana's technological partner. Indra has already implemented ticketing and access control systems for this company in its Monorail and Light Rail Transit lines in Kuala Lumpur, after becoming the winning bidder of both contracts in 2011 and 2012.

Smart video surveillance technology in the Sydney Rail Network

Sydney Trains, the entity offering railway services in the city of Sydney and its area of influence, has awarded Indra a contract to modernize the railway network video surveillance system, using state-of-the-art technology, in Australia's largest, most populated urban center. Indra will implement its technology in the two control centers for managing the entire video surveillance system using closed-circuit television (CCTV) in a network of over 150 commuter stations, and will install state-of-the-art software for its operations and control. The multinational will replace the current 11,400 analog cameras with IP cameras that will be connected to the existing trunk communications network through a new network to be deployed in the stations. Indra will also supply the servers and storage devices for recording images during the period stipulated by the client. The new video surveillance system will include all of the advantages of IP (Internet Protocol) technology, given that by connecting directly to the cameras of the Sydney Trains computer network, any user station may operate as a control console for visualizing the images of any camera in real time and for recovering video recordings. Mobile devices connected to the network may also access video. Likewise, any tablet or cellphone may become a mobile console with which patrolling security employees may view images, thereby increasing their effectiveness

IDOM

IDOM is present in Malaysia since 2011 in the city of Johor Bahru, near Singapore, where it developed and supervised the largest steelworks project in Asia. It consists of a cold rolling mill with a total capacity of 180,000 tons/year. In later phases, further enlargement of cold rolling, hot rolling and steelworks will begin production. The final project is an integrated plant with capacity of 1 million tons/year of steel and 600.00 tons/year of cold rolling mill, incorporating the latest technologies.

IDOM has likewise participated in some of the Metro infrastructures that are being implemented in the cities of Southeast Asia, such as Metro Ho Chi Minh (recognized as the best Spanish engineering project in 2015), line 3 of Metro Hanoi, and urban transport in Vientiane (Laos), which will enhance the economic and sustainable growth in the region.

In the same geographical area, IDOM develops other water infrastructure projects (Laos, Philippines, Indonesia), which allow the company to increase awareness of the region and its regulations.

SIEMENS ESPAÑA

Siemens Railway Technologies in Singapore Downtown Line

In 2008, the Singapore transport authority (Land Transport Authority – LTA) awarded Siemens Rail Automation (former Invensys Rail) the contract for supply, installation and commissioning of the Trainguard Sirius CBTC (Communications-Based Train Control) system, state-of-the-art electronic interlocking Westrace MK2, ATS (Automatic Train Supervision) Controlguide Rail 9000 system and associated signaling for the Downtown Line.

In September 2011, the Spanish Siemens Rail Automation Division started trials on a Testing Track in the Chinese city of Changchun. Signaling and PSD (Platform Screen Doors) system tests started in September, 2012, then dynamic tests "test running" were carried out, and afterwards the customer started the first phase non-commercial operation tests in the Downtown Line.

Commercial operation of the first section began in 2014 and, in 2015, Siemens commissioned signaling of the second section and one depot. When the entire line is commissioned in 2017, this line will be 42 kilometers long and it will have 34 stations and two depots, and it will completely automatically transport over half a million passengers daily.

Key factors for success of this Siemens project in this country are mainly a close tracking of the work plan, an ideal management of requirements and settings, a good combination of "on-site" and offshore works and also the support from the customer, LTA, and good relations with it.

SINGAPORE, MALAYSIA AND AUSTRALIA

DIFFERENT ENVIRONMENTS


Singapore

SINGAPORE

Going through Singapore's river by boat, eating at a hawker, watch the skyscrapers from Merlion Park, visiting Little India, walking through Chinatown and enjoying a drink at Clarke Quay are some of the experiences you can live in Singapore.

If all the above can encourage you to visit Singapore, once you travel you will notice that the best of the city is its unique and incomparable atmosphere. Singapore is a city where you will find people any day at any time: concerts, events and street life is common to all the inhabitants of the city.

As essential visits we recommend:

The **Hotel Marina Bay Sands** has marked a before and after in Singapore architecture. Its three towers and the pool on the 57th floor have redefined the skyline of the city

Esplanade. Although many compare their shape with a durian (the famous local fruit), no one denies that it is one of the most important architectural works of Singapore and one of the most famous theaters in the world

165 meters high, the Singapore Flyer is the highest big wheel in the world. During the 30 minute trip you can make see the entire city of Singapore.


Cameron Highlands

MALAYSIA

Malaysia offers a high number of cultural activities and therefore it is a very popular destination for tourists. In Malaysia you can visit:

Cameron Highlands: Mountain and wild nature lovers will enjoy this area, with towns like Brinchang, Ringlet or Tanah Rata.

Ipoh: This town is named after an indigenous tree whose poisonous resin was used by Aborigines for hunting.

Johor Bahru: Regarding the main points of interest, we highlight the mosque and the palace of Sultan Abu Bakar (1833-1895), as well as some temples.

Kinabalu: The area is noted for its extraordinary biodiversity, with tropical and sub-alpine forests.

Kuala Lumpur: As the most iconic tourist spots, we highlight the Parliament, Royal Palace, National Mosque, which can support 10,000 worshipers in its main prayer hall, sultan Abdul Samad's building located at Merdeka Square, with victorian and Moorish elements.


Canberra

AUSTRALIA

A country full of amazing natural treasures that you cannot miss, like the beaches of **Lorne** in Victoria, **Byron Bay** in New South Wales and the Gold Coast, in Queensland, where you can surf and discover the wonderful underwater world of the **Great Barrier Reef.** The more adventurous may enjoy whale watching in Eden, **New South Wales**, or Warrnambool, Victoria. Visit Sydney and go to the Centrepoint Tower, from where you can contemplate a magnificent view of the city. If what you want is to learn more about cultural life, please visit **Canberra**, the Australian capital and a young and modern city where you can bike along Lake Burley Griffin, take a balloon ride, play golf at one of their fabulous golf courses or take a tour and see the beautiful vineyards surrounding the city.

European SMEs, big promoters of the global railway business

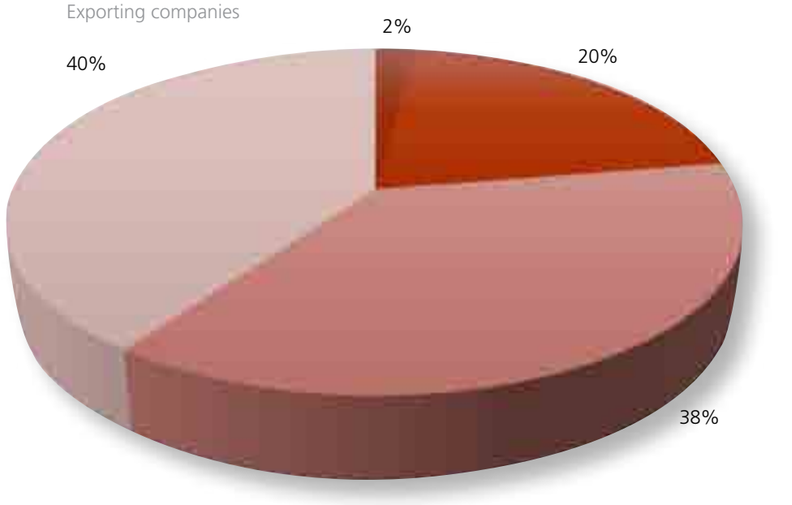
TODAY, SMALL AND MEDIUM SIZED ENTERPRISES ARE THE FUNDAMENTAL STRUCTURE OF PRODUCTIVE ACTIVITY IN EUROPE. ALTHOUGH SPANISH SMES SUPPORT NEARLY THREE QUARTERS OF EMPLOYMENT IN THE PRIVATE SECTOR AND GENERATE 64% OF ADDED VALUE, THEY NEED TO IMPROVE THEIR COMPETITIVENESS AND GROWTH.

Spain is a country of SMEs, particularly micro-enterprises. Any analysis of the Spanish business structure and demographics guarantees that SMEs are the fundamental structure of productive activity in our country. According to the Central Companies Directory (CCD) on January 1st 2015, the number of active enterprises grew by 2% to stand at 3,186,878, this being the first increase in the number of companies registered since 2008.

Of all companies, 99.9% have fewer than 250 employees. Just over 55% have no employees, ie approximately 1.75 million smaller companies are individual entrepreneurs. From the other companies with employees (these are 1.44 million), 91% have fewer than 10 employees; 108,383 are small; 1.2% is medium and only about 5,000 companies are listed as large enterprises. That is, as companies with employees, only 0.3% has more than 249 workers.

Another distinctive feature of the corporate structure in Spain is that the Spanish SME is characterized by intense concentration on a small number of productive activities. Almost two thirds of SMEs with employees are enrolled in just ten activities. With respect to its sector orientation, 81% of SMEs with employees belong to the service sector (highlighting the activities of wholesale and retail distribution, services, food and beverage, ground transportation and legal activities and accounting), 11% are in the construction sector and 8% belong to the industrial sector, where activities such as manufacture of metal products, except machinery and equipment, food industry and related production and processing of wood include the highest number of many small companies.

Exporting companies



The importance of the internationalization of Spanish SMEs

The increase of experienced Spanish exports since the beginning of the crisis responds to a pattern in which the number of companies were committed to the outdoor adventure, many of them SMEs, and diversification beyond the EU markets have been key. According to data provided by the Ministry of Economy and Competitiveness, sales abroad, first proper manifestation of internationalization, increased by 4.63% in 2015, reaching 250,241.3 million and representing 23.49% of GDP. If we look at the evolution of exports in Spain in recent years it shows that they have increased compared to 2005 when they totaled 154,846 million euros, which represented a 16.64% of its GDP.

Also, it is noteworthy that the annual growth of exports from Spain in 2015 exceeds the entire euro zone (4.2%), and also the major world economies, including France (4%), Italy (3.7%), United Kingdom (-1.7%), USA (-7.1%) and Japan (3.5%).

Throughout this external development, small and medium-sized enterprises have also been involved, which have had a tremendous growth. Almost two-thirds of the total number of exporters in Spain (65.7%) are companies with fewer than 10 employees, but accounted for only 10.4% of the declared value exported.

In general, almost all exporting companies in our country are SMEs, namely 97.8% of the total, although their weight in the total volume of exports was 47.9%.

If we analyze the export propensity, ie, how many companies are performing export operations, the total micro (0 to 9 employees) in 2013 was only 2.08% export operations, significantly increas-

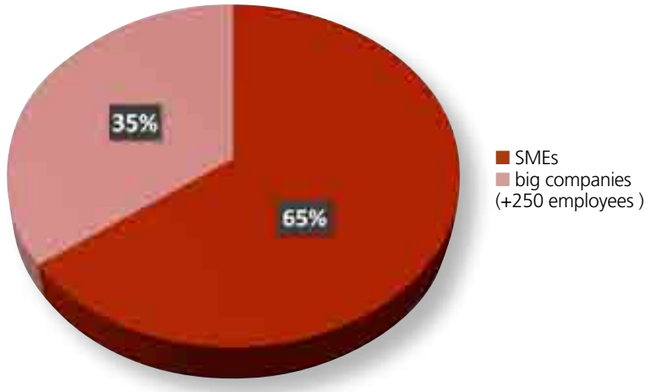
Almost all Spanish exporters are SMEs: 97.8% of the total

ing as companies grew from having 10 to 49 employees (20.34% of total exports) and even more when we look at the next section, between 50 and 199 employees (37.5% exports). In all sections of employees the percentage of exporting companies has increased significantly from 2010 to 2013.

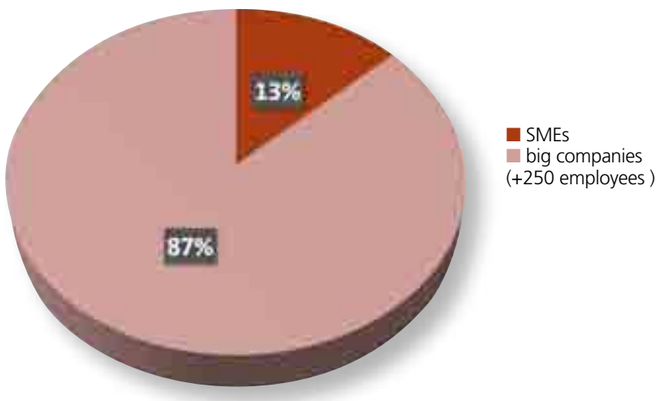
Spanish railway SMEs

It is estimated that the Spanish rail industry includes about 600 companies, of which, around 220 are dedicated exclusively to rail activities and 75% are small and medium enterprises, according to the Ministry of Public Works in 2014.
Small and medium-sized manufacturers of railway components today play an important role in the value chain of the industry. They work for the major players in the global arena and participate in the most technologically advanced projects worldwide, ensuring their knowledge, competitiveness and adaptability to final customers and continuous updating of its technology.

