



## 5<sup>th</sup> INTERNATIONAL RAILWAY CONVENTION



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59 Railway authorities from 31 countries from all around the world met in Seville during June 15-17



### IN DEPTH: ALGERIA

Metro and tram, the solution to its urban transport



### DESTINATION: USA

The country is committed to invest in its passenger rail network



### INTERVIEW

Gonzalo Ferre, President of Adif, analyses the current situation of the Spanish railway sector:

"The key to Spanish success is in the ability to integrate different technologies and make them work"



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**MAFEX SUCCESS IN THE EXHIBITION MIDDLE EAST RAIL, RAIL SOLUTION ASIA AND UITP**  
Mafex coordinated the presence of a dozen Spanish companies in three of the most important global rail exhibitions held recently in Dubai, Kuala Lumpur and Milan.

### MAFEX TRAVELS TO PERU AND ECUADOR

In March, a delegation of Spanish companies visited major operators and rail infrastructure managers from Ecuador and Peru.

### MAFEX ANNOUNCES ITS NEW WEBSITE AND THE SERVICE COLLABORATE+

Last May, the Association presented its new website adapted to new technologies and giving priority to ease navigation. In addition, Mafex has launched the new service Collaborate+ to boost collaboration among its members.

### THREE NEW COMPANIES JOIN THE ASSOCIATION

Ecocomputer, Instalaciones Inabensa, S.A. and the Association IK4 Research Alliance join Mafex, who currently has 75 members.

### THE 5<sup>TH</sup> RAILWAY CONVENTION ENDS SUCCESSFULLY



Seville hosted 52 international train entities which participated in more than 750 meetings with major Spanish railway companies.

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**USA IS COMMITTED TO IMPROVE ITS PASSENGER RAIL NETWORK**



At present, the country is investing heavily in order to improve its passenger rail network in both urban transport and long distance, with the introduction of High Speed services.

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## The transport policy of the EU and its impact on the rail industry under debate

Dear friends,

Half of the year has gone by and, during this period, the Association has made a major deployment from the point of view of participation and attendance to fairs and congresses of the sector: Middle East Rail in Dubai, Rail Solutions in Kuala Lumpur or the World Congress and Exhibition of Public Transport organized as always by the UITP in Milan have been the most recent. Recently, the Association has coordinated a trade mission to Peru and Ecuador, as well as the visit with a large number of Spanish companies to the World Congress on High Speed organized by the UIC in Tokyo.

All this has been completed with the recent celebration in the month of June of the 5<sup>th</sup> International Railway Convention organized by MAFEX and made Sevilla the railway world capital for a few days, with broad participation in the event of experts from around the world, along with those Spanish companies and major national and international sector institutions.

In this issue we inform you about all this activity, but we also include an interview with Gonzalo Ferre, President of Adif, with which we analyse the various current issues that concern the sector and are the keys for Spain to be a High Speed world leader, the future of the Spanish industry

internationally and the challenges Spanish companies and administrations will face at national and international levels.

Following the usual structure of the magazine, we also include an article addressing in depth urban transport in Algeria, a country that has been highlighted in recent years by a significant investment in this area; and under the section Destination, an analysis on the overview that the United States provides in terms of railway development, highlighting its urban transport projects in metros, trams and commuter. High Speed is also included.

As usual, there is information about the various successes both in national and international projects and the various contracts our companies are signing, as well as information in innovation that our members are having.

And just like we did in the previous issue, we want to welcome the two new companies to our association, ECOCOMPUTER and INABENSA, as well as IK4 Association, which recently joined Mafex.

Finally, we say goodbye expecting that you enjoy reading this issue.

**MANAGEMENT: MAFEX.**

**MAFEX STRATEGY AND COMMUNICATION COMMITTEE:** Albatros, CAF Signalling, Idom, Indra Sistemas, Ingeteam, Metalocauchó, Patentes Talgo, Sener, Thales España, Vossloh, Siemens Rail Automation and Bombardier España.

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Mafex stand at the exhibition Middle East Rail 2015

## Mafex success at Middle East Rail, Rail Solution Asia and UITP fairs

MAFEX COORDINATED THE PRESENCE OF TWENTY THREE SPANISH COMPANIES IN THREE MAJOR RAILWAY EVENTS WORLDWIDE HELD RECENTLY IN DUBAI, KUALA LUMPUR AND MILAN.

The Spanish Railway Association coordinated the participation of a large group of railway companies in three major railway events that have been held recently in Dubai, Kuala Lumpur and Milan during the months of March, April and May respectively. The most important railway fair in the Middle East and North Africa,

Middle East Rail 2015, hosted this edition more than 9,000 visitors, 330 exhibitors and 600 delegates from around the world. Mafex organized the Spanish group participation at the fair that took place on March 17th and 18th.

The Spanish participation consisted of engineering firms such as LKS, Tyspa and Sener, rolling stock manufacturers like CAF and Talgo and other railway companies like Arceormittal, GMV and NEM Solutions, all members of Mafex.

The Spanish pavilion was visited by various public railway agencies and bodies such as the Roads and Transportation Authority-RTA, Etihad Rail or the Ministry of Public Works, who also gave several lectures on various projects in the MENA region (Middle East and

North Africa) with particular reference to the present rail network that will cover the GCC region.

Also, Mafex coordinated the Spanish pavilion at the Rail Fair Solution Asia 2015 held during the 22nd to the 24th of April in Kuala Lumpur, which consisted of the Spanish leading rolling stock manufacturers CAF and Talgo, the constructor OHL and Indra, a railway technology company. In addition, other companies members of Mafex, such as Vossloh Spain, participated by exposing their new developments in this Fair.

This Fair/Congress held its 16th edition together with the Annual Congress of the AROA, Asian Railway Operators Association, which had the participation of around 70 exhibitors from 20 countries occu-



Malaysian railway authorities in the Spanish pavilion at the exhibition Rail Solution Asia 2015

pying a space of over 2,000 square meters. Likewise, 1800 International professionals visited the fair and 160 delegates participated in the congress, as well as the main railway authorities of Malaysia, Hong Kong, Vietnam, Singapore, Thailand and the Philippines.

Both the Middle East and South-east Asia are markets with great interest to the Spanish railway companies. Particularly in the latter region, the High-Speed line linking Kuala Lumpur with Singapore, the urban transport system of Klang Valley, the modernization of the railway line in the West Coast and the East Coast's expansion are projects in which the Spanish industry is highly interested.

In the Middle East, a large consortium of Spanish companies is conducting the High-Speed project between the Saudi cities of Mecca and Medina. A number of other important infrastructure plans add great interest for companies that are members of Mafex. Among them, we must highlight the metros in the cities of Riyadh,

Mecca and Jeddah in Saudi Arabia and the Saudi Landbridge Project, a conventional railway linking the Saudi cities of Riyadh, Jeddah, Dammam and Jubail. Finally, it is important to emphasize the great railway project that will link the countries of the Persian Gulf, known as the GCC Railway Project. This railway line will run along more than 2,100 km and will cross the countries of Kuwait, Bahrain, Qatar, Oman, UAE and Saudi Arabia. More information in Mafex's magazine issue 1.

### UITP World Congress and UIC High Speed Tokyo

The most important international fair for public transport and urban mobility organized by the International Association of Public Transport, UITP, held in Milan from the 8th to the 10th of June, also featured a Spanish pavilion coordinated by the Spanish Railway Association and supported by ICEX Spain Export and Investment. The following Spanish companies participated: CAF, Ingeteam, SICE,

Goal Systems and Railsa.

You can find more information regarding this Fair/Congress and the participation of Spanish companies in different urban systems worldwide in the section Mafex Informs of the issue number 3 of the magazine.

Finally, Mafex participated in the fair UIC HIGH SPEED held from July 7th to 10th in Tokyo, in which ICEX Spain Export and Investment, in collaboration with the Economic and Commercial Office of Spain in Tokyo, organized an information pavilion.

The High Speed world congress-exhibition, which celebrated its ninth edition this year, is the largest international event on technology and innovation in equipment, rail, infrastructure, technology products and services related to the development of High Speed rail.

Spanish companies are world leaders in High Speed. Spain occupies the first place in Europe and third worldwide with a network of 2,322 km in UIC width in service since December 2014. 



# Mafex travels to Peru and Ecuador

A DELEGATION OF SPANISH COMPANIES VISITED MAJOR OPERATORS AND INFRASTRUCTURE RAILWAY MANAGERS OF ECUADOR AND PERU IN MARCH

**M**afex travelled during March 23<sup>rd</sup> to the 27<sup>th</sup> to Quito and Lima with a dozen Spanish railway companies in order to see in first-hand the investments that the government of Ecuador and Peru are planning to make on railway infrastructure in short-term.

Spanish engineering firms, manufacturers of railway equipment and

components, as well as developers of innovative technologies in various railway fields had the opportunity to meet with Metro de Quito, the Ministry of Transportation, the Ministry of Transport and Railways of Ecuador and various departments of the Electric Train Authority (AATE), Proinversión, Ministry of Transport, PeruRail, Cosapi and GyM Ferrovías de Lima, among others.

There are two markets of great interest to companies that are members of Mafex. In the case of Ecuador, the railway sector has been in full renovation and rehabilitation of infrastructure since years, with an investment of USD 118,400 million. The creation of new urban transport systems like Metro

de Quito or the tram of Cuenca are also interesting. Moreover, the recent agreement signed between Spain and Ecuador to promote co-operation in the field of management of transportation systems and infrastructure development represents a new opportunity for Spanish companies.

As for Peru, the country plans to expand its rail network considerably in the coming years, mainly through public – private investment initiatives. Only until 2016, the Government has allocated USD 5,300 million to rail infrastructure. Lima is also in full construction and expansion of its metro network, and other cities such as Arequipa also have their own plans for the improvement of urban transport.



Mafex members visiting Ecuador Railways



## transforming tomorrow



ArcelorMittal is the world's leading steel and mining company, with rail production facilities in Spain, Poland and United States that offer a wide portfolio of products covering rails for subways, trams, trains, light rails, crane rails, crossings, rail accessories and other special products such as cathode bars and track shoes.

Steel is a vital part of the world we live in, and it has an important role to play in helping us forge a more sustainable future. The modern world relies on steel, as for example, for its rail infrastructure. Steel is an essential part of the fabric of life.

Customer satisfaction, market expansion and R&D focus, are ArcelorMittal Europe – Long Products, rail strategic basis. Following these axes, the new investments and developments were launched: Head Hardened rail at Gijón Mill and 120 length rail, at Dabrowa mill.

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Estamos convencidos de que el acero desempeña un papel fundamental en el mundo: gran parte del tejido de la vida está hecho de acero, como en el caso de las vías del ferrocarril.

Satisfacción del cliente, expansión de mercado y apuesta por la I+D son la base estratégica de ArcelorMittal Europe – Long Products – Carril. De acuerdo con estos ejes principales se lanzaron las nuevas inversiones y desarrollos: carril de cabeza endurecida en la fábrica de Veriña y 120 m, en la fábrica de Dabrowa.





## WWW.MAFEX.ES NEW WEBSITE AND COLLABORATE + SERVICE

The Spanish Railway Association, Mafex, launched last May its new website, responding to new technological trends through various design improvements and prioritizing ease of navigation as a key element. During its first week, the site received over 2,900 visits. The section with information about products, services and technological developments of all Mafex members obtained the greatest number of visits.

Mafex currently has a total of 75 member companies that in 2014 had a railway turnover of 4,400 million euros, of which 64% was exported, and employed a total of 20,200 people.

In addition, the new platform has a section available exclusively to Mafex members, where there is a **Documentary Fund** with

more than 500 reports and documents relating to the rail sector in different countries; a **database of contacts** with more than 1000 references from railway companies and organizations with which Mafex is in contact; the latest **Newsletters** of the association and access to an exclusive service with the latest **international news and tenders**.

We invite you to visit our new website: [www.mafex.es](http://www.mafex.es)

### NEW COLLABORATE + SERVICE

Mafex has recently launched a new service aimed at facilitating the exchange of information, knowledge and experience in international markets between its member companies. As part of this platform, the companies concerned will act as facilitators of information in markets where they have presence and in turn benefit from the expertise of other partners in those markets where there is no presence. It is, ultimately, a service that promotes collaboration in a bidirectional sense and voluntarily between Mafex members who want to participate.



**MAFEX MAGAZINE.** In the new website you can access the magazine of the association and read all published articles and news, as well as downloading the full issue.

**LINKS.** An easy for accessing tabs with Mafex information.



**ACCESS FOR MEMBERS.** exclusively for members, the web has access to check the documentary fund, contact databases and have access to exclusive news and tenders.

## UNIFE celebrates its General Assembly in Bucharest

THE GENERAL ASSEMBLY OF THE ASSOCIATION OF THE EUROPEAN RAIL INDUSTRY WAS HELD DURING JUNE 17-19 IN BUCHAREST.

Another year, UNIFE, the Association of the European Rail Industry, held its General Assembly held in Bucharest, Romania, from the 17<sup>th</sup> to the 19<sup>th</sup> of June.

Throughout the three days, representatives of European associations and companies had the opportunity to participate in various panel discussions with leading members of the Directorate General for Mobility and Transport (DG MOVE), the Regional Policy (DG Regio) and the



Industry and Entrepreneurship (DG GROWTH), among others. The topics discussed were those that most affect the railway sector, including investment plans of the European Union (Juncker Plan, PPPs and other European funds), ERTMS developments or Community Transport Policy (Fourth Railway Package, the review of the White Paper on Transport, etc.). MAFEX, as a member of the Eu-

ropean Association, participated throughout this year in meetings of the Committee of National Associations and the Committee on Trade and International Affairs, where vital issues not only in Europe but globally are treated, such as trade negotiations of the EU with third countries to encourage the presence of the European railway industry in those markets where penetration is more difficult. 📍

## Three new companies join Mafex

ECOCOMPUTER S.L., INSTALACIONES INABENSA S.A. AND THE ASSOCIATION IK4 RESEARCH ALLIANCE ARE NOW MEMBERS OF THE SPANISH RAILWAY ASSOCIATION, WHICH ALREADY HAS 75 MEMBERS.



Spanish companies, EcoComputer S.L. e Instalaciones Inabensa S.A. and the Association IK4 Research Alliance, have recently joined Mafex, the Spanish Railway Association.

### ECOCOMPUTER S.L.

Specialized in software development solutions for the railway sector company, and comprehensive access control and presence in all types of facilities. For more information [www.ecocomputer.com](http://www.ecocomputer.com)

### INSTALACIONES INABENSA S.A.

An engineering and industrial construction and infrastructure company, especially rail infrastructure, catenary, substations, communications and auxiliary facilities

such as lighting and ventilation. For more information [www.inabensa.com](http://www.inabensa.com)

### IK4 RESEARCH ALLIANCE

An alliance of nine technology centres whose activity is the development of technology in many fields. Specifically for the railway sector, this company is working to develop innovative solutions for electric traction systems, storage systems, development of materials and processes, wheel-rail dynamics, noise and vibration, etc. For more information [www.ik4.es](http://www.ik4.es)

You can access the data sheets of these companies and other Mafex members on the new website of the association [www.mafex.es](http://www.mafex.es). 📍



Event inaugurated by, in the image from left to right, the the General Director of Industry and Small and Medium Enterprises of the Ministry of Industry, Energy and Tourism, Víctor Audera; the President of the Spanish Railway Infrastructure Administrator (ADIF), Gonzalo Ferre; the president of Mafex, Víctor Ruiz Piñeiro and the CEO of ICEX Spain Export and Investment, Isaac Martín Barbero.