Distribution of Mafex memeber in 2014



Billing volume distribution of Mafex members in 2014



In the last decade, more than 50% of exports of Spanish SMEs correspond to countries of the European Union, where the leading manufacturers of rolling stock in the world are concentrated, and these markets the most demanding benchmark worldwide for developments in other world markets.
The presence in foreign markets of the Spanish railway companies in general and SMEs in particular, has increased significantly in the last decade. The experience gained in the domestic market as well as the railroad boom over other modes of transport as a solution to the needs of different countries, regions and cities around the world have certainly helped this growing foreign presence.
According to data from 2014, the number of SMEs members of MAFEX, the Spanish Railway Association, represent around 65% of the members and 13% of total turnover. The rest, 35%, with a turnover of 87%, correspond to large companies.
This high number of SMEs highlights the importance of maintaining a continued effort in supporting such companies, both by the Association and the government in general, since internationalization, innovation and competitive improvement works, are undoubtedly more complex when carried out by these companies.

SMEs in Europe

According to the statistical office of the European Union, Eurostat, Spanish SMEs support nearly three quarters of employment in the private sector and generate 64% of added value. Both figures are higher than those recorded in half of the countries of the EU-28. The substantial difference to our main EU trading partners is the relevance gained by microenterprises in terms of activity and employment. SMEs with fewer than ten employees support 40% of employment, compared to 29.1% of the European SMEs, and generate 28% of added value (22% EU). This group of companies represent approximately 90% of the total in France, Italy and the United Kingdom. While in Germany this percentage is about 80%. Meanwhile, in Germany, France and the UK, the percentage of people employed in large companies is approximately twice the number in Spain, while the number in micro companies is half the amount.
In major EU countries, the export intensity of large companies is significantly higher than that of SMEs in the field of intra and extra-trade, which, coupled with a greater propensity to export, explains the concentration of ex-

ports in large companies. About 55% of intra-EU trade and 50% of exports realized outside the EU are attributable to small and medium enterprises. Among the characteristics that define the behaviour of European SMEs in relation to their activity in foreign markets, we must highlight that smaller companies have not been outside the process of globalization of the economy.

If we analyse exclusively the behaviour of Spanish SMEs during 2010-2013, we must say that they have been the most active in the market of the European Union 15. Specifically, in this period, they began to export to the EU-15 more 30% of Spanish SMEs, compared to 25% of German SMEs, 16% French and 12% Italian.

Main challenges and needs of small and medium enterprises

The continuity of the current phase of economic growth and employment in Spain depends primarily on improving the competitiveness and growth of small and medium enterprises. The smaller companies still face the urgent need to address a structural change in the markets, mainly foreign, to provide new opportunities for business development and consolidation. However, SMEs have some challenges arising from the current cycle of activity. Although throughout 2015 both sales and margins have gradually recovered within the sectors dominated by small companies, the return on equity of SMEs stands at around 1, 5% away from the profitability of large companies, which is 7.2%, and 4.0% that was obtained by SMEs during the period before the crisis.

That is why both Spanish and European SMEs are facing significant challenges in areas like finance (especially in terms of improving conditions and access to finance), research, innovation and the environment, affecting the conditions in which they operate and compete.

For example, access to finance is a problem for about 21% of SMEs in Europe, and this percentage is much higher for micro-enterprises in many Member States, including Spain. SMEs need to make decisions about how much financial capital is required and of what kind, where they should get it and how to apply with the highest level of information available and less uncertainty.

Horizon 2020 places special emphasis on providing SMEs with an access to finance for innovation

In addition, the number of European SMEs that innovate successfully is less than that of large companies. The situation is worsened by structural difficulties such as lack of technical skills and management, as well as remaining rigidities in labor markets at a national level.

Thus, innovation is also key to improving the competitiveness of smaller companies. Encouraging innovation among SMEs has double beneficial effects on the European economy. First, it makes companies improve their competitiveness through market introduction of new or improved products and services. In addition, this increased competitiveness fosters further growth of SMEs, resulting in additional productivity gains for the whole economy.

Generating greater scale economies, full integration with strategy and improved access to financing are the main factors behind the fact that big companies maintain and even expand the number of innovative activities.

EU support to SMEs

In a changing global context, characterized by continuous structural changes and enhanced competitive pressures, the role of small and medium enterprises is, as we have been saying, increasingly important because they create employment opportunities and are key players to ensure prosperity to local and regional communities. Dynamic SMEs will give Europe more strength to cope with the uncertainty of today's globalized world.

One of the main tools of the European Union in innovation is the Horizon 2020 program, which places special emphasis on providing small and medium enterprises access to sources of finance for innovation and R & D projects.

After previous attempts of Framework Programmes bringing innovation policies for SMEs, the European Commission has dealt with the program Horizon 2020 to give more prominence to SMEs, which account for 98 percent of all European businesses and employ 87 million people - around 70 percent of total employees - through the Programme actions "Innovation in SMEs" and "Access to finance risk".

One of the fundamental premises of Horizon 2020 is to provide at least 20 percent of the budget supplied by two of the main pillars of the Program for Small and Medium Enterprises. This assumes that in the lines of "Social Challenges" and "Industrial Leadership", about 7,600 million Euros will be allocated to SMEs in the period 2014-2020.

Of these 7,600 million Euros, around 7 percent was channelled through the "Instrument SME", i.e., about 532 million, and the remaining 13 percent will be made through other instruments and lines of action.

On rail in particular, the European Commission has the initiative of a public-private partnership, Shif2Rail, a European program that

MAFEX, along with the UNIFE and European institutions, is working on supporting and defending the European railway industry and, in particular, small and medium-sized enterprises

addresses railway research and innovation over the next seven years and has a budget of 920 million Euros. Among its challenges are increasing rail capacity, reliability and punctuality, as well as focusing on interoperability, efficiency and sustainability, key aspects of the sector that are being undertaken by both large companies and the different technologies and innovations developed by small and medium enterprises.

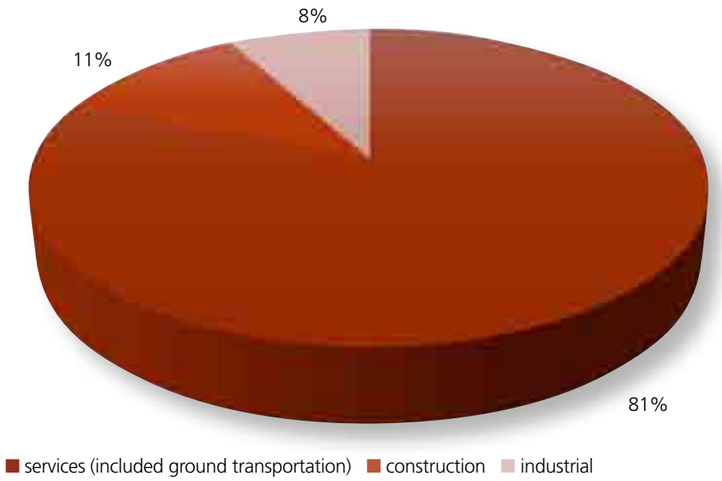
The European Railway Association, UNIFE, through its Committee on SMEs, aims to provide small and medium enterprises in the European rail industry with information on EU policies and EU funds dedicated to SMEs in order to support them in accessing these funds and provide them a direct exchange with the European institutions.

At present, the vast majority of European SMEs specialized in supply rail have to do business outside their country of origin, both within and, increasingly, outside the EU. Internationalization is not an option but a prerequisite for growth and even survival. However, it can be quite difficult for an SME to conquer foreign markets.

It is for this reason that the Mafex, along the European Association, is working together with the European institutions, in supporting and defending European rail industry and in particular small and medium enterprises in relation to their two main challenges: internationalization and funding.

In this regard, recently, the Industry Committee of the European Parliament has drafted a proposal-whose resolution is scheduled for this month of May- where it requests, among other issues, equal opportunities globally, eliminating RBP in non-European third markets and promoting programs and instruments to help small and medium-sized European companies access financing and investment in innovation, to help improve their competitiveness.

Sector orientation of exporting companies with employees



SUCCESSFUL SPANISH RAILWAY SMES

SPANISH SMALL AND MEDIUM ENTERPRISES PLAY AN IMPORTANT ROLE IN THE VALUE CHAIN OF THE RAIL INDUSTRY. THESE COMPANIES, WORKING FOR MAJOR PLAYERS IN THE GLOBAL ARENA, ARE PARTICIPATING IN THE MOST TECHNOLOGICALLY ADVANCED PROJECTS WORLDWIDE, ENSURING THEIR KNOWLEDGE, COMPETITIVENESS AND ADAPTABILITY TO END CUSTOMERS WITH A CONTINUOUS UPDATE OF THEIR TECHNOLOGY. HERE WE PRESENT SOME SUCCESS STORIES OF SPANISH SMES WITH INNOVATIVE TECHNOLOGIES THAT ARE HELPING THE SPANISH RAIL INDUSTRY TO BE KNOWN AS A WORLD LEADER.

AMURRIO FERROCARRIL:

"Amurrio railway manufactures over 2000 hearts per year for sections in europe and worldwide"

Amurrio is one of the European leaders in the design and manufacture of monobloc manganese steel hearts turnouts for all kinds of paths, which annually manufactures over 2,000 units worldwide.

The main destinations are the European railway lines, although there are crossovers of Amurrio installed in over 65 countries worldwide.

The heart is key in the crossing area and, therefore, throughout the entire track, so its design requires a thorough understanding of the functionality and materials, and extreme care in manufacturing.

The monoblock manganese steel hearts are manufactured in a single piece of Hadfield steel (Mn 12-14%) without bolted joints, melted and machined entirely in Amurrio. The quality and typical characteristics of this steel are achieved through a controlled process.

Final machining and adjustment of these parts requires high precision to achieve the standards of safety and comfort needed in high-speed passenger transport sections.

The result of the manufacturing process of Amurrio is having pieces of great versatility in ITS applications (high speed, conventional, tramway, freight, etc.) and requires little maintenance throughout its life cycle.

The design of each heart must be dealt with individually according to the parameters of deviation (length, radius, speed, type of route, etc.). To accelerate and make this process more efficient, Amurrio has more than a thousand references that can adapt and quickly enter production.

In addition to the monoblock hearts, Amurrio designs, manufactures and installs all kinds of hearts adapted to the needs of each railway line:

- Mobile end
- Monoblock steel plate
- Assembled rail
- Assembled with Mn steel tip.
- Special hearts on Mn steel.

LUZNOR:

"The technology developed by Luznor has helped the company to supply its products to various manufacturers of rolling stock: 100% of rail operators in Spain, Italy and Portugal have different types of lanterns made by Luznor"

Luznor Desarrollos Electrónicos S.L. is a Spanish company specializing in the design and manufacture of flashlights for the railway and industrial sectors. Luznor lanterns are known for their technology, reliability, quality and performance.

The technology developed by Luznor make the flashlights unique in terms of performance (three powers and three autonomies in the same flashlight), high luminous efficiency, and different signalling possibilities in the same flashlight.

These qualities have led Luznor to supply its products to various rolling stock manufacturers. As for rail operators, 100% of rail operators in Spain, Italy and Portugal have different types of lanterns made by Luznor.

Different working teams in rail, tunnels and overhead lines have Luznor lanterns as part of their usual kit.

Also, about 75% of the lanterns implemented in different metros (Madrid, Barcelona, Valencia, Seville, Lisbon, Brussels, Milan, Caracas, etc) are supplied by Luznor.

The latest technology developed by Luznor is applied to railway lanterns. Each model has an electronic card, microprocessor and radiator to decrease the heat produced by the LEDs.

IDOM:

"IDOM's contribution to railway development in Europe has resulted in the design and modernization of railway infrastructure in countries such as Croatia, Macedonia and Poland."

In recent years, IDOM has intensified its presence in Europe (5 offices in the UK, 2 in Poland, 1 in Slovenia, 1 in Portugal and 13 in Spain). IDOM's contribution to railway development in Europe has resulted in the design and modernization of railway infrastructure in countries such as Croatia, Macedonia and Poland. All these projects have in common the analysis and improvement of existing lines in service and the design of signalling, energy and information systems to optimize the operation of the corridors in compliance with European standards. With the implementation of designs, the lines will increase their capacity, increasing the number of trains and reducing travel times. IDOM as an engineering company addresses the projects comprehensively, responding to the various railway managers in all disciplines: infrastructure, track, power, signalling, communications, mobile material. Below are the ongoing projects drafted by IDOM that will be a reality in the coming years thanks to investments of different railway administrations:

CROATIA (HZ)

• Reconstruction of the freight station of Rijeka and construction of the new container terminal associated with the new freight dock in Rijeka for Port of Rijeka Authority.