Opening ceremony of the V Spanish Railway Convention



## The 5<sup>th</sup> International Railway Convention - Seville 2015 ends successfully

DURING JUNE 15-17, SEVILLE HOSTED 52 INTERNATIONAL TRAIN ENTITIES WHICH PARTICIPATED IN MORE THAN 750 MEETINGS WITH MAJOR SPANISH RAILWAY COMPANIES

Authorities from 31 countries around the world met during June 15<sup>th</sup> – 17<sup>th</sup> in Seville in the framework of the V International Railway Convention which Mafex, the Spanish Railway Association, organizes every two years since 2007. The Convention, which had the support of ICEX Spain Export and investment and the Ministry of Industry, Energy and Tourism, consolidates itself as an international reference platform in which international manufacturers, operators and railway managers know in first-hand the complete portfolio of solutions and services offered by the Spanish railway industry. Also, this professional meeting served to analyse the main projects and investments planned in more than thirty countries who



The director of the Spanish railway platform, Ángeles Tauler; General Director of the Spanish Railways Foundation, Alberto García; the General Director of Industry and Small and Medium Enterprises of the Ministry of Industry, Energy and Tourism, Víctor Audera; and UNIFE's General Director, Philippe Citroen.

bet on the railway as a mean of transport.

The opening ceremony was attended by the president of the Spanish Railway Infrastructure Administrator (ADIF), Gonzalo Ferre; the Director General of Industry and Small and Medium Enterprises of the Ministry of Industry, Energy and Tourism, Víctor Audera; the CEO of ICEX Spain Export and Investment, Isaac Martín Barbero; and Mafex's President, Víctor Ruiz Piñeiro, who in his speech reiterated the commitment of Mafex to

"boost the activity of the Spanish railway companies, help them in their great international experience and further strengthen ties with major rail representatives of the world".

### National and international institutions support the Spanish railway sector

The general director of Industry and Small and Medium Enterprises of the Ministry of Industry, Energy and Tourism, Víctor Audera, affirmed that the railway is

"a particularly strategic sector," which is in "key reference positions in the world due to the great technological leap achieved in the last 25 years."

In his view, the railway is called to be "a major role" in the industrial recovery, within the objectives set by the government for 2020.

Furthermore, the CEO of ICEX Spain Export and Investment, Isaac Martín Barbero, emphasized that there will be an increase in support for innovation, "which is the bedrock of internationalization" and works for strengthening intangibles such as the "value" provided by the Spanish industry will be carried out.

In the same lines, the president of Adif, Gonzalo Ferre, said the developer and manager of railway infrastructure "is committed to launch more long-term contracts, to enhance the knowledge of the company providing the service, therefore generating and more stability" to the company.

In addition, representatives from other organisms such as Renfe, UNIFE, the Spanish Railway Technology Platform, **Continue**



Above, Delegation of authorities of the GCC (Gulf Cooperation Council). In the picture below, Dr. Julio Bango, General Director of the National Institute of Railroads of Angola (INCFRA) talking with Spanish businessmen.







Joaquin Jimenez, deputy international director of ADIF in the conference: "The role of ADIF as Infrastructure Manager of Highly Efficient Commuter Networks in Spain".



Juan Matias Archilla, director of international projects in the conference: "Spanish High Speed Operation and Current Status"



In the picture above, Lola Bravo, Executive Presidency of Alamy with Jose Luis Arevalo of Tysa and Maria Concepción Ortega of Idom in the forum dedicated to Urban Transport. Below, parallel sessions of international rail authorities.



El Hadi Djoumagh, director for management of control and partnerships of the National Society of Railway Transport in Algeria (SNTF)

the Spanish Railways Foundation and Alamy attended the event and participated with several presentations at various forums.

### More than 750 bilateral meetings

During three days more than 750 bilateral meetings between representatives of 52 international organizations and representatives of the 45 Spanish companies attending the Convention took place.

These meetings helped strengthen trade ties between attendees and explore opportunities for cooperation between them. It also facilitated foreign guests to know in detail the broad portfolio of products, services and technological solutions of the Spanish industry.

Also, 37 technical visits to installations and plants through the main Spanish railway regions like Asturias, Basque Country, Madrid and Valencia, among others were organized.

International authorities were able to visit the control centre and maintenance workshops of Metro

Seville and the tram control centre of this city. Also, an important part of the foreign delegation travelled in the first High-Speed line to be built in Spain more than two decades ago, the line Seville - Madrid, and was able to visit the train cabin during this journey.

### The Spanish railway experience in the world

The program of the 5th Convention was completed with panels of parallel conferences on the investment plans of foreign guest organisms and the exposure of Spanish technological innovations. Under the generic title of "Spanish Rail Industry Forum", specific cases of projects that have been carried out successfully in urban transport networks, High Speed and medium distances by the Spanish industry both national and international.

Among the Spanish participating companies are Acciona Ingeniería, Alstom Transporte, Arcelor-mittal España, Assignia, Caf, Cetest, Getinsa-Payma, Idom, Ineco, Nem Solutions, Tysa and Vossloh España, as well as presentations



More than two dozen media participated in the international meeting. In the photo, Canal Sur interviewing the Director of Mafex, Pedro Fortea.

on the experience of the Spanish railway administrations such as Adif, Renfe, TMB and Euskotren. All of them exposed their role played in the development of the main railway networks in the world and their high technological capacity to cooperate on new projects.

As for the sessions given by international guests, the first day, June 15, was focused on Middle East and Africa, with speeches by senior personalities from the railway sector in UAE, Saudi Arabia, Bahrain, Oman, Algeria and Angola, with the notable intervention of the GCC

Continue >





Bilateral meetings



Networking during the V Railway Convention

(Gulf Cooperation Council). A panel was reserved for Europe, where EU railway programs and transportation plans in countries such as Czech Republic, Macedonia, Norway, the Netherlands and Turkey were exposed. The second day was devoted to the rail markets of Africa and America, with specific cases of Indonesia, Malaysia, Singapore, Japan, USA, Mexico, Peru, Panama, Dominican Republic, Ecuador,

Chile and Brazil. Finally, during the third day, rail transport plans in Eastern Europe (Serbia, Croatia and Romania) and Southeast Asia (Thailand, Korea, Philippines and India) were presented. All markets in which the different governments have invested heavily in rail and urban systems as a sustainable and efficient transport, and where Spanish companies are currently working and exported in 2014 more than 2,800 million euros. 🇪🇺



In the imagen, bilateral meeting.