• Plan the country's transport program for the Ministry of Transport.

• Corridor V (Pan-European corridor) connecting the Adriatic ports.

• Improvement and electrification of the line. Vinkozci- Vukovar.

• Doubling and electrification of the line: Koprivnizka-Hungarian border.

MACEDONIA (Ministry of Transport)

• Railway section Kriva-Palanka- Bulgaria for the Ministry of Transport and Communications of Macedonia. Feasibility study and construction project.

Poland (PKP)

• WARSAW RAILWAY JUNCTION. Drafting of the project for the improvement of Warsaw's railway junction and the E20 line is part of the West - East Pan-European Corridor connecting Berlin with Moscow. Works will include the remodelling of the stations relevant for freight traffic or commuter rail service nearby. It includes improving infrastructure, signalling systems, telecommunications and catenaries

• RAILWAY IN LODZ. The state of the railway lines in the region of Lodz (Poland) is very varied: from newly upgraded lines to non-electrified lines and single track. The same goes for the stations and stoppings. The region also has underused several rail corridors with great potential. Regional authorities have been proposed to identify what measures and projects should be implemented in order to reach an effective plan tailored to the needs of citizens, with special emphasis on a multimodal rail system. In this context, the authorities asked Idom to conduct a study for transport integration of passenger rail with other modes of transport. The study includes 15 lines and 140 stations. In addition to the above projects, IDOM is also a leader and reference engineering in the design of high-speed projects, highlighting the study for PKP in Poland for the development of 450 km of high-speed lines or, more recently, the development of the East Link for Traffikverket, Sweden, the first Scandinavian high-speed corridor.

CETEST:

"Is one of the few laboratories that is accredited worldwide capable of offering the full portfolio of tests necessary to carry out the homologation of a railway vehicle."

The process for homologation of a railway vehicle is long and expensive. It involves performing large number of tests in components both in laboratory and in the finished train. Due to the complexity of the process it is very important to have an accredited laboratory, with proven experience in approval processes and cover the complete portfolio of evidence necessary to complete the process.

CETEST is a test laboratory that is a global reference and is accredited to ISO17025 standard for carrying out the process of approval of new vehicles. CETEST facilitates the process to its customers covering the entire portfolio of tests in the laboratory and in track, as well as providing a flexible service tailored to each situation's needs.

Among the types of tests performed, are the structural integrity and fatigue of components (boxes, bogies, axles, gear etc.), railway dynamics (including the use of measurement axes of the forces between the wheel and rail), noise, vibration, EMC, aerodynamics, traction, brakes and pantograph-catenaries interaction. For more information check the website www.cetest-group.com.

NEM SOLUTIONS:

"78% of our customers are foreigners. Major world cities with a metro or tram system include A.U.R.A technology, developed by us. In addition, in Spain we work with most of the metro networks in the country"

NEM Solutions, a Gipuzkoan company that focuses on the sectors of rail and wind energy, provides solutions, products and services aimed at improving the maintenance of complex active services. It has created the A.U.R.A technology, capable of handling the myriad of data generated daily by each train or wind turbine.

Thanks to A.U.R.A, NEM Solutions projects the future of the assets. To reach its forecast, NEM combines advanced information processing techniques and algorithms of Artificial Intelligence. AURA is capable of generating normal models by comparing data generated daily by machines, thereby detecting deviations and predicting the future.

78% of the customers are foreigners. Major world cities with a metro or tram system have the AURA technology: Vancouver, Toronto, Chicago, Houston, Washington DC, Los Angeles, Beijing, Santiago de Chile, Madrid, Rome, Sao Paulo, Ankara, United Arab Emirates or Bilbao, among others. In Spain, in addition to working with most of the metros of the country, NEM Solutions helps in the maintenance of the fleet Renfe Alvia, which became in 2008 the first high-speed line to incorporate this technology. Brand Loney, Inspection Superintendent for rail subway cars in Washington D.C. says that "NEM Solutions approach to the maintenance of the train wheels is very advanced compared to any other option seen so far."

With 9 years of life, the company from San Sebastian manages more than 40,000 train cars and more than 42,000,000 wheel measurements. In fact, it already has the world's largest train wheels database. It is thanks to its expertise that the company manages the life of the machines, improve productivity and reduce the cost of O & M.

Simulation of the interaction between the pantograph and the catenary

INECO HAS CONDUCTED PINK, AN ANALYSIS OF THE SIMULATION OF THE DYNAMIC INTERACTION BETWEEN PANTOGRAPHS AND CATENARIES ON RAILWAY LINES, WITH A PARTICULAR FOCUS ON HIGH SPEED LINES.

This study, carried out using the ANSYS simulation tool which applies the finite element method, helps to understand and optimise the functioning of these two elements in addition to predicting how new designs might behave. In order to increase the speed of high performance trains, the interaction caused by the contact made between catenaries and pantographs must be studied. The dynamic behaviour of this system is one of the greatest limitations of high-speed railway systems. Although these two elements must be in permanent contact in order to ensure that the energy reaches the train's engines, the movement of the train can cause excess tension to be placed on the wire, thus wearing it down, or it can lead to a loss of contact due to very low tension.

In spite of the vital importance of this interaction given its strong association with interoperability, as well as the fact that the effect of wave propagation on the flexible catenary limits the increase in speed, this interaction had not been thoroughly researched. Experience has shown that the commercial success of railway lines relies highly on the speed at which the journey is made, in turn influencing many other elements: the track (minimum radius of the track alignment), security and braking systems, maximum gradients, etc.

This new analysis which was presented at the II European Rolling Stock Forum allows us to optimise –through the simulation of this interaction– the velocity of high speed trains. This makes it possible to increase speed without causing the system to lose contact, a scenario which can lead to premature deterioration.

Innovation project for the creation of a new Chinese ERTMS system

THE SIGNALLING UNIT OF ALSTOM SPAIN PARTICIPATES IN A R & D PROJECT FOR THE CREATION OF A NEW SIGNALLING SYSTEM IN CHINA'S HIGH-SPEED NETWORK, THE LARGEST IN THE WORLD.

Alstom's technology laboratories in Madrid form a part of the development team that is working on creating a new signalling solution for the Chinese market. This new technology, called CTCS (Chinese Train Control System), has been defined by Chinese authorities after being inspired by the European standard (ETCS/ERTMS). The project has been developed along the Guanhui Intercity Railway line, which is a section that runs nearly 100 km between Dongguan and Huizhou, cities of the Pearl River Delta in southeast China. The latest advances and developments in train control have been used in the project, including both CTCS level 2 technology and ATO systems (Automatic Train Operation) to automatically control stops at stations.

Alstom Spain, through Casco (Alstom's joint venture in China), has participated in the ATO development phase and in the installation and testing of on-board prototypes on a real train. The prototypes were subsequently validated. And after over two and a half years of testing, the train equipped with Alstom technology has just entered commercial service.

With over 10 years of experience in installing ERTMS solutions, Alstom is one of the global pioneers in the development and implementation of this technology, with projects in 23 countries that serve 1200 km of track and include over 4700 on-board ERTMS units.

The railway signalling and safety division of Alstom Spain has over 400 technicians and engineers engaged in developing and implementing signalling solutions for all types of railway infrastructures.

The Cityflo 350 system allows the responsible use of energy in metro de Bilbao

DEVELOPED BY BOMBARDIER TRANSPORTATION, IT ALSO ALLOWS AN OPTIMIZATION OF ENERGY CONSUMPTION.

Keen to encourage efficient driving, Bombardier Transportation signed an agreement with the Bilbao Metro System in 2014, to oversee a project that would optimize the consumption of energy. This was all possible thanks to Bombardier´s Cityflo 350, which is part of the automatic driving system ATO that allows the train to be driven without the driver having to adjust the speed throughout the journey.

The ATO system operates according to the timetable established by the trains' regulatory system, which depends on whether the train is delayed or ahead of schedule. The system employs a driving strategy that understands rail track curves of acceleration and deceleration.

The objective of this project has been to find a train driving strategy based on a speed scale for its subsequent implementation into the system software ATP/ATO. As a result, the ins and outs of this project have been studied from various angles: from the operational viewpoint of Bilbao Metro, from the viewpoint of investigation and simulation and that of implementation, on which Bombardier has currently been working on.

As of today, three train driving strategies exist: slow, medium and fast speed. For each of these a reference value exists for the acceleration and deceleration rates: 1,1 m/s2 for fast speed, 0,8 m/s2 for medium speed and 0,6 m/s2 for slow speed. After various simulations and pilot tests, it was decided that the outline of the speed should be modified, permitting each train's driving strategy to have a speed deceleration rate that this outline allows. In this way, the regularization of the journey time has improved, achieving substantial energy efficiency savings.

BIM modelling in the design of line 3 of Riad

THE USE OF THIS PROGRAM IN COMPLEX PROJECTS HAS ALLOWED IDOM TO CONDUCT THE METRO LINE WITHIN THE ESTABLISHED DEADLINES.

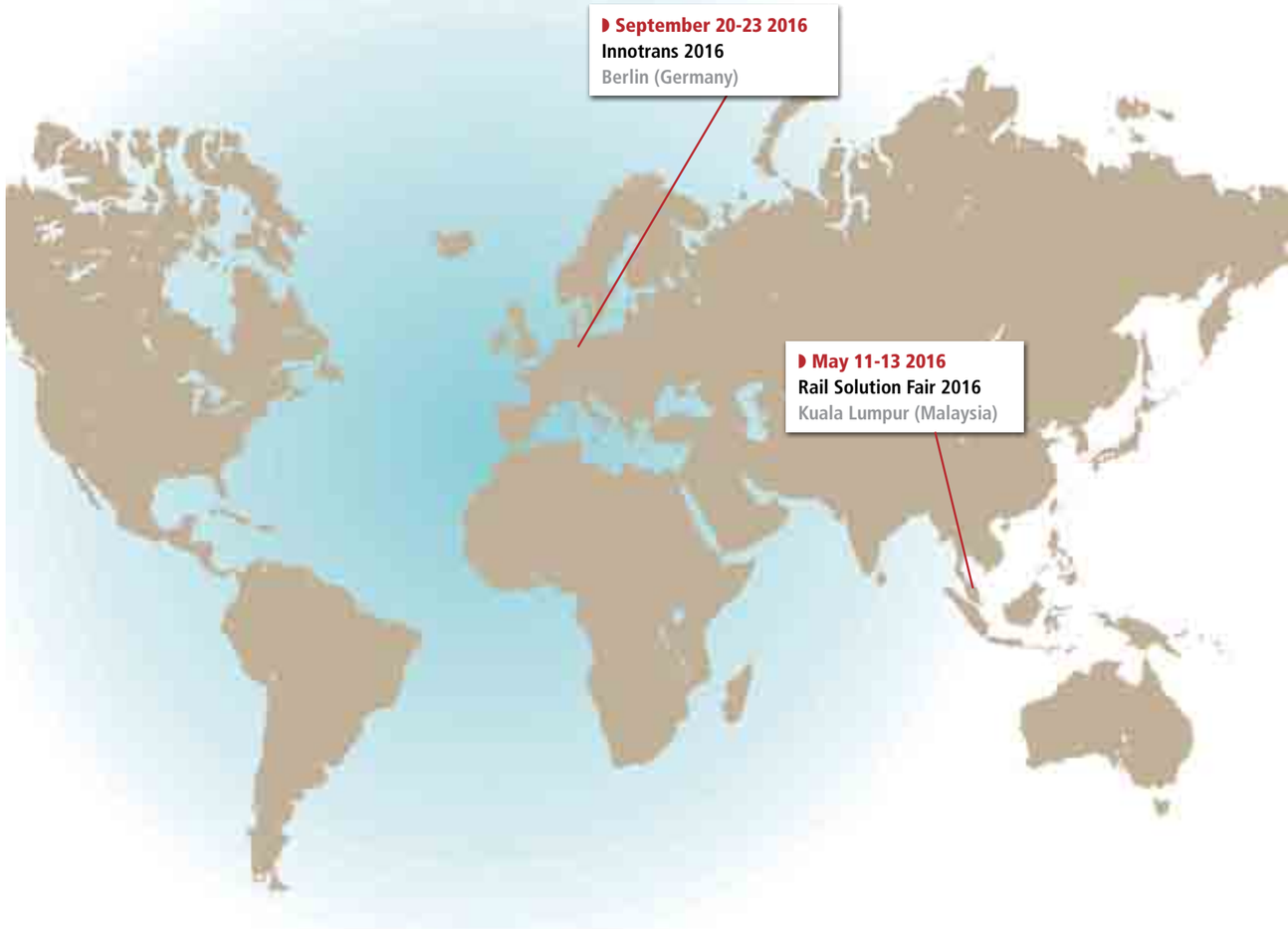
BIM use is becoming more and more common in the engineering environment nowadays both in terms of design as well as at construction and operation/end user level. IDOM is conscious about BIM implementation offers the possibility of approaching designs in a more hands-on, close-to reality kind of way allowing, or in a way forcing, all disciplines to interact from the very beginning. This permits the design to be accurate and quickly integrated which, among other things, reduces errors and omissions, this being quite an issue on a fast track project such as the New Riyadh Metro Line 3 where we are currently engaged as sole designers for all civil and MEP works excluding all related to the actual metro system (signaling, rolling stock and metro system telecoms).