TECHNICAL VISIT TO THE CONTROL CENTRE OF METRO SEVILLE



PARTICIPATING INTERNATIONAL ORGANIZATIONS

COUNTRY	COMPANY	POSITION
ALGERIA	▮ SNTF - Société Nationale des Transports Ferroviaires	▮ Director of Control Management and Partnerships
ANGOLA	▮ Instituto Nacional Dos Caminhos ▮ Caminho de Ferro de Moçamedes - EP	▮ General Director of Ferro de Angola (INCA) ▮ Chairman of the Board
BRAZIL	▮ CPTM - Companhia Paulista de Trens Metropolitanos ▮ Metro Rio ▮ Anprilhos	▮ Director Assistant - Operation and Maintenance ▮ Specialist Engineer Rolling Stock (control and electronic) ▮ Engineer
CHILE	▮ EFE - Empresa de los Ferrocarriles del Estado Chile	▮ Deputy Manager of Bridges and Civil Works
CROATIA	▮ ZPD - Željezničko Projektno Društvo ▮ Duro Dakovic ▮ ZPD - Željezničko Projektno Društvo	▮ Designer ▮ Purchaser ▮ General Manager
CZECH REPUBLIC	▮ Ceske Drah	▮ DMU and EMU working group manager
ECUADOR	▮ Metro de Quito	▮ Equipment and Facilities Professional
INDIA	▮ Medha Servo Drives ▮ Jupiter Wagons Limited	▮ General Manager (International Partnership and Strategic Alliances) ▮ Chief Technical Officer
INDONESIA	▮ Ministry of Transport ▮ PT LEN Railway Systems	▮ Director of Rolling Stock ▮ VP Project Operation & Management
ISRAEL	▮ Israel Railways ▮ Israel Railways	▮ Vice President of Infrastructure ▮ Vice President Safety, Security, Quality
JAPAN	▮ JR East	▮ Senior Manager
KOREA	▮ KORAIL - Korea Railroad Corporation ▮ Hyundai Rotem	▮ International Procurement Manager ▮ Manager - Department Overseas Procurement
MALAYSIA	▮ SPAD ▮ SPAD ▮ SPAD	▮ Associate Project Director, Cross Border Rail ▮ Deputy Manager ▮ Senior Analyst
MEXICO	▮ Secretaría De Comunicaciones y Transportes (SCT)	▮ General Director for Economic Regulation
MOROCCO	▮ ONCF- Office National des Chemis de Fer ▮ Head of Global Sourcing Department	▮ Purchasing Manager
NETHERLANDS	▮ Veolia Transdev	▮ Manager, Rail planning Department
NORWAY	▮ Bybanen As - Bergen Light Rail	▮ Technical Manager
OMAN	▮ Ministry of Transport and Communications ▮ Oman Rail Company ▮ Oman Rail Company	▮ Deputy Director General for Maintenance and Land Transport ▮ Director General of Human Resources ▮ Director General of Contracts and Procurement
PANAMA	▮ Metro de Panama	▮ Director of Projects and Planning
PERU	▮ Ministerio de Transporte y Telecomunicaciones ▮ Proinversion	▮ Director of Railways ▮ Financial Counselor
REPUBLIC OF MACEDONIA	▮ Macedonian Railways Transport Jsc ▮ Skopje	▮ General Manager
ROMANIA	▮ METROREX S.A. ▮ CFR S.A	▮ Chairman of the Supervisory Board ▮ Investment and TIC Director
SAUDI ARABIA	▮ SRO - Saudi Railway Organization ▮ GCC - SG The Cooperation Council for the Arab States of The Gulf - Secretariat General ▮ GCC - SG The Cooperation Council for the Arab States of the Gulf - Secretariat General ▮ King Fahd Causeway Authority  ▮ The World Bank ▮ Ministry Of Transport ▮ MMDA - Al-Madinah Al-Monawarh Development Authority	▮ Director General Expansion Projects ▮ Director of Transport Department  ▮ Deputy Director of Transport Department ▮ Assistant Director General-Technical Affairs ▮ Sr. Advisor -Transport Program Leader ▮ Director General Public Transport ▮ Civil Project Engineer
SERBIA	▮ City Of Belgrade, Office of the Mayor	▮ Advisor to the Mayor for Interntional Financial Institutions Relation
SINGAPORE	▮ LTA - Land Transport Authority	▮ Senior Group Director, Rail
THAILAND	▮ SRT - State Railway of Thailand	▮ Superintending Engineer - Mechanical Engineering Center
THE PHILIPPINES	▮ MRAIL ▮ AC Infrastructure Holdings Corporation - Ayala ▮ MPIC - Metro Pacific Investments Corporation	▮ President ▮ Chief Operating Officer  ▮ Vice President of Business Development
TURKEY	▮ TCDD - Turkish State Railways ▮ TCDD - Turkish State Railways ▮ TUVASAS - Turkish Wagon Industry Inc ▮ Department	▮ Assistant Director of the Department of Investigation, Planning and coordination ▮ Engineer ▮ Mechanical Engineer R&D
U.A.E.	▮ DOT - Department of Transport Abu Dhabi ▮ FTA - Federal Transport Authority ▮ ETHAD RAIL	▮ Surface Transport Advisor ▮ Executive Director - Land Sector ▮ Commercial Director
U.S.A.	▮ Hyundai Rotem USA ▮ Nippon Sharyo ▮ BART - Bay Area rapid Transit District	▮ Manager - Procurement Team ▮ Engineering and Marketing Manager ▮ Manager of Vehicle Systems Engineering





### Alstom España and OHL to build a new metro system in Guadalajara, Mexico

#### Alstom España

The Mexican Secretariat of Communications and Transportation has awarded an Alstom-OHL consortium a contract to build and commission a complete system for the Guadalajara Line 3 metro. This new, 20-kilometre line will run diagonally through

the city of Guadalajara (Zapopan, Guadalajara and Tlaquepaque), carrying 233,000 passengers a day. The contract value is 380 million euros, which includes civil works, electrification and supply of transport systems.

Alstom Spain's train manufacturing plant in Santa Perpetua

de Mogodá (Barcelona) will supply all 18 trains, each with three coaches.

In the meantime, the engineering centre and safety laboratories in Madrid will develop the video surveillance systems, control centres and passenger information equipment.

### Chennai Metro Rail Limited awards LKS India the project development of 4 shopping centres in different metro stations



#### LKS

The arrival of the metro in the city of Chennai should be a real-

ity in March, when the first line is expected to be inaugurated.

The largest infrastructure project in the capital of Tamil Nadu, which will transform the everyday life of millions of citizens, will count on LKS INDIA in some of its collateral projects.

Chennai Metro Rail Limited, public agency developing this macro-project, has created an internal drive to develop shopping centres near the stations of the future subway line. This agency awarded malls next to 4 stations to LKS.

The Alandur Station, next to the airport is expected to be a meeting place for executives who travel daily, and will accommodate a

small Boutique Hotel inside with a two-level parking below ground. The Ekkattuuthangal and Arumbakkam stations will host primarily office space. Finally the CMBT Station will be destined to integrate the scattered commercial spaces existing in the current station. The total area to be constructed will be approximately 30,000 m<sup>2</sup> and the project should be finished by October 2015.

LKS will implement its experience in the design and construction of shopping centres for the development of these projects, whose ultimate goal is to generate a source of funding for each station in order for them to be economically self-sufficient..



Signalling is not what you see, but what you don't see.  
Relax, this train is running on a CAF Signalling system.





### Vossloh España will supply 25 additional tram-trains to Karlsruhe

Vossloh España

Within the scope of an option Verkehrsbetriebe Karlsruhe GmbH (VBK) and Albtal-Verkehrsgesellschaft (AVG) have ordered another 25 light rail vehicles of the type "Citylink NET 2012" from the consortium Vossloh Es-

paña – Vossloh Kiepe. The original contract on the supply of 25 new low-floor vehicles was concluded in 2011 and comprises two options for altogether 50 vehicles.

The Citylink Net 2012 is a barrier-free LRV, which can be operated on all tram lines of the VBK in the city and in the region on the light rail lines S1 and S11 of the

AVG between Hochstetten and Bad Herrenalb / Ittersbach. Thus, the vehicle connects the area surrounding Karlsruhe with the inner city of Karlsruhe and contributes considerably to high urban mobility. The first vehicles from the original order were put into operation in October last year. About half of the first vehicle lot has already arrived in Karlsruhe.