IDOM have implemented BIM in projects such as the Riyadh metro due to its complexity and need for interdisciplinary integration at every level. Among all the BIM levels available to apply, IDOM is going for BIM level 2 & Level 3. For all station design the common environment is BIM 2D or level 2, which basically means a collaborative working environment – all disciplines use their own 2D & 3D CAD models, but do work on a single, shared model. The collaboration comes in the form of how the information is exchanged between different disciplines – and is the crucial aspect of this level. Design information is shared throughout the different design teams, which enables to be able to combine design data from different sources in order to make a combined BIM model, and to carry out interrogative checks on it (clashes, omissions, etc...).

This level of BIM application has been especially useful in the stations due to the complex MEP installations required for them and the need to fit those in a restricted space that had to provide both functionality and an aesthetically pleasing aspect. To do this within a very tight submittal schedule could not have been possible if BIM working environment had not been used. Architectural, structural and MEP IDOM´s designs are integrated in a unified model and then based on the results of the model interrogation design adjustments and decisions are readily and easily taken.

For some of the smallest stations, IDOM is implementing level 3D, this means full collaboration between all disciplines by means of using a single, shared project model which is held in a centralized repository. This model is updated according to a BIM execution plan that guides the way of carrying out the design within this BIM level environment. All parties can access and modify that same model. The major and most notable benefit is that it removes the final layer of risk for conflicting information.

UPCOMING EVENTS THAT WILL BE ATTENTED BY MAFEX



INFRASTRUCTURE

Enginering and consultancy
- Aquafrisch, S.L.
- Ardanuy Ingeniería, S.A.
- CAF Power & Automation
- Colway Ferroviaria, S.L.
- Getinsa-Payma, S.L.
- Idom
- Instalaciones Inabensa
- Ineco
- ITK Ingeniería, S.A.
- MB Sistemas, S.Coop.
- NEM Solutions, S.L.
- Sener Ingeniería y Sistemas, S.A.
- Typsa

Civil engineering construction
- Assignia Infraestructuras, S.A.
- Azvi
- COMSA
- Instalaciones Inabensa, S.A:
- Parrós Obras, S.L.
- PRECON - Prefabricaciones y Contratas, S.A.U.
- Rover Alcisa, S.A.

Electrification
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Arteche
- Getinsa-Payma, S.L.
- Idom
- Ineco
- Ingeteam Power Technology, S.A.
- Instalaciones Inabensa, S.A:
- La Farga Lacambra, S.A.U.
- Luznor
- Parrós Obras, S.L.
- Semi, S.A.
- Telice
- Typsa

Fixed material: components and equipment
- Alstom Transporte, S.A.
- Amurrio Ferrocarriles y Equipos, S.A.
- Aquafrisch, S.L.
- Arcelormittal España, S.A.
- Arteche
- Duro Felguera Rail, S.A.U.
- Elektra - Grupo Elektra, S.A.
- Faiveley
- Hicasa - Hierros y Carbones, S.A.
- Idom
- Ikusi
- Instalaciones Inabensa
- Ineco
- ITK Ingeniería, S.A.
- Jez Sistemas Ferroviarios, S.L.
- Parrós Obras, S.L.
- Redalsa, S.A.
- Siemens Rail Automation, S.A.U.
- Talleres Alegría, S.A.
- Thales España GRP, S.A.U.
- Valdepinto, S.L.

Security
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- DSAF. Dinámicas de Seguridad
- Ecocomputer S.L.
- Idom
- Ikusi
- Implaser 99, S.L.L.
- Ineco
- Manusa Door Systems
- Sice
- Siemens Rail Automation, S.A.U.
- Telice
- Thales España GRP, S.A.U.

Signaling and traffic control
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Bombardier España
- Cables y Comunicaciones Zaragoza S.A.
- CAF Signalling
- DSAF. Dinámicas de Seguridad
- Getinsa-Payma, S.L.
- GMV Sistemas S.A.U.
- Idom
- Ikusi
- Implaser 99, S.L.L.
- Indra Sistemas, S.A.
- Ineco
- Luznor
- P4Q Electronics, S.L.
- Semi, S.A.
- Sice
- Siemens Rail Automation, S.A.U.
- Telice
- Thales España GRP, S.A.U.
- Typsa

Maintenance
- Alstom Transporte, S.A.
- Amurrio Ferrocarriles y Equipos, S.A.
- Aquafrisch, S.L.
- Azvi
- COMSA
- Danobat
- Duro Felguera Rail, S.A.U.
- Idom
- Ikusi
- Ineco
- Instalaciones Inabensa
- Parrós Obras, S.L.
- Siemens Rail Automation, S.A.U.
- Telice
- Thales España GRP, S.A.U.

Stations
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Idom
- Ikusi
- Ineco
- Luznor
- Manusa Door Systems
- Parrós Obras, S.L.
- Thales España GRP, S.A.U.
- Typsa

Quality control, inspection and certification
- Cetren

INFORMATION AND DATA SYSTEMS

Systems and equipment for collection and ticketing
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Calmell Group
- Ecocomputer
- Idom
- Ikusi
- Indra Sistemas, S.A.
- Manusa Door Systems
- Sice
- Thales España GRP, S.A.U.

Communications, information systems and passenger information equipment
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Cables de comunicaciones Zaragoza, S.L.
- CAF Power & Automation
- Ecocomputer
- Getinsa-Payma, S.L.
- Idom
- Ikusi
- Indra
- Ineco
- P4Q Electronics, S.L.
- Sice
- Siemens Rail Automation, S.A.U.
- Telice, S.A.
- Thales España GRP, S.A.U.
- Typsa

ROLLING STOCK

Passenger car manufacturers
- Alstom Transporte, S.A.
- Bombardier España
- CAF - Construcciones y Auxiliar de Ferrocarriles, S.A.
- Patentes Talgo, S.L.
- Stadler Rail Valencia S.A.U

Manufacturers of freight wagons
- Alstom Transporte, S.A.
- Bombardier España
- CAF - Construcciones y Auxiliar de Ferrocarriles, S.A.
- ITK Ingeniería, S.A.
- Talleres Alegría, S.A.
- Stadler Rail Valencia S.A.U

Locomotive manufacturers
- Alstom Transporte, S.A.
- Bombardier España
- CAF - Construcciones y Auxiliar de Ferrocarriles, S.A.
- Patentes Talgo, S.L.
- Stadler Rail Valencia S.A.U

EQUIPMENT AND COMPONENTS ROLLING STOCK

Traction and control systems
- Alstom Transporte, S.A.
- CAF Power & Automation
- Cetest
- Ingeteam Power Technology, S.A.
- P4Q Electronics, S.L.
- Patentes Talgo, S.L.

Components
- Albatros, S.L.
- Al-Ko Record
- Alstom Transporte, S.A.
- Arteche (Electrotécnica Arteche Smartgrid, S.L.)
- CAF Power & Automation
- Cetest
- Elektra
- Faiveley
- Fundiciones Garbi, S.A.
- Funor, S.A.
- Gamarra, S.A.
- Hispacold
- Ikusi
- Indra
- Ingeteam PowerTechnology, S.A.
- Metalocaucho, S.L.
- MGN Transformaciones del Caucho, S.A.
- P4Q Electronics, S.L.
- Siemens Rail Automation, S.A.U.
- Teknorail Systems, S.A.
- Valdepinto, S.L.

Equipment and machinery for the manufacture of rolling stock
- Aquafrisch, S.L.
- Cetest
- Danobat
- ITK Ingeniería, S.A.
- MB Sistemas, S.Coop.

Interior
- Alstom Transporte, S.A.
- Colway Ferroviaria, S.L.
- Idom
- Kelox, S.A.
- Teknorail Systems, S.A.
- Valdepinto, S.L.

Security
- Albatros, S.L.
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Cetest
- DSAF. Dinámicas de Seguridad
- Idom
- Ikusi
- Implaser 99, S.L.L.
- Indra
- Luznor
- Siemens Rail Automation, S.A.U.
- Tecnatom
- Thales España GRP, S.A.U.

Maintenance
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- Alstom Transporte, S.A.
- Aquafrisch, S.L.
- CAF - Construcciones y Auxiliar de Ferrocarriles, S.A.
- Cetest
- Danobat
- Faiveley
- Ikusi
- Ingeteam Power Technology, S.A.
- Kelox, S.A.
- Luznor
- Metalocaucho, S.L.
- NEM Solutions, S.L.
- Patentes Talgo, S.L.
- Siemens Rail Automation, S.A.U.
- Talleres Alegría, S.A.
- Teknorail Systems, S.A.
- Stadler Rail Valencia S.A.U

Quality control, inspection and certification
- Cetren
- Tecnatom

Members directory per sector

ALBATROS, S.L.

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Albatros Corporation is specialised in the design, manufacture, commercialization, and maintenance of equipment for the railway industry. Albatros is formed by various units of engineering and manufacture in Spain as other countries.

We have a team of over 500 employees, selling over 100 million Euros a year, specially on export markets, with over 27,000 static converters, 35,000 passenger information systems, 6,000 HVAC systems, 10,000 WC modules and a variety of designs for the exterior as the interior of the trains, metros and tramways all over the world.

AL-KO

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AL-KO, a pioneer in the manufacture of shock absorbers in Spain, offers wide range of shock absorbers and suspension elements, backed by its engineering versatility that provides innovative technical solutions to meet the needs of its customers.

This fact has lead AL-KO, to carry out -in all its plants- major investments in research and testing facilities, as well as in expansions and refurbishments with the objective of implementing a flexible, efficient and profitable production, also in small series.

All this serves to make AL-KO a competent party in developing effective solutions in the field of suspension.

ALSTOM TRANSPORTE, S.A.

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As a promoter of sustainable mobility, Alstom Transport is the only railway manufacturer present in the full spectrum of transport systems, equipment and services.

The company offers a complete range of high performance products: rolling stock, signalling, maintenance and modernisation, infrastructure and integrated solutions.

In Spain, Alstom Transport employs around 2000 people in 19 working sites, has a manufacturing site in Barcelona and develops R&D programmes both for rolling stock and railway signalling and safety projects.

The technological laboratory located in Madrid has become a benchmark for signalling projects throughout the world.

AMURRIO FERROCARRIL Y EQUIPOS, S.A.

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Amurrio Ferrocarril y Equipos, S.A. is one of the international market leaders in the design, production and installation of railway materials. Our rolling stock interchanges and crossings are installed in high-speed rail lines, underground lines, tram lines, and conventional railways throughout Europe, Asia, America and Africa.

In the area of metal foundry, we have the experience, the knowledge and the people to produce, process and mechanize machine tool parts and sets of great technical complexity in carbon steel manganese steel and other steel alloys.

AQUAFRISCH, S.L.

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Aquafrisch is a service oriented company. Our task is to provide our customers needs with reliable results. Aquafrisch provides a wide offer in equipment and services in both working fields for the company:

1.- Aquafrisch Rail: solutions for railway equipment in depots and workshops.

2.- Aquafrisch Agua: solutions for water treatment both in consumption and waste waters.

ARCELORMITTAL ESPAÑA, S.A.

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- **www.arcelormittal.com/rails+specialsections**

ArcelorMittal is the world's leading steel and mining company and it is part of a small group of rail manufactures whose production has developed notably in the specialized high-speed, heavy- haul, metro, conventional lines and other applications are light rail and tram in the different qualities of normal carbon steel, micro alloyed and head hardened rails.

ArcelorMittal quality has been recognized by customers around the world, from Europe through Asia to Oceania, America and Africa.

Next time you travel by train, no matter the continent where you are, you may be doing it on rails manufactured by ArcelorMittal.

ARDANUY INGENIERÍA, S.A.

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- **www.ardanuy.com**

Ardanuy is a consultancy company that specializes in studies, designs, works management and technical consultancy pertaining to Rail, Metro, Tram and Cable Transport.

The company was founded in December 1992 and is made up of a team of over 100 Engineers and Architects. Other experts also act as consultants to Ardanuy staff on specific projects.