### The Buenos Aires Belgrano Sur line already has replacement material manufactured by Amurrio Ferrocarril y Equipos

Amurrio Ferrocarril y Equipo

Within the program of renewal of rail infrastructure of Trenes Argentinos Operadora Ferroviaria, the company Amurrio Ferrocarril y Equipos SA has supplied between the months of December 2014 and March 2015 miscellaneous equipment and spare parts for Belgrano Sur line, amounting to more than 1.2 M€

The supplied equipment includes monobloc manganese steel frogs, destined to replace the previous assembled frogs. The monobloc manganese steel frogs have optimized performance, low main-



tenance and longer service lives. Amurrio has extensive experience designing and manufacturing these frogs, which has specialized

for all kinds of tracks.

Amurrio has also supplied half-switches and guardrails, as well as some complete turnouts..



### Railway interchange

Danobat

The Danobat solutions for the railway sector will be exhibited at the Railway Interchange 2015 trade fair which will be held from 4 to 7 October in Minneapolis.

The Railway Interchange trade fair is the largest showcase in the railway sector in North America. With a large number of reference projects, more than 600 companies will exhibit their solutions for this sector. This exhibition is an international meeting point for buyers and sellers of technology in passengers and freight transport.

At this fair, the Railways business unit

of DanobatGroup will exhibit turn-key solutions for maintenance and production of components for rolling stock, as well as specific machines for machining those components.

It should be mentioned that only recently the North American company Greenbrier Rail Service, the leading US supplier of equipment and services for rail transport, contracted Danobat's expertise in high value-added projects. The Danobat equipment will be installed in one of their maintenance workshops for train axles. This is state-of-the-art machinery incorporating the latest technology which will enable

the US company to further automate its processes.

DanobatGroup, a European benchmark group in the machine tool sector, located in northern Spain with production plants, among others, in the US, Germany and the UK, started operating on the US market 20 years ago when the first sales office was opened. Since then, a series of major contracts were signed in this country, mainly in the aerospace, military and oil sectors, with clients such as General Electric, US Army, American Airlines, Greenbrier, Solar Turbines, Pratt & Whitney or US Steel.

### Getinsa-Payma consolidates its position in the Turkish market with the starting up of a new supervision contract



Getinsa

In December 2014, Izmir's Council awarded GETINSA-PAYMA the technical assistance and supervi-

sion of the construction of Bornova central station and the tunnel that links it to Evka-3 Station of Izmir Light Train project.

This new tunnel will have a total length of 1,163m and will involve some of our most relevant fields of expertise, from railway and geotechnical engineering to Mechanical Engineering works

Up to date our team has carried out the verification of the Detailed Design, which gives way to the contractors bidding process. The good progress of the preliminary activities allows us to schedule the commencement of construction works in the second semester of 2015.

With this new contract GETINSA-PAYMA consolidates its position in the Turkish market and looks optimistically and confident at the new opportunities this country offers us.



One year ago, Ibertest was selected by COPASA, Member of AI Shoula Consortium, for the installation, in their Quality Control Laboratory in Saudi Arabia, of testing and verification systems of the elements from the superstructure of tracks that were under their responsibility (rails, sleepers, gutters, etc.). The elements constituent of the track and therefore, their Quality Control, are crucial as it's the single point of contact between the train and the superstructure of tracks, and this, in high speed networks and under the extreme conditions of operation existing in the Arabian Peninsula, are a world-class challenge. Therefore, the control systems requested to Ibertest should adapt reliably to the different stages of the construction of the elements to be tested and under severe demands of regulations and productivity.

Three facilities were designed for this purpose: The first one, formed by an automatic compression-bending sys-



tem, of 3000 kN and 100 kN respectively of max capacity, able to cope quick and accurately to the high number of tests on concrete specimens manufactured "in-situ", without losing sight of the pace of work that the construction demands. After that, one of the manufacturing with more responsibility, sleepers, should also be verified according to EN 12320-2 standard. So we designed a servo-controlled Bending Test System, of 500 kN of capacity (and controlled from computer too) equipped with a sleepers feeding device, which guarantees a suitable rate of positioning of the specimen and its automatic testing process. Another request to which we had to respond was that of the assurance of quality, by static bending (2000 kN) of the special rails to be mounted on the track board and that are welded

by the "Flash Butt welding" process Ibertest who has a wide experience in this type of tests, has already delivered several installations for static and dynamic tests (Adif, Felguera Rail, Matériel Ferroviaire d' Arbérats, Voestalpine, etc.) that allow the determination of the quality of the rails welding under inspection, according to EN 14730-2 standard. This is a strict standard to check the elasticity and resistance in welded areas.

Now completed the first year of work of the mentioned facilities in Saudi Arabia, Ibertest After-Sales Technical specialists have proceeded to the preventive maintenance of these three installations, in the laboratory that there has COPASA.

The work concluded with the calibration by ENAC, certification valid internationally by the agreement of mutual recognition ILAC-MRA, of all

## A photograph of a large, circular tunnel under construction. The tunnel's interior is lined with corrugated metal. In the center, a large, curved structure, possibly a piece of machinery or a support, is visible. Several workers in high-visibility vests are standing on scaffolding or ladders along the right side of the tunnel. The lighting is bright, illuminating the interior of the tunnel.

Istanbul is the cornerstone of the Turkish economy. With over 14 million inhabitants, Istanbul is the most populous city in Europe and a tourist attraction for over 10 million visitors (2013). The country is still growing, however, now the objective of the city is to grow in a sustainable manner. It is in this context that the Istanbul Metropolitan Municipality has launched the Vezneciler-Edirnekapi-Eyüp-Gop-Sultangazi metro project. Serving the European part of the city, running 17 km from east to west, this new metro line will have a total of 12 stations. Idom has been contracted to carry out the preliminary and detailed design of the entire line. Once again, Idom will bring its expertise and experience gained in the many metro projects completed around the world, to implement this ambitious infrastructure project in a period of just fifteen months.

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**CERTIFICATION ENTITY** of rail products processes and services (EN 45011 / EN 17065).

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**Miryam Sánchez, Ineco's new technical director of Waste Management**

**Ineco**  
Miryam Sánchez joins the team at Ineco as new Technical Director of Waste Management. With a degree in Biological Science and a masters degree in Environmental Pollution, Miryam Sánchez is an expert in the management of waste in the field of planning, design, construction, facility operation, and implementation of software for the control and monitoring of waste in treatment infrastructure and waste disposal. Ineco's new Technical Director has a professional experience of 23 years and has directed over 30 waste installation projects in private and public companies such as Madrid City Council, Madrid Regional Administration and DHV Ambiental,



as well as participated in the drafting of the state, regional and local standard. Miryam has advised on the topic of waste management Latin American cities such as Quito, Mexico DF, Rio de Janeiro, Bogota, or entities like the Clinton Foundation, the Inter-American Development Bank (IDB)

and the Spanish Federation of Residue. Furthermore, she has directed community acquis transfer projects on waste policies in Poland and Romania. With this appointment, Ineco strengthens its Environment area and positions itself towards new possible contracts in this field.