In Spain, Ardanuy carries out work from offices in Madrid, Barcelona, Valencia, Seville and Tenerife. It also has offices in Lithuania, Poland, India, Colombia, Algeria and USA.

Ardanuy has always had a marked international vocation. Currently over 90% of new contracts are won on the international market, in Western Europe: United Kingdom, Ireland and France; Central and Eastern Europe: Poland, Bulgaria, Latvia, Lithuania; America: Bolivia, Chile, Colombia, Mexico, Peru, USA; Africa: Morocco, Mozambique, Algeria, Egypt, South Africa; and Asia: India, Vietnam, Kazakhstan.

ARTECHE (ELECTROTÉCNICA ARTECHE SMARTGRID, S.L.)

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Arteche Group's business is focused on providing equipment, applications and solutions for the electricity and railway sector worldwide. In power generation, transmission, distribution, industry, and railway technologies, the group has become a key player in the search for answers to new challenges. A position maintained by a deep knowledge of the different international electricity systems, efficient client-oriented organization and remarkable investment in research and development.

This is shown by over 50% increase in the brand references in the past five years. Arteche's decisions over the years made our group a symbol of reliability, quality and trust, both in solutions and in corporate relations. Corporate alliances have taken a key role in Arteches's history, becoming and asset which has contributed to our international growth and to the development of innovative solutions.

ASSIGNIA INFRAESTRUCTURAS, S.A.

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Assignia Infrastructures is a company that is part of the Essentium Group, which is based in Spain.

It has international experience in the development, execution, management and operations of large infrastructure projects of all kinds, including concessions and services.

Assignia has participated in all high-speed railway projects in Spain. Its experience is reflected in the various projects developed including infrastructures, superstructures, stations, new lines or renovations of lines in circulation that include: high-speed, conventional and sub-urban lines, trams and metros, the expertise in the sector is complemented by performing maintenance works thereof.

The in-house machinery park (available for widths 1,435 and 1,668 mm), the flexibility and international presence of the company in countries like Mexico, Venezuela, Turkey, Morocco, India, Algeria and Chile, gives Assignia an unquestionable distinction in the railway sector.

AZVI

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Azvi is a hundred-year-old Company specialised in Civil Works whose origins are in railways, forming part of the history and evolution of the railways and its infrastructures in Spain and abroad.Throughout these years, Azvi has participated in numerous construction, rehabilitation, conservation and maintenance projects over more than 1,000 kilometres of track, of which almost 450 km have been High-Speed Rail built within the last 25 years.Azvi also has a large and modern machinery park which allows the company to carry out works with its own machines and a Logistics Centre equipped with modern facilities and state of the art resources in order to centralize a variety of support services to railway activity, such as MachineryPark, materials, maintenance, checking and repairing shops. Research and Development is also an important issue for Azvi. Through its own R&D department, Azvi invests in railway research and development, in collaboration with various public and private entities and investigation groups.

BOMBARDIER ESPAÑA

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- **www.bombardier.com**

Bombardier Transportation, a global leader in rail technology, offers the broadest portfolio in the rail industry.
Bombardier Transportation Spain is one of the leading exporters of the Spanish railway industry, employing more than 750 people in its plants and offices in Trápaga (Biscay), San Sebastian de los Reyes and Alcobendas (Madrid), Madrid and Barcelona, and taking part in some of the major railway projects in the country.
Its Propulsion Systems plant located in Trápaga (Biscay) and its Centre of Excellence in Rail Signalling Engineering located in San Sebastian de los Reyes (Madrid) are world top technological centres, leading the requests for Bombardier's propulsion and signalling systems for Spain and for the rest of the world. Exports represent already more than 85% of its activity.

CABLES DE COMUNICACIONES ZARAGOZA

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- **F: +34 976 72 99 72**
- **comercial@cablescom.com**
- **www.cablescom.com**

Founded in 1971, Cables de Comunicaciones has been steadily building its reputation as a respected business in the field of communications cables. Cables de Comunicaciones has cemented its position and its products are now used in over 50 countries around the world. The company has a wide range of products that are certified according to the standards of the leading telecomm and railway operators in the majority of countries in Europe. It is dedicated to designing and developing excellent telecommunications, signalling, instrumentation, data and fibre optic cables.

CAF - CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES, S.A.

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- **F: +34 91 436 60 11**
- **caf@caf.net**
- **www.caf.net**

CAF is a firm focused on investigation, development, design, production and maintenance of Rolling stocks for the railway industry. Our product range include from High Speed, to regional and suburban trains, articulated units, underground trains, LRVs, light underground trains and locomotives. Maintenance of the whole range. It boasts production premises throughout Spain (Beasain, Irun, Zaragoza, Castejón and Linares), as well as in the USA (Elmira NY), France (Bagnères de Bigorre), Mexico (Mexico Df) and Brazil (Sao Paulo) and Rail Technological Centres in Beasain and Zaragoza. CAF's projects are distributed in over 25 countries around the world in the five continents.

CAF POWER & AUTOMATION

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- **F: +34 943 30 92 52**
- **info@cafpower.com**
- **www.cafpower.com**

CAF P&A is a global manufacturer of electric power solutions as well as information and communications systems for the rail industry. CAF P&A have equipped more than 5,000 vehicles world wide including, metros, light rail, locomotives and high-speed trains.
One of the main strategic lines is the development of its own technology. To do so, as a major asset, CAF P&A has a team of experienced, competent and dynamic specialists.
CAF P&A develops, manufactures and delivers high reliability solutions adapted to each and every client's specific needs in compliance with railway standards.

CAF SIGNALLING

- **C/ Sepúlveda, 7B 28108 Alcobendas (MADRID)**
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- **F: +34 91 661 37 51**
- **cafsignalling@cafsignalling.com**
- **wwww.cafsignalling.com**

CAF Signalling, the technological subsidiary of the CAF Group, provides rail traffic signalling, both in Spain and abroad.
As such, it offers railway signalling solutions and remote control for Railway infrastructures.
CAF Signalling, boats the Company's own in-house engineering and expertise to take on "turn-key" railway signalling projects with recognition from several Railway Administrations in Spain and other countries in Europe, America, Africa, Middle East and Asia.

CALMELL GROUP

- **Pol. Ind. Pla d'en Coll C/ Fresser, 12 C 08110 Montcada i Reixac (BARCELONA)**
- **P: +34 93 564 14 00**
- **F: +34 93 564 58 22**
- **calmell@calmell.net**
- **www.calmell.com**

The first company of the group, Calmell, S.A. was founded in 1970, focusing its activity on the manufacture or graphic products. Currently, the Calmell Group is the leader in access control and identification, through its companies Calmell S.A., Affix S.L., Idoneum S.A., which are respectively engaged in producing the supports (tickets, cards,…), developing specific software and hardware, personalization and security.
In the public transport sector it works for integrators and operators supplying any kind of support for ticketing and reader/writer systems.
With a strong international presence through its network of representatives and distributors, the Calmell Group is able to satisfy your needs on a global level.

CETEST

- **Lazkaibar, s/n 20200 Beasain (GIPUZKOA)**
- **P: +34 943 028 690**
- **cetest@cetestgroup.com**
- **www.cetestgroup.com**

Test and analysis services for:
- Design verification and validation.
- Full homologation of new products and vehicles.
- Failure analysis and optimization.

Fully accredited test lab with more than 40 years of experience in railway testing.
Test services cover the following areas:
- Structural components.
- Running gear.
- Suspension systems.
- Vehicle dynamics.
- Noise and vibrations.
- Aerodynamics.
- EMC and energy consumption.
- Mechatronics.
- Special instrumentation (Instrumented wheelsets, instrumented pantograph).

CETREN

- **C/ Sierra de Cazorla, 1 – Las Matas. 28290 Las Rozas (MADRID)**
- **T. Certificación: +34 91 127 97 27/ 97**
- **T. Formación: +34 91 127 92 27/ 29**
- **Certificación: cetren@cetren.es**
- **Formación: formacion@cetren.es**
- **www.cetren.es**

Cetren, as expert on the railway sector, has over 30 years experience in promoting and certifying the quality in this sector. Our experience and exclusive dedication to railways allows us to offer global solutions for certification, as the Spanish Notified Body according to European Interoperability Standards and also acting as Independent Safety Assessor and Certification Entity of rail products, processes and services.
Cetren is also the first private center expert in railway staff training, as approved by the Ministry of Public Works and Transport since 2007.

COLWAY FERROVIARIA, S.L.

- **C/Botánica, 149-151 08908 L'Hospitalet (BARCELONA)**
- **P: +34 93 414 65 12**
- **F: +34 93 639 86 04**
- **acolomerf@colway-08.com**
- **www.colway-08.com**

Colway Ferroviaria,S.L., company belonging to the COLWAY Group, specializes in the design, engineering, manufacture, supply, installation and commissioning of turnkey railway vehicle interiors. Through the integrated management of modular supplies, based on experience, knowledge, research and innovation, the company achieves the satisfaction of the needs and expectations of its customers: railway manufacturers and public administrations.
Colway capabilities include Modular System solutions for Rail Interiors as Toilet Modules, Front hoods, saloons, walls, Buffet, Restaurant areas, vestibules.

COMSA CORPORACIÓN

- **C/ Julián Camarillo 6A, 2ª planta 28037 (MADRID)**
- **P: +34 913 532 120**
- **F: +34 913 504 954**
- **jensenat@comsa.com**
- **www.comsa.com**

COMSA is the company of COMSA Corporación specialised in the construction of railway infrastructures. Founded in 1891, the company provides a comprehensive service in the field of railway construction and maintenance, electrification, and control and communication systems of high speed rails, conventional rails, metros and tramways. In this business activity, it is leader in Spain, where has been involved in the construction of all high speed lines, and has permanent operations in Argentina, Brazil, Lithuania, Mexico, Poland, Portugal and Turkey. It has also taken part in a large number of projects in other markets such as Italy, the Philippines, Taiwan, Malaysia, India, etc. This extensive experience has been the key for its consolidation in the railway sector and has enabled it to become the leader in the railway construction industry.

DANOBAT

- **Arriaga Kalea, 21 20870 Elgoibar (GIPUZKOA)**
- **P: +34 943 748 044**
- **F: +34 943 743 138**
- **danobat@danobat.com**
- **www.danobat.com**

Danobat Railways business unit focuses its activity in the supply of turnkey solutions for the manufacturing and maintenance of railways rolling stock, incorporating own products of leading technology, together with those manufactured by specialized companies.
It gathers extensive experience and qualification in the rendering of services such as engineering services, equipment integration, complex project management, and collaboration with the customer all along the life of the project.
Danobat has a strong international presence and references in the most relevant customers.

DSAF – DINÁMICAS DE SEGURIDAD, S.L.

- **Avda. de San Blas nº 13 - Polígono Industrial de Gojain 01170 Legutiano (ARABA)**
- **P: +34 945 466 314**
- **F: +34 945 466 314**
- **info@dsaf.es**
- **www.dsaf.es**

DSAF is a company structure devoted to People's Movement Safety. It is committed to providing new technologies applied to

design and project implementation, as well as initiatives that guarantee an approved evacuation safety level in this generalized risk society.
Emergency signalling is DSAF's main application area; it develops photoluminescent, electroluminescent and LED signalling systems for people evacuation in risk situations and environments: tunnel evacuation safety, vessel evacuation safety, building evacuation safety…
DSAF safety applications are developed in three big areas: tunnel safety (road / railway), safety in vessels, and buildings.

DURO FELGUERA RAIL, S.A.U.

- **Pol. Ind. Fábrica de Mieres s/n 33600 Mieres (ASTURIAS)**
- **P: +34 985 45 63 31**
- **F: +34 985 45 61 64**
- **dfrail@durofelguera.com**
- **www.durofelguera.com**

DF Rail is a Spanish company specialized at the design, manufacturing and supply of turnout systems and components for Metro, Conventional, Heavy Haul or High Speed Lines. Turnouts, single and double crossovers, diamond crossings, single and double slip crossings, single and double junctions, switch expansion joints, ..., on wooden or concrete sleepers; for ballasted or unballasted tracks; for single or combined gauges; with monobloc Mn steel crossings or with swing nose crossings; insulated glued joints; transition rails.

ECOCOMPUTER S.L.

- **C/ María Zambrano 5 - Bajo· 33401 Avilés (ASTURIAS)**
- **P: +34 985 52 50 46**
- **F: 34 985 56 83 17**
- **sales@ecocomputer.com**
- **www.ecocomputer.com**

Ecocomputer S.L. is a technology firm based on North Spain (Asturias and Cantabria) and focused on the design, development and implementation of IT solutions on the railways industry (ie: ticketing, booking, passenger information system) and access control and time&attendance business. Founded on 1999, it holds a wide portfolio of own products as a result of years of evolution and adaptation to customer needs. Ecocomputer provides as well onsite IT maintenance services for the railways operators and administrator infrastructure companies (Railway Control and Regulation Centres, security infrastructure, IT equipment).

ELEKTRA-GRUPO ELEKTRA S.A.

- **C/ Apostolado, 34 20014 San Sebastián (GIPUZKOA)**
- **P: +34 607 94 29 73**
- **railway@elektra-sa.es**
- **www.grupoelektra.es**

Grupo Elektra is a market leader in the field of electrical and electronic equipment distribution for manufacturers of rolling stock, maintenance and railway equipment manufacturers. Being the leading company in the railway sector in the supply of electrical equipment. Your solution provider in electrical products for railway, with specific tecnical support.
Elektra Group is composed of an extensive Spanish national network and has companies in Romania, India and USA.

FAIVELEY TRANSPORT IBERICA, S.A

- **Pol. Ind La Drecera – c/ Mecánica, 23 – 43470 La Selva del Camp (TARRAGONA). c/Antonio Cabezón s/n – 28034 Madrid (MADRID)**
- **T: +34 917282159**
- **F: +34 917282157**
- **jesus.delatorre@faiveleytransport.com**
- **www.faiveleytransport.com**

Faiveley Transport Ibérica, S.A. is a firm focused on design, production, and maintenance of auxiliary equipments for railway industry (locomotives, rolling stocks, trams and metros). Our product range include also the design, production, installation and maintenance of Platform Screen Doors (PSD).
FT Ibérica is the branch for Spain, Portugal and Mexico market of International Group Faiveley Transport. Our main facilities are in La Selva del Camp (Tarragona –Spain) and Commercial offices in Madrid.

FUNDICIONES GARBI, S.A.

- **Bº Munsaratz, 33 48220 Abadiano (BIZKAIA)**
- **P: +34 94 621 54 80**
- **F: +34 94 681 73 86**
- **garbi@fundicionesgarbi.es**
- **www.fundicionesgarbi.es**

Founded back in 1972, Fundiciones Garbi has evolved from a traditional foundy to a Global Service Company for industry.
We offer a full catalogue of services starting from the casting or other materials till delivery of "ready to use" parts or assembly sets. With this aim, we have developed an organization oriented towards solid and competitive processes, ensuring quality from design phase using APQP tools. Well aware of customer satisfaction, we offer to our clients additional global services including a full range of heat treatments, machining, product inspection and testing (NDT's, etc), protection and finishing surface treatment (Painting, Metallization, Others...), including final assembly of different parts. For the Railway industry we are specialized on production of rolling stock material.

FUNOR, S.A.

- **Pol. Ind. de Villalonquejar C/ Condado de Treviño, 41 09001 Burgos (BURGOS)**
- **P: +34 947 29 84 80**
- **F: +34 947 29 82 93**
- **info@funorsa. es**
- **www.funorsa.es**

Castings in carbon steel, alloy steel and stainles steel.
Our products:
- Steel casting.
- Raw castings or fully machined.

Examples:
- Bogie components.
- Pivots.
- Motor housings.
- Pressure rings.
- Axle boxes.
- Links...

GAMARRA, S.A.

- **Portal de Vergara, 6 01013 Vitoria (ARABA)**
- **P: +34 945 25 16 77**
- **F: +34 945 27 49 48**
- **gamarra@gamarrasa.es**
- **www.gamarrasa.es**

Gamarra, S.A. at a glance: Spanish steel foundry -located at Vitoria Gasteiz- annual production: 4,000 tons - customers: European State Railways, - producers of rolling stock and their subsuppliers - as foundry and supplier homologated by DB AG (HPQ), ÖBB, SBB, SNCF (AFQ) (extract) as well as according to DIN EN ISO 9001: 2000 + DIN 6700 - 2.
Products: brake discs, brake block shoe holders, buffers, spigots and essential steel castings for bogies.

GETINSA-PAYMA, S.L.

- **C/ Ramón de Aguinaga, 8 28028 Madrid (MADRID)**
- **P: +34 91 456 09 82**
- **F: +34 91 456 09 83**
- **internacional@getinsa.es**
- **www.getinsa.es**

With more than 40 years of experience in Transport Infrastructure Projects in Spain and all around the world, Getinsa-Payma, S.L. has grown into a top engineering firm in Spain and an international benchmark in the sector. In Spain, Getinsa-Payma has played a leading role both in the modernization of the conventional railway and in the development of the new high speed railway network. Our services include project management and engineering & consultancy services, involving all phases of the project, from feasibility studies up to commissioning and technical assistance for the operation and maintenance of railway infrastructure. Our experience covers civil works, track and platform, signaling and telecommunication systems, as well as electrification (electric substations, overhead lines, etc.). We are currently working on railway projects in Europe, Middle East, Africa, Asia, South America and USA.

GMV SISTEMAS, S.A.U.

- **Juan de Herrera, 17 - P.T.B. Boecillo 47151 Valladolid (VALLADOLID)**
- **P: +34 983 54 65 54**
- **F: +34 983 54 65 53**
- **ahernandez@gmv.com**
- **aags@gmv.com**
- **www.gmv.com**

Since 1994 GMV provides Intelligent Transport Systems, offering turnkey solutions and specific products. GMV develops applications adapted to sector needs, including satellite navigation, mobile communications, passenger information, fare collection systems and monitoring-and-control centers.
GMV's railway portfolio includes fleet management system, SAE-R®, providing operators with an all-in system for planning and management, and other products like CCTV, PA-Intercomm and Passengers Video Information, as well as electronic fare collection systems for railway sector.

HICASA - HIERROS Y CARBONES, S.A.

- **Polígono de Asipo, P48 33428 Cayés-Llanera (ASTURIAS)**
- **P: +34 985 26 04 73**
- **F: +34 985 26 09 05**
- **info@hicasa.com**
- **www.hicasa.com**

HICASA specialises in the storage, transformation, distribution and commercialisation of railway materials, rails and railway accessories of all types in accordance with both European (UNE EN), as well as American (ASTM) Standards, not to mention others such as AREMA, etc. HICASA belongs to a private group of companies, GEVIR, which is made up of four enterprises in Spain, and is special in the sense that it combines its role of distributor with that of manufacturer, given that it possesses its own specialist light rail factory, a fact which endows it with a unique market profile. We can boast of a roofed surface area at our installations of over 13,000 $m^{2,}$ where we dispose of modern cutting and drilling machines that enable us to transform iron and steel and to supply orders of any format and measurement, in accordance with the specifications requested by our clients. We export over 50% of our products abroad.

IDOM

- **Zarandoa 23 48015 Bilbao (VIZCAYA)**
- **P: +34 94 479 76 40**
- **F: +34 94 475 93 64**
- **cortega@idom.com**
- **oscar.rico@idom.com**
- **www.idom.es**
- **cortega@idom.com**
- **oscar.rico@idom.com**
- **www.idom.es**

Idom is one of the european leading companies in the field of professional services in engineering, architecture and consultancy. It is an independent company established in 1957 and it has participated in over 30.000 projects in five continents. In 25 countries with 42 offices throughout Angola, Arabia, Argelia, Belgium, Brazil, Canada, Chile, Colombia, Ecuador, France, Germany, India, Laos, UAE, Spain, U.S.A., Libya, Morocco, Mexico, Peru, Poland, Portugal, Rumania, Turkey and United Kingdom.
More than 2.500 staff posseses the expertise and experience to cover all the phases of a railway project (high

speed, conventional, freight, metro, light rail, tramway, depot and workshops..), from conception to commissioning and beyond.
Idom will accompany the client by providing the correct technical assistance required for the decision-making process: technical specifications for design, alternatives studies, demand and traffic studies, financial and socio-economical analysis,basic and detailed design, operational and maintenance plans,works supervision, testing and commissioning.

IKUSI

- **Paseo Miramón, 170**
  20014 San Sebastián
  (GIPUZKOA)
- **P: +34 943 44 88 00**
- **F: +34 943 44 88 20**
- **movilidad@ikusi.com**
- **www.ikusi.com**

Ikusi offers integral solutions for exploiting the diverse means of urban public transport (Bus/BRT/Tramway/Light Rail/Metro/Suburban), as well as in intermodal transport hubs. One proposal, backed up with a track record reaching back more than 20 years in the sector, has the main goal of improving passenger experience, guaranteeing safety, increasing revenue from secondary sources independent from the main activity, and streamlining operational efficiency.

IK4 RESEARCH ALLIANCE

- **Pol. Azitain 3K, 2ºG**
  20600 Eibar (GIPUZKOA)
- **T: +34 94 382 03 50**
- **otegi@ik4.es**
- **www.ik4.es**

K4 Research Alliance es una alianza de centros tecnológicos, privada e independiente, de referencia en el ámbito tecnológico europeo. Está integrada por 9 entidades del País Vasco: AZTERLAN, CEIT, CIDETEC, GAIKER, IDEKO, IKERLAN, LORTEK, TEKNIKER y VICOMTECH.
IK4 Research Alliance tiene por objeto la generación, captación y transferencia de conocimiento científico-tecnológico principalmente al tejido empresarial, con el fin de contribuir a la mejora de su competitividad y, en general, al progreso de la sociedad.
Actualmente reúne 1275 personas y en 2014 tuvo unos ingresos de 102 M€.

IMPLASER 99, S.L.L.

- **Pol. Ind. Borao Norte, Nave 5A**
  50172 Alfajarín (ZARAGOZA)
- **P: +34 902 18 20 22**
- **F: +34 902 18 20 22**
- **international@implaser.com**
- **www.implaser.com**

Implaser is a Spanish company focused in developing innovative security signs for railway projects. Innovation and quality are our mainstays, as we were the first SME being certified in R+D+I in Spain. Implaser has all the range of products certified by AENOR with photoluminescent values of 150, 300, 580 and 720 mcd/m^2.
We are also specialized in the manufacturing of informative, security and accessibility stickers for coaches, to be used both indoor and outdoor.
Hard work and great concern for innovation has allowed us to develop new products, such as photoluminescent systems combined with electroluminescent and guiding systems by LEDs.

INDRA

- **Avda. de Bruselas, 35**
  28108 Alcobendas (MADRID)
- **P: +34 91 626 88 58**
- **F: +34 91 626 88 68**
- **dmeza@indra.es**
- **www.indra.es**

Indra is a world leader and pioneer in the supply of technological platforms for railway operations management, control and supervision, having specific solutions already tested on high speed and conventional lines and metropolitan operations. Indra is also a leader in ticketing systems for transport operators and has facilities and projects all over the world.
Furthermore, Indra develops high-precision safety and signalling systems. At this moment in time, Indra's solutions are completely unique because of their high level of integration and adaptation to the current and future necessities of the railway environment whatever may be the most state of the art technological and operative options. Indra has managed to open a competitive market for the first time based on technological and economical competitiveness.

INECO

- **Paseo de la Habana, 138**
  28036 Madrid (MADRID)
- **P: + 34 91 452 12 00**
- **nacional@ineco.com**
- **international@ineco.com**
- **www.ineco.com**

Global leader in transport engineering and consultancy, it has contributed to the development of transport infrastructures for over 45 years in more than 45 countries. Its high level technical specialisation allows its activity to diversify into new markets and reinforce its presence in those where it is already established. Its participation in the whole railway system in Spain has led the company to develop important international projects like the Makkah-Madinah high speed in Saudi Arabia, the Ankara-Istanbul line in Turkey and the HS2 project in the United Kingdom.

INGETEAM POWER TECHNOLOGY, S.A.

- **Edificio 702**
  Parque Tecnológico de Bizkaia
  48160 Derio (BIZKAIA)
- **P: +34 94 655 90 00**
- **F: +34 94 403 98 37**
- **traction@ingeteam.com**
- **www.ingeteam.com**

Ingeteam is an expert leader in the development of electrotechnical and power electronics systems providing involving energy exchanges at large.
Our capacities and the experience on the railways sector allow us to offer technological solutions that significantly contribute to reach our customers´ strategic objectives, leading to maximize operational efficiency.
We strive towards on offering in-house/state-of-the-art developments for.

INSTALACIONES INABENSA, S.A.

- **Energía Solar, 1 -**
  Palmas Altas
  41014 (SEVILLA)
- **P: +34 95 493 60 00**
- **F: +34 95 493 60 05**
- **inabensa@abengoa.com**
- **www.inabensa.com**

In the railway sector, Inabensa is an international reference for overhead lines, traction substations, communications and ancillary installations: high voltage, low voltage, lighting and ventilation.
Inabensa undertakes turn-key projects, ranging from designing, supplying and installing to maintaining electrification system for both conventional and high-speed railways, freight, subways, trams and monorails.
It also holds one of the most advanced pools of rail plants in the sector, highly sophisticated with the utmost functionality and approved for use in the EU. Inabensa has its own overhead line equipment technology, CAVE overhead line and TkMx overhead line, and it also has an R&D department focusing on energy storage systems, bidirectional substations, detection of broken rail and software development.