**Ecocomputer Passenger Information System (RailMan DSS) implemented on Renfe RAM**



**Ecocomputer**  
Ecocomputer, an engineering company specialized on railways and security industry, has implemented its Passenger Information System (RailMan Digital Signalling System) on the railways stations of Renfe RAM, updating a prior solution. The new system RailMan DSS provides real-time passenger informa-

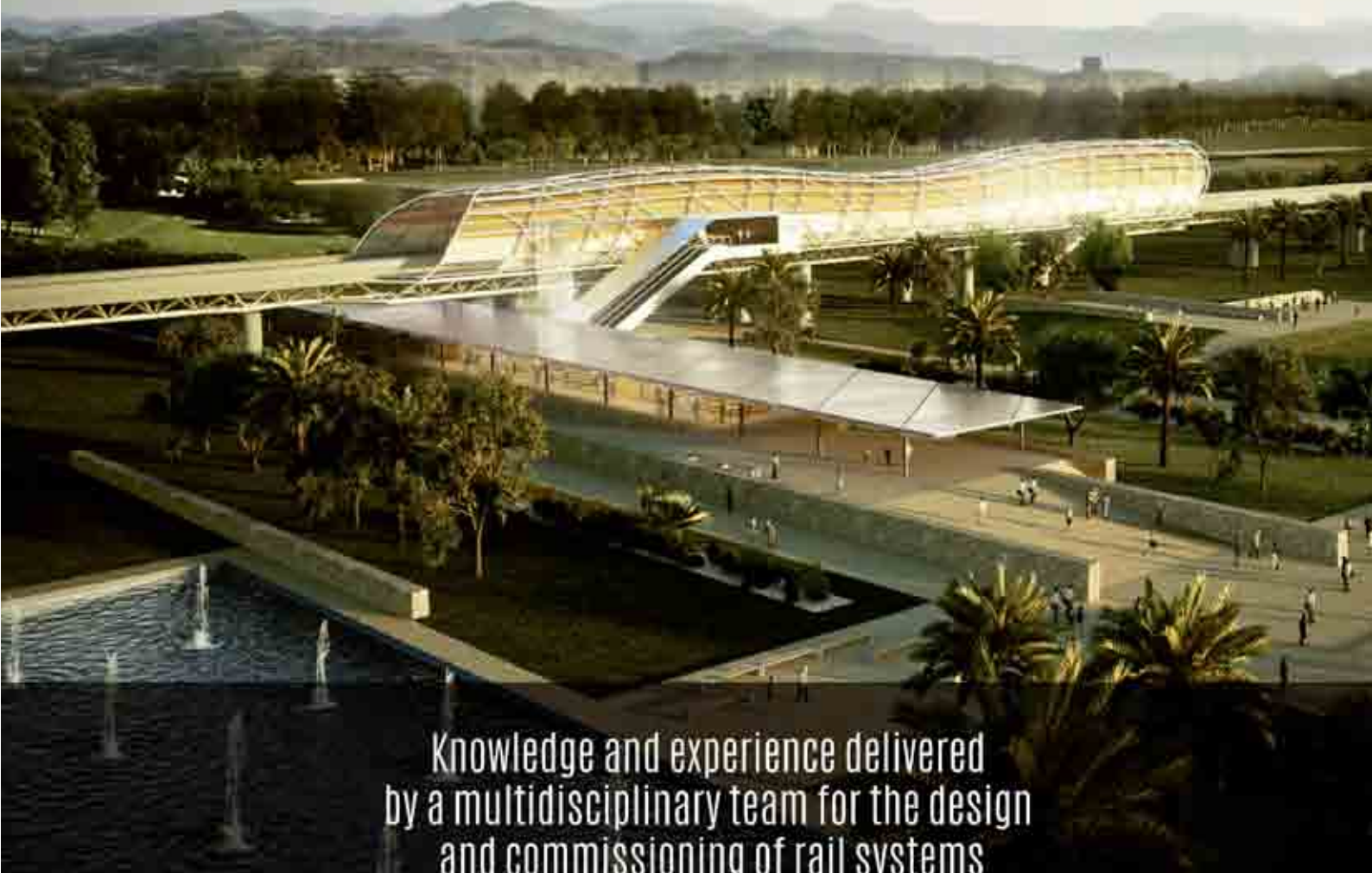
tion based on the GPS positioning of the trains. The system allows multiple configurations, from basic installations with only information displays to complex sites with onsite servers, reducing and minimizing cost and infrastructure. Furthermore, it could be integrated with prior infrastructure.

A web site module provides a centralized management, publishing and generating remote messages on text panels and public address systems on the stations that are selected individually or grouped. This facilitates the reporting of incidents, notices or possible changes in train schedules. RailMan DSS was already in use through an app for mobile platforms (Android, IOS and BlackBerry), providing passenger information about train services and issues on the service. Another module not implemented on this project would allow users to interact with a touch screen kiosk. Renfe RAM Passenger Information System covers a total of 31 railway stations in six regions (Asturias, Cantabria, Castilla-León, Galicia, Murcia and Basque Country), including key stations such as Oviedo, Gijón, Santander and Bilbao. It comprises 46 large format display screens, 103 LED panels of single or multiple lines and a public address system.



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Technical Conference on Electric Risk and Safety in a Railway environment

Elektra

With a view to improve and provide technical solutions in railway, past March 18th and 19th in Sicame facilities (Grupo-SBI) and organized by Grupo Elektra took place "Technical seminars in Electric hazards and Electrical safety in Railway environment", in both sessions were presented legislation and regulations, practical cases and railway card line.

This session was made possible with the invaluable support of SBI, CATU, Cegers, close collaborators of Grupo Elektra in terms of Safety and Industrial PPE's.

Both sessions were a great success. A total of 40 people assisted on behalf of railway administrations like TMB, FGC, Tram-Barcelona and in-



tegrator companies Alstom, Talgo, Comsa Emte, Cobra.

The end of the session was used to visit the validation process of dielectric gloves, and occasion to enjoy a lunch where it was took

the opportunity the share different opinions and experiences about subjects discussed in the sessions. For more information, please contact through the following email: railway@elektra-sa.es.



ITK Ingenieria, S.A. delivers to Uruguay two railway vehicles for the maintenance of the rail infrastructure

ITK

ITK Ingenieria has just delivered two railway vehicles for the maintenance of the infrastructure to its client AFE (Railway Administration) in Uruguay. The machines, which are part of a total set of 4 vehicles, have the most

modern technologies for traction and circulation, and are a piece of the strategy for the modernization of the railway net in this South American country. ITK is building, at the same time, installations for the inspection, manufacturing and painting of high

speed train sets, fully robotized and automated, for the Spanish RENFE, with a total surface of 6.000 square meters and a value of seven million euro. ITK operates actively in South America, India, Turkey and Taiwan, as well as the EU.

Bombardier's Primove operating in Mannheim

Bombardier

Primove is an e-mobility solution, created by Bombardier, which supplies power to all types of electric vehicles quickly and without cables. Based on magnetic induction technology applied to electric mobility, it is already being used in trams in the German city of Augsburg.

After its recent homologation, the first Primove electric buses with passengers started operating on May Market, one of the most important exhibitions of the German region of Rhein-Neckar, where visitors could enjoy test rides.

The e-buses, which will be handed over to the customer Rhein-Neckar-Verkehr GmbH (rnv), are the first ones to feature all three PRIMOVE products; besides PRIMOVE popul-



sion, the two e-buses are equipped with the wireless Primove charging technology and the Primove high power battery system.

Passenger revenue service will start in summer 2015 on the Mannheim city centre line. Throughout the nine-kilometre-

long journey, the e-buses will be inductively charged at four charging stations during the short dwell times at regular bus stops as well as on both end stops of the line. In addition, a fully electric Primove equipped van will also be used by RNV as service and delivery vehicle.



Indra signs the biggest ticketing contract in the world in Riyadh (Saudi Arabia) for €266 M

Indra

Indra has signed a €266 M contract to implement the entire ticketing and access control technology in the new public transportation system currently under construction in the capital of Saudi Arabia, Riyadh. This is the biggest ticketing project in the world up-to-date, to be completed in 54 months, and it includes main-

tenance and technological assistance for 10 years.

This project strengthens Indra's position in the Middle East, where major infrastructure plans are in the pipeline for the next few years. Additionally, it represents an important milestone in the Transport and Traffic market of Saudi Arabia, where the multinational is the technological partner of the high-speed railroad project between Medina and Mecca.

In Riyadh, Indra will develop the entire advanced pricing management

system for the city's public transportation network. This includes a ticketing control center with information from the various systems, financial management software, the operator clearing house, and other value-added systems for commercial management.

Indra will provide onboard ticket sale and validation systems for the entire public bus network, which will include around 800 to 1,000 vehicles; and the sale and access control systems for more than 80 stations in six subway lines (this network will total 175 kilometers and serve about six million users). This subway and bus project in Riyadh is a new addition to Indra's many ticketing accomplishments. The multinational is now a world leader in this sector. Indra's technology has been chosen for the subways in Madrid, Barcelona, Valencia, Santiago de Chile, Medellín, Lisbon, Mumbai, Calcutta and Shanghai, the light rail in Kuala Lumpur, the suburban railroad in Mexico City, the light rail in Austin and the light rail in St. Louis (USA).



Gonzalo Ferre, President of Adif

“The key to Spanish success lies in the ability to integrate different technologies and make them work”



THE PRESIDENT OF ADIF ENSURES THAT THE BODY WHICH HE PRESIDES IS A PRESCRIBER OF THE SPANISH TECHNOLOGICAL AND INDUSTRIAL SUPPLY WORLDWIDE AND IS A REAL SHOWCASE OF THE ABILITY OF OUR INDUSTRY AND OUR COMPANIES. GONZALO FERRE TALKS ABOUT THE CURRENT SITUATION OF THE SPANISH RAILWAY INDUSTRY.

MADRID. SPAIN

“Experience is what makes Spain an international High Speed reference. This country has been able to create, enhance and manage a modern rail network in the last twenty years, and not only in High Speed, since it has also developed solutions to improve urban mobility”

The President of Adif (Spain), Gonzalo Ferre, talks about the situation of the railway situation industry and future plans of Spain at international level.

**Spain currently has a rail network of over 15,200 km of which 11,483 km belong to conventional network, 2,322 km to High Speed lines in UIC width (LAV), 119 km to mixed network and 1,207 km to narrow or metric gauge. What would you say are the keys by which Spain is a world leader in High Speed and the railway sector in general?**

The key is experience. This country has been able to create, enhance and manage a modern rail network in the last twenty years, not only in High Speed, and has also developed solutions to improve urban mobility, such as our commuter network, which is recognized globally.

The key to Spanish success lies in the ability to integrate different technologies and make them work

on a rail system of proven quality. Our institutional development and quality know-how accumulated by our engineers and companies are very valuable assets for other countries that have their eyes in our model.

**You recently attended the opening of the V International Railway Convention organized by Mafex in Seville during the past month of June, which gathered 66 companies, authorities, railway operators and managers from all around the world. What was the key message you transmitted to your international counterparts and which you would like to share with our international readers?**

Adif is a key prescriber of Spanish technological and industrial supply in the world. Everything that the Spanish industry has created has been installed and tested in the network of Adif, which is a real showcase of the ability of our industry and our rail technology companies. We have many suppliers (over

1,400) which, thanks to how we work, have managed to ensure high performance at a much lower cost, and this new approach has led to improved competitiveness in Spain and an access to new markets.

**In the International rail frame, Spain and its industry occupy a privileged and leading position. How do you see, however, the future of Spanish railway companies in international markets?**

The future is positive and inspiring, but to compete globally from a leader position as the Spanish industry currently has, it is necessary to maintain the competitive advantages that have allowed us to be a world leader.

This is to maintain the quality and competitiveness of Spanish solutions developed in our network, and leverage the knowledge generated to help other countries improve their infrastructure and rail services.

**The Administration chaired by you, Adif, is part of important international consortia such as the High Speed corridor between Mecca and Medina. But there are also other agreements with rail managers from different countries. Could you tell us more about the main countries with which Adif is co-operating?**

Adif has a global presence that conducts in various contracts, technical assistance, training and consulting services for institutional collaboration agreements to offer the world the expertise and knowl-

edge accumulated during the last twenty years in the development of our modern rail network. In this regard, I can note, for example, our increasing cooperation with India, one of the largest rail networks in the world, which currently has major investment plans in railways. We can also mention our significant presence in the Gulf countries or the different railway projects in Turkey, Israel, Russia and Mexico, among others.

**Continuing in the international environment and entering the area of innovation and R & D, what role does ADIF have in the Shift2Rail program of the European Union? SMEs sometimes see with some distance such programs. What would you say to these companies in relation to this initiative?**

For Adif, participating in an initiative of the European industry such as Shift2Rail supported by the European Commission as part of the 2020 strategy that promotes an inclusive, smart and sustainable growth is a necessity.

Currently, our role as a full member of Shift2Rail is involved in researching investigation those lines that are most interesting for us, infrastructure managers, such as the one dedicated to security systems or to generating cost efficiencies in the creation of high-capacity infrastructure.

It is true that for SMEs to participate in an initiative like Shift2Rail may seem complicated at this point in its development, but I am sure that when the projects are consolidated within each line of business, opportunities will appear.



Gonzalo Ferre together with other authorities of the Spanish Public Administration during the 5<sup>th</sup> Convention of Mafex

“The future for Spanish companies is positive and inspiring, but in order to compete globally from a leader position as the Spanish industry currently has, it is necessary to maintain the competitive advantages that have allowed us to be a world leader.”



## The challenge of Spain is to increase the number of citizens who opt for rail as a mean of transport



More than 50% of Spanish exports of railway SMEs are realized to countries of the European Union. With the launch of the 4th Railway Package (4RP), do you think that Spanish companies will benefit from it?

Unquestionably it is an opportunity and a challenge for the Spanish industry as to complete the single European railway area and to improve interoperability. Measures are destined to increase the quality and effectiveness of services of domestic passenger transport, for which public service contracts will be open to competition in domestic markets.

This is a new challenge, since the Spanish industry in Spain must also compete with European companies that want to enter our market, but also a breakthrough opportunity and business in an increasingly globalized market in all areas of activity. And the railway sector can't be an exception.

Turning now to the Spanish market, in November last year the first steps towards the liberalization of one of the main corridors took place in Spain, the Levante Corridor, which connects Madrid with Valencia, Alicante, Castellon and Murcia. In what phase of the liberalization process are we? And how do you think the liberalization of the sector will affect the Spanish railway industry?

The liberalization of economic activity is always, as I said before, almost by definition, a real growth opportunity for improvement, starting with the introduction of competitors as one of the main factors of development and market incentives. In my opinion, the process undertaken in Spain cannot be assumed, in any case, as a setback, but as a major boost for the railway sector.

Finally, what challenges can you tell us that both the Span-

ish railway industry and Public Administrations are facing in the coming years at both national and international levels?

One of the main challenges of the railway industry is to improve its global competitiveness as a mode of transport. In Spain, in particular, the challenges are to increase the total number of citizens who enjoy this mean of transport and increase the volume of transported goods.

A key challenge is to ensure the sustainability of rail with measures in different areas in order to allow this transport mean to don't have a negative impact in government accounts and the competitiveness of our economy.

For this we are undertaking important initiatives, both in terms of business management and citizen orientation, applying criteria of social responsibility and consistency, as well as maximum efficiency to meet the demands of the new legislative environment. 🌱

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## Integrated solutions for railway infrastructure challenges

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railway lines: signaling and control technologies, electrification systems, rolling stock, turnkey projects and maintenance for all the areas of railway services.

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# USA is committed to improve its passenger rail network

AT THE MOMENT THE COUNTRY IS INVESTING HEAVILY IN ORDER TO IMPROVE ITS NETWORK OF PASSENGERS IN BOTH URBAN TRANSPORT AND LONG DISTANCE WITH THE IMPLEMENTATION OF HIGH-SPEED SERVICES.