INTERNACIONAL HISPACOLD, S.A

- **Avda. Hacienda San Antonio,1**
  Pol. Ind. El Pino
  41016 Sevilla (SEVILLA)
- **p: +34 954 677 480**
- **F: +34 954 999 728**
- **hispacold@hispacold.es**
- **www.hispacold.es**

Hispacold is a World leader company for climate systems specialized in comfort for people with more than 30 years' experience.
Hispacold designs and manufactures HVAC solutions for all rail vehicles: trams, metros, EMUs, DMUs, LRVs… with proven and reliable technology solutions.
In Hispacold each activity is based on a solid quality culture and on a real commitment with the environment. Quality certifications ISO 9001, ISO 14001, OSHAS 18001 are only the smallest part of this working way.
Hispacold is a company of Irizar Group SC, which employees more than 3.000 people in the five continents and has a global turnover of more than 550 Million €. This gives Hispacold the benefits from a multinational organization while maintaining an individual company spirit.
Hispacold's presence in the five continents guarantees the best technical assistance at any place of the world.

ITK INGENIERÍA, S.A.

- **Parque Científico Tecnológico de Gijón - Parcela 5 - Edificio ITK.**
  33203 Gijón (ASTURIAS)
- **P: +34 985 35 50 00**
- **F: +34 985 35 70 50**
- **itk@itk-ingenieria.es**
- **www.itk-ingenieria.es**

One line of business in which ITK has become involved has been the development, supply and assembly of installations and equipment for the rail sector.
ITK's work takes in all aspects of a project, starting with the precise definition of the needs of the client to offer an integrated solution that brings together construction, production, environmental and personnel aspects via analysis, calculation and engineering.
Installations, vehicles and equipment are delivered in an operational state with their corresponding operating and maintenance manuals and even training courses for outside staff, integral maintenance for the life of said installations and a complete after-sales and repair service.

JEZ SISTEMAS FERROVIARIOS, S.L.

- **Arantzar, s/n**
  01400 Llodio (ARABA)
- **P: +34 94 672 12 00**
- **F: +34 94 672 00 92**
- **infor@jez.es**
- **www.jez.es**

JEZ Sistemas Ferroviarios, S.L. is committed to designing, manufacturing, supplying and maintenance of all types of manganese steel switches and railway track systems, in addition to moulded cast steel parts for the general industry.
Our Technical Department (Department of R&D) ensures we have the capability of designing and producing points and crossings (turnouts, crossovers, scissor crossovers and diamond crossings) or parts for them, such as hard steel manganese crossings or spare tongues.
At JEZ Sistemas Ferroviarios, S.L. we fit our developments to meet clients needs.

KELOX, S.A.

- **Isla de Jamaica, 8**
  28034 Madrid (MADRID)
- **P: +34 91 334 15 90**
- **F: +34 91 358 05 64**
- **marketing@kelox.es**
- **www.kelox.es**

Kelox launched its railway activity in 1977, manufacturing catering equip-

ment for dining cars on longdistance lines.
The experience and knowledge acquired over the years have become Kelox specialist in the design and full supply of galleys and catering equipment for high-speed, shuttle and regional trains.
Our style of design is characterised by harmony; it is beautiful, ergonomic and functional, always according to the customer specifications.

LA FARGA LACAMBRA, S.A.U.

- **Ctra. C-17z - Km. 73,5**
  08508 Les Masies de Voltregà
  (BARCELONA)
- **P: +34 93 859 40 20**
- **F: +34 93 859 55 30**
- **josep.anfruns@lafarga.es**
- **www.lafarga.es**

La Farga Lacambra is a model company in the railway sector, with more than 200 years' experience in the copper industry. A solid international presence and continuous innovation in the search for new alloys have enabled it to produce high-service materials.
La Farga Lacambra provides global solutions for copper materials and its alloys such as CuMg, CuSn or CuAg, integrating the whole productive process and ensuring the maximum technical qualities. These products satisfy the needs of the market for all kind of lines and speeds around the world.

LUZNOR

- **Paduleta, 47**
  01015 Vitoria (ARABA)
- **P: 945 200 961**
- **F: 945 200 971**
- **iarbeloa@luznor.com**
- **www.luznor.com**

Luznor Company is specialized in the design, manufacture and commercialization of professional torches (for railway industry), emergency lighting (for industry and architecture) and other Electronic devices.
Luznor offers you (in its factory in Vitoria) highly qualified technicians, a high standard of quality, an effective system development, manufacture and testing, and above all, a philosophy of commitment to our customers allowing us to offer innovative products equipped with advanced technology and recognized prestige.

MANUSA DOOR SYSTEMS

- **Avda. Via Augusta, 85-87 -**
  6ª planta.
  08174 Sant Cugat del Vallès
  (BARCELONA)
- **P: + 34 902 321 400**
- **P: +34 935 915 700**
- **F: +34 902 321 450**
- **F: +34 932 185 610**
- **manusa@manusa.com**
- **www.manusa.com**

Manusa is the Spanish market leader in design, production, installation and maintenance of automatic door systems. Established in 1966, it has 12 delegations in Spain, branches in Portugal, Brazil, Singapore and India and international presence in more than 70 countries around the world.
Manusa develops specific products for public transport, such as platform screen doors (PSD) and ticket gates for access control, as well as one-way corridors, onboard doors and tunnel partitioning doors, always with the Manusa technology support.

MB SISTEMAS, S. COOP.

- **Pol. Ind. Igeltzera -**
  C/ Igeltzera, 8
  48610 Urduliz (BIZKAIA)
- **P: + 34 94 403 06 26**
- **F: + 34 94 403 06 27**
- **amacias@mbsistemas.es**
- **www.mbsistemas.es**

MB SISTEMAS is part of MONDRAGON CORPORATION.
We develop turnkey "World Class" engineering projects, implementing automation solutions into the Assembly and welding phases of manufacture process for car body structures of railroad passenger cars.
We give "ad hoc" solutions for the customer's needs; having implanted successfully our facilities around the world.
As engineering we develop both, robotic installations and special machines for any assembly process.

METALOCAUCHO, S.L.

- **Polígono Erratzu, 253**
  20130 Urnieta (GIPUZKOA)
- **P: +34 943 33 37 55**
- **F: +34 943 33 37 51**
- **info@metalocaucho.com**
- **www.metalocaucho.com**

MTC specialises in the design and manufacture of anti-vibration and suspension solutions for Rolling stock.
The Company was established in 1982 and currently has three manufacturing sites, located in Spain (HQ), China and India. In 2009 the company was awarded IRIS Certification.
MTC, being among the leading companies in its sector, supplies to the main Rolling stock Constructors worldwide, including Alstom, Bombardier, CAF, CSR, CNR, Hyundai Rotem, Siemens, Talgo, Vossloh).
We also collaborate with Operators for the supply of spare components for their overhaul projects.
Our main products are rubber-metal primary and secondary suspensions, focusing on primary springs (conical or chevron type), guiding bushes, guiding links, secondary air springs and emergency springs, traction rods, elastic bushings, buffers, layer springs as well as a diverse range of associated rubber-metal solutions.

MGN TRANSFORMACIONES DEL CAUCHO, S.A.

- **C/ Candelaria, 9 - Pol. Ind. Camino del Calvario**
  28864 Ajalvir (MADRID)
- **P: +34 91 887 40 35**
- **F: +34 91 884 45 84**
- **enp@mgncaucho.com**
- **www.mgncaucho.com**

MGN was established in 1957 and since then it has been developing its activity both designing and manufacturing rubber-metal components, mainly for the railway industry. MGN invests in research and innovation as a basis for the development of elements to be adapted in the new understanding of passenger and fright trains, taking the lastest technological advances of the rubber world, vibration control and damping systems.

NEWTEK SOLIDOS S.L

- **Pol. Abendaño. Urdaneta bidea, 3B.**
  Zarautz - (GIPUZKOA)
- **P: +34 943 835942**
- **F: +34 943 894441**
- **comercial@newteksolidos.com**
- **www.newteksolidos.com**

NEWTEK SOLIDOS, S.L. manufactures sand filling systems for the railway equipment industry, sand feeders, storage silos, pneumatic transport, dust return systems, sand loading equipment and facilities maintenance..

NUEVAS ESTRATEGIAS DE MANTENIMIENTO, S.L.

- **Paseo Mikeletegi, 54 - 2º**
  20009 Donostia (GIPUZKOA)
- **P: +34 943 30 93 28**
- **F: +34 943 30 93 26**
- **gparada@nemsolutions.com**
- **www.nemsolutions.com**

At NEM Solutions we offer total control of business operations and maintenances for the railway industry. Our products and services project the assets' future from data generated daily. The objective is to give our client the possibility to control his/her own business and to avoid surprises. Thanks to our expert knowledge we provide wheel life management, productivity improvement and O&M cost reduction.

P4Q ELECTRONICS, S.L.

- **Ctra. Bilbao-Balmaseda, Km. 9**
  48810 Alonsotegi (BIZKAIA)
- **P: +34 94 498 20 28**
- **ialberdi@p4q.com**
- **www.p4q.com**

At P4Q we are involved in the complete development of electronic devices and lean production services. We are structured as an integral supplier of electronics solutions, focused in flexibility and quick development. We design under customer specs and approval. Being a partner of our customers giving global support attending local production demands. Is the basis of our strategy. We have facilities in Albuquerque (NM), USA as well as in Spain.

PARRÓS OBRAS, S.L.

- **Ctra. Virgen del Monte, 1**
  13260 Bolaños de Calatrava
  (CIUDAD REAL)
- **P: +34 926 88 47 05**
- **F: +34 926 88 47 06**
- **rocio@parros.es**
- **www.parros.es**

Family business with over 25 years experience in civil construction and iron and steel industry for the railway sector. Parros Group which is specialized in pile driving and catenary foundations, has implemented the 80% of the foundations of the entire Spanish High Speed Network.
Whether conventional railway network or Highspeed Railway (AVE), PARROS GROUP is distinguished by the versatility of our machines adapted "Ad hoc" for auxiliary civil works from the railway, with automatic switching to the three Spanish gauges. Also innovative is our implementing system of noise barriers from the railway track and its foundations. Generic activities of building and general construction.

PATENTES TALGO, S.L.

- **C/ Paseo del Tren Talgo, 2**
  28290 Madrid (MADRID)
- **P: +34 91 631 38 00**
- **F: +34 91 631 38 93**
- **marketing@talgo.com**
- **www.talgo.com**

Talgo, leading High Speed rolling stock manufacturer in Spain, has over 70 years of experience manufacturing very high speed, high speed, intercity and regional trains, tilting passenger coaches and locomotives.
The company is also a pioneer in providing complete maintenance solutions to railway operators worldwide, and is specialized in the design and manufacture of maintenance equipment for any type of rail vehicles.

PRECON; PREFABRICACIONES Y CONTRATAS, S.A.U.

- **C/ Espronceda, 38, local 3**
  28003 Madrid (MADRID)
- **P: +34 91 343 03 48**
- **F: +34 91 359 12 46**
- **fsanchez@precon.cemolins.es**
- **ferroviario@precon.cemolins.es**
- **www.cemolins.es**

PRECON is the Spanish leader in design and supply of precast concrete products for railway tracks, either ballasted and ballastless tracks.
PRECON has supplied solutions based on monoblock, twinblock, block, slabs and sleepers for switches and crossings. Either for high speed, conventional lines, heavy haul, subways and tramways. PRECON from its two Spanish factories has supplied more than 15 millions twinblock sleepers, 5 millions monoblock sleepers, 500,000 ml sleepers for switches and crossings and currently manufacture most of the slab track systems in use in Spain.

REDALSA, S.A.

- **General Solchaga, s/n**
  P. I. de Argales, Apdo. 719
  47008 Valladolid (VALLADOLID)
- **P: +34 983 27 13 16**
- **F: +34 983 27 37 68**
- **redalsa@redalsa.com**
- **www.redalsa.com**

■ Rail electrical welding LBS are arranged to form 288 meters for high-speed train strecht and convencional rail network.
■ Engeneering services and integral management for electrical welding factories and management of rail stockpiles.
■ Regeneration of used rails to make LBS.
■ Providing fastening complet systems. Manufacture of metalic elements for diferents fastening systems. Iron sheets J2.L1 or P50 for J2 and Elastic fastening clips SKL-1, SKL14, SKL12 and new variant to "Fast-Clip".
■ Rail ultrasonic inspection, using hand-held equipment and self-propelled movil equipment until 90 Km/h.
■ Maintenance and repair work of train coaches in our factory. Our facilities are equipped with 3 Km of railway and 3 railway access to RFIG. We have all the necessary traction resources of 1668 track width.
■ Thermal aluminium welding kits distribution.

ROVER ALCISA, S.A.

- **C/ Ochandiano, 18 - Edificio A**
  Parque Empresarial El Plantío
  28023 Madrid
  (MADRID)
- **P: +34 91 444 44 80**
- **F: +34 91 444 44 81**
- **aleon@roveralcisa.com**
- **www.roveralcisa.com**

The Rover Alcisa Group came into being in 1962, and brought together its corporate activities in Construction, Property Development, Engineering, Mining Extraction and New Technology, giving rise to a diversified corporate group ready to take on new investments.
The Rover Alcisa Group is present on all fronts and in all fields of civil works. Indeed, its position as leader is plain to see.
It has a wealth of experience in all kinds of overland infrastructures: highways, dual carriageways and motorways. In addition to its strong position in this sector, it also has a notable and unique presence in railway infrastructure: high-speed, metro and tram.
Its involvement in one-of-a-kind projects as part of the Spanish rail network turned this corporate group into one of only a handful throughout Spain specializing in large-scale projects whose implementation is technically complex.

SEMI, S.A. (GRUPO ACS)

- **Manzanares, 4**
  28005 Madrid (MADRID)
- **P: +34 91 701 77 00**
- **F +34 91 521 85 97**
- **ferrocar@semi.es**
- **www.semi.es**
- **www.grupoacs.com**

A society in international expansion. With the adaptability of a small business, the infrastructure of a big company and the financial backing of a large group. SEMI is encompassed in the major companies of Industrial Services sector of the ACS group. Focused in the industrial field, SEMI build infrastructures for energy, transport, communication, environment and non-residential building. Activity in the railway area: Electrification and Traction Substations for AC and DC, Auxiliary Electrical Equipment, Engineering and Consulting, Maintenance of Catenary and Substations, Infrastructure for Railway Signaling and Communications.

SENER INGENIERÍA Y SISTEMAS, S.A.

- **Severo Ochoa, 4 (PTM)**
  28760 Tres Cantos (MADRID)
- **P: +34 91 807 70 8 / 717 4**
- **F: +34 91 807 87 32**
- **dep.infra@sener.es**
- **www.sener.es**

Sener is one of the leading engineering and technology groups in Europe with over one billion euros of annual turnover, more than 5,000 professionals and a continuously growing international presence with offices in more than 15 countries. In the field of railway engineering, Sener count on an extensive experience in metros, light rail trains systems and tramways, conventional railway line, freight transport and High Speed Lines. Sener's activities range from preliminary, conceptual and feasibility studies, basic and detailed engineering to project management services, supervision of works, value engineering or ICE services.

SICE TECNOLOGÍA Y SISTEMAS

- **c/ Sepúlveda, 6 -Pol. Ind.**
  Alcobendas 28108 Alcobendas
  (MADRID)
- **P: +34 916232200**
- **F: +34 916232201**
- **sice@sice.com**
- **www.sice.com**

SICE Tecnología y Sistemas, (SICE TyS) is a multinational group of Companies, technology and systems integrators operating in the fields of traffic and transport, environment and energy, telecommunications and all types of industrial processes.
SICE TyS's transport activities are focused on meeting the needs of users, operators and transport operation concessionaires in the transport sector. As a systems integrators and systems suppliers, they offer unique technological solutions tailored to all kind of installations.
Design of the Centralized management of all services that complement any form of public or private transport and integrates different solutions and systems:
■ Security&Safety Systems for Metros and Railways
■ Telecommunications Systems for Metros and Railways
■ Signaling: (Interlocking, Level Crossing, CTC)
■ Electric BRTs
■ Ticketing
■ Public transport prioritization
■ Consulting Engineering (OFITECO): Railways lines, Tunnels, Load test (railways bridges)

STADLER RAIL VALENCIA S.A.U.

- **Pol. Ind. del Mediterráneo – C/ Mitjera, 6 – 46550 Albuixech (Valencia) – España**
- **P: +34 96 141 50 00**
- **F: +34 96 141 50 02**
- **mar.rivas@ve.vossloh.com**
- **www.stadlerrail.es**

Activity
Stadler Rail Valencia S.A.U. has a commitment to innovation. Stat-of-the-art technology and optimum quality are the characteristics of the whole range of products developed and produced in the Valencia plant.
As one of Europe's leading rail industry manufacturers, we design and build locomotives as well as passenger trains. Closely linked with the industrial heritage of railways and with the benefit of more than a century of experience, our goal is to design and manufacture advanced-technology, high-performance locomotives for present and future public transport networks, to create new passenger vehicle concepts and to provide comprehensive maintenance services.
Products
■ Dual-mode, Diesel-electric, electric mainline locomotives.
■ Shunting locomotives
■ Passenger rail vehicles: LVR, Metro and Tram-Train.
■ Bogies for locomotives and trains.
■ Maintenance for locomotives and trains.
■ Components and spare parts.
References
■ Diesel-electric Locomotives of the families EURO4000, EURO3000 and EUROLIGHT for Spain; Portugal; France; Italy; Norway; Sweden; United Kingdom and Israel
■ Dual-mode locomotives for United Kingdom and PRASA (South Africa)
■ Shunting Locomotives for SNCF (France)
■ Locomotives Series 333 and Series 334 for RENFE (Spain)
■ Metros for FGV (Valencia)
■ Citylink Tram-Trains for FGV (Alicante), SFM (Mallorca), FEVE (León) in Spain; for VBK & AVG (Karlsruhe) and VMS (Chemnitz) in Germany; for SYPTE (Sheffield) in UK and for Puebla (Mexico)
■ Tramlink Tramways for Rostock (Germany), Santos (Brazil) and Gmunden (Austria)
■ Suspension Monorail for WSW (Germany)
■ Bogies CIVIA, for RENFE (Spain)
Certifications
IRIS2.0, ISO9001, ISO14001, OHSAS 18001, EMAS, EN 15085 (welding), DIN 7601 (bolding)

SIEMENS RAIL AUTOMATION S.A.U.

- **Ronda de Europa, 5**
  28760 Tres Cantos (MADRID)
- **P: +34 91 514 80 00**
- **www.siemens.es/railautomation**

Siemens Rail Automation is the resulting Company after the acquisition of the Invensys Rail Dimetronic group by Siemens. The new division offers integrated mobility solutions through the most advanced technologies for railway signalling and train control.
Our main purpose is the supply of "turn-key" projects, including all the phases of design, development, supply, manufacturing, installing, testing, commissioning and maintenance of railway signalling systems and automatic train control systems for either mass transit applications as main line and high speed lines. The solutions and systems of Siemens Rail Automation allow railways and metropolitan networks to improve the safety of their railway application; increase the capacity of the lines; reduce operating costs; optimize maintenance works; obtain a better usage of its rolling stock, having at the same time lower energy consumptions rates and to decrease energy consumption.

TALLERES ALEGRÍA, S.A.

- **C/ Peña Santa, 7 - P.I. Silvota**
  33192 Llanera (ASTURIAS)
- **P: +34 985 26 32 95**
- **F: +34 985 26 60 1**
- **talegria@talegria.com**
- **www.talegria.com**

Talleres Alegría with more than 100 years at the service of railway´s networks, offers to its customers a wide range of fixed track equipment with the best quality and service conditions. Following its own technical design or its customer's, Talleres Alegría manufactures among other turnouts for High Speed Lines, conventional Lines, subway and Tramway lines, as well as End Forged Switch Points and Track Vehicles.
Being aware of the relevance of comfort within the railway sector, Talleres Alegría has collaborated with leading companies developing and applying technical solutions for mitigating noise and vibrations during the crossing over the turnouts.

TECTATOM

- **Avda. Montes de Oca, 1 San**
  Sebastián de los Reyes
  28703 Madrid (MADRID)
- **P: +34 91 659 8600**
- **F: +34 91 659 8677**
- **correo@tecnatom.es**
- **www.tecnatom.es**

Tecnatom has more than 50 years of experience in the application of Non Destructive Testing (NDT) to the in-spection of components. It also offers its high technological level in

the development and application of inspection systems and techniques to the railway market, where security and quality control are increasing required.
Tecnatom can provide its depth knowledge on materials currently used or tested in the railway sector (metals or new materials carbon-fiber based), taken advantage of its activities in the nuclear and aerospace sectors.
The main fields where it is carrying out activities in the railway sector are:
- Inspection services for infrastructures and rolling stock
- Development of inspection techniques and procedures
- Development of inspection equipment and systems (ultrasonics, eddy currents) for rail transport components (track, axles, bogies, wheels)
- Training of operators on Non-Destructive Testing (NDT) techniques
- Development of training simulators for train drivers.

TELICE

- **Pol. Ind. Onzonilla, 2ª fase 24391 Ribaseca. (LEÓN)**
- **P: +34 987 22 10 04**
- **F: +34 987 26 44 07**
- **telice@telice.es**
- **www.telice.es**

Telice is a Spanish company with 39 years of experience in several fields of technology installation, especially for the railway sector.
Our activities cover design, installation and maintenance for Railway Electrification Systems, Railways Safety and Signalling, Optical Fiber, Industrial Automation and Electrical Installations.
Our extensive experience has made Telice a preferred partner for carrying out work and providing services for important railroad administrations and major construction and technology companies in the railroad industry.

TYPSA

- **C/ Gomera, 9 28703 San Sebastián de los Reyes (MADRID)**
- **P: +34 91 722 73 00**
- **F: +34 91 651 75 88**
- **madrid@typsa.es**
- **www.typsa.com**

Typsa Group is one of the most important European consulting groups and leader in the fields of civil engineering, architecture and the environment.
Since its creation, in 1966, Typsa Group's ever-increasing activities, having focused both on preliminary assessment and on design, as well as supervision and/or management of construction projects in Europe, the Americas, Africa and the Middle East. Typsa is one of the most experienced Spanish consulting firms in the field of railways and metro systems. We have been involved in more than 4,700 km of High Speed lines (HSL), 2,600 km of conventional lines, 390 km of conventional metro and 450 km of tram and light-rail transits.

TEKNORAIL SYSTEMS, S.A.

- **Paseo de la Castellana, 91 28046 Madrid (MADRID)**
- **P: + 34 91 515 60 00**
- **F:+ 34 91 564 72 86**
- **info@teknorail.com**
- **www.teknorail.com**

Teknorail Systems, S.A. is a company belonging to the EUROFINSA Group, whose activity focuses on the development of railway interior projects, aimed both for the refurbishment of existing vehicles and also for new rolling stock, with a scope of supply that ranges from the design and engineering to the industrialization and material supply, including the technical assistance to the car commissioning. Teknorail's main goal is to provide its customers with high-quality solutions for railway interiors by means of innovation, global project management, modular supply and flexible solutions.

THALES ESPAÑA GRP, S.A.U.

- **Serrano Galvache, 56 Edificio Álamo 4º, Planta Sur 28033 Madrid (MADRID)**
- **P: +34 91 273 76 80**
- **F: +34 91 273 78 67**
- **jose.villalpando@thalesgroup.com**
- **www.thalesgroup.com**

Thales is a World leader in Mission Critical Solutions for Land Transportation. Thales Spain, with more tha 60 years of experience, has been pioneer and leader in the technological development of the Spanish railways, beein one of the main suppliers of safety and telecommunication systems for the Spanish Railways Administrations and present in countries as Turkey, Mexico, Algeria, Malaysia, Egypt and Morocco. Its activity goes from the development, manufacturing installation, commissioning to the maintenance of equipments and systems for railway signalling, train control, Telecommunication, Supervision ticketing and critical infrastructures security.

VALDEPINTO, S.L.

- **Calle Águilas, 9 - Nave 11 28320 Valdepinto (MADRID)**
- **P: +34 91 691 42 68**
- **F: +34 91 691 57 03**
- **lauraparra@valdepinto.net**
- **www.valdepinto.com**

Valdepinto, S.L. was established in 1986 and focuses its activities in the Railway sector.
We have four main product lines:
- All types of machining (specialists in electrical insulation).
- Screen printing, Signs and Engraving low-relief.
- Metal transformation and welding.
- Design and fabrication of transformers and coils of high/low voltage. Our philosophy is to always offer all our clients an unbeatable value for Money, combined with an excellent service.

Talgo Designer and Manufacturer of High Speed and Very High Speed Passenger Trains

Very high speed train
Very high capacity
Best accessibility
Best-in-class energy consumption
Lightweight construction
Cutting edge technology
Maximum reliability

Talgo

www.Talgo.com