After many years in which the country has invested in passenger rail below what is deemed necessary to maintain certain infrastructure in good repair and expand capacity at present population growth, the need to reduce its heavy dependence on oil, traffic congestion on access routes to large cities, as well as reduce the environmental impact of motor vehicles, have made the US government bet to boost passenger rail.

"The freight network is highly developed and, in fact, is the rail system that moves the world's goods, with a share of 40% of freight in the country and prospects for growth (by volume) of up to 22% in the next two decades. By 2015 it is anticipated that the major freight rail companies will invest \$ 29,000 M, of which between 15 and 20% correspond to capacity expansion," said Maria Jesus Fernandez, Chief Counsel of the Commercial Office in Chicago of the Spanish Embassy in the United States. "The long-distance passenger transport, however, has limited geographical coverage - she continues-. The charging infrastructure is not suitable for an efficient passenger, so investment needs are enormous in both modernization of existing infrastructure as in expansion of capacity. The investment allocated



to this infrastructure comes from their private owners, with direct support of the government when network upgrades benefit the passenger".

## Investments

"The Congress approved in March a bill under the name of "Law for the reform and investment in pas-

senger rail" that is now debated in the Senate, where it could even undergo changes. The current version provides the approval of funds valued at \$7,800 M for the next four years (2015-2019), including operations, of which \$ 1.900 M would be allocated to the East Corridor, which is the busiest in the country; \$3,900 M

to the national network of Amtrak and \$1,200 M available for aid to states with new intercity Amtrak lines," explains Maria Jesus. In regard to public transport, including urban and suburban service, the political debate on a multiyear law replacing MAP-21 is also pending. The current surface transportation legislation expired

on May 31st. "Congress and Senate have approved a temporary extension until July 31, with similar levels of spending, which only needs to be signed by the president, who has already indicated its willingness to do so. Even with this approval, a second extension of two months will be needed to allow further negotiations to

reach a more ambitious agreement and identify new resources to finance infrastructure and thus have a multiannual framework giving stability to the sector. It should be noted that the last time there was this situation, the Congress took 3 years to approve a new multiyear farm bill," said the Counsellor.



URBAN TRANSPORT. New York.

New York and New Jersey have the largest portfolio of metro projects in the country, whose plans add together \$ 18,600 M

The demand for public transport by rail is growing and it is at the highest level of the past five decades, as well as the interest of citizens to have more public transportation options, as reflected in numerous surveys. "The number of trips on Amtrak has increased from 21 million in 2000 to 31 million in 2014, 48% more. In 1980 there were more than 18 agencies with commuter rail service and in 2014 the number reached 28. A similar situation happens with light rail: 9 services in 1980 to 35 in 2014. However, while investment figures have also risen, these have not increased from the point of view of present and future needs," explained the Commercial Office of Spain in Chicago.

New York and New Jersey are the states with the largest budget due to the size of their urban systems and the sharp increase in population. Ongoing projects for the expansion and renovation of its metros require an investment of approximately \$18,600 M, with the Metropolitan Transportation Authority (MTA) of New York as the agency with the largest portfolio of projects (\$16,500 M). Other cities with ambitious expansion projects are Seattle (\$ 9,000 M), Boston (\$6,200 M), San Diego (\$3,500 M) and Los Angeles (\$3,366) M .

"In the segment of trams there are ongoing projects worth \$ 674 M in cities like Washington DC, Tucson (Arizona), Detroit (Michigan), Atlanta (Georgia), Kansas City (Missouri) and Cincinnati (Ohio). In these last two cities with trams supplied by the Spanish company CAF. In total there are more than 30 cities with projects in various stages of planning and feasibility level," continues Maria Jesus.

Light rail, meanwhile, is also experiencing significant growth, with more than 30 cities with plans of new construction or expansion of the existing network in various stages of planning. Two megaprojects in Baltimore must be



Infographic of a mezzanine station.

highlighted: one of the lines, under PPP consideration, is worth \$ 2,400 M and is already in pre-qualification phase; and a second line is worth \$2,600 M. The Mid-Coast Trolley line in San Diego (\$1,800 M) or the Southwest line of Minneapolis (1.250 M \$) are also relevant. Los Angeles Metro is expanding its Purple Line (phases 2 and 3 for \$5,000 M) and the extension of the Foothill Gold Line from Azusa to Montclair (\$1.000 M ) and San Francisco / BRT is expanding to Silicon Valley / San Jose-Santa Clara (phase 2 for \$3,600 M).

New York

Despite ongoing funding problems, several major projects are being carried out to improve communications in New York. Regarding investment in rail transport, an important part will be covered by the New Starts program, administered by the FTA, which provides federal funding to projects of new transport systems that meet certain criteria and

follow some basic guidelines. This program does not provide more than 60% of the project costs, and requires that the transit agency receiving the aid is capable of operating the system once built.

The first priority of MTA New York is to protect the safety, reliability and quality of the service carrying out, among other things, the replacement of trains and subway cars, renewal of track, signals, yards, warehouses, bridges and stations. In addition, other improvements such as points of support services, accessibility to disabled people and the information of the arrival of the train, expanding the scope of the MTA (through projects like the Second Avenue and access to Penn Station Metro-North) will be made. Even with the largest subway system in the nation, two commuter railroads, a vast infrastructure and public facilities to handle millions of users every day, one cannot deny that they are major energy consumers. That is why they are

working harder than ever to increase energy efficiency and reduce carbon emissions. They have implemented more than 100 energy efficiency projects in their facilities. Among them are the following:

- New York City Transit is buying much more efficient metro cars, energy saving
- Metro-North has new M-8 cars equipped with regenerative braking, which captures and reuses energy whenever the train brakes are activated. The replacement project workshop Shop Harmon also incorporates new features to reduce energy consumption, as a roof with insulation and more natural lighting.
- Long Island Rail Road (LIRR) just implement a an environmental friendly washing system, a technique that reuses over 70 percent of its wash water.

2015-2019 Capital Program

It includes the necessary financing to complete the East Side Access Project,

including most regional investments that support access to the East Side (East Side Access) and provide improvements in the regional transportation network. It also includes funds to complete the design and begin the initial construction of Phase 2 of the Second Avenue. This project was added to allow access from Metro-North into Penn Station.

East Side Access

Access to the East Side of Manhattan was one of the wishes of users in the Long Island Rail Road (LIRR) working on the East Side of Manhattan. The new line will increase its capacity and reduce travel time for passengers from Long Island and Queens traveling to Manhattan. Now, 230,000 people use this line of the LIRR to Penn Station every day, located west of Manhattan, and shared with users of Amtrak and NJ Transit. Almost half of them have to be used after other means of transport (metro, bus, etc.) to access their workplace in East Manhattan, adding 40 minutes travel time.

With this new access it will be able to travel directly to the Grand Central Station without having to go through Penn Station. In addition, within the project is the construction of the new LIRR

(Long Island Rail Road) East Side Station, under the Grand Central Station in Manhattan, which would increase the capacity of users.

The project, estimated at \$8.300M, will add a new terminal for the LIRR into Grand Central Station and 22,000 square feet of retail space. New tunnels will be constructed from the main roads of the LIRR in Queens, under Amtrak's Sunnyside Yard and the LIRR deposit, connecting with the tunnel on 63rd Street. In Manhattan, new tunnels will be built from the junction with the lines of Metro-North, on Second Avenue and 63rd Street and then South on Park Avenue and the roads of Metro-North.

The new station LIRR in the East Side, under the Grand Central Terminal, offers new entrances, a hall, and eight rails in four lower platforms instead of the current routes. According to the latest updates of the plan, it is expected to inaugurate this infrastructure in 2019, 10 years later than originally planned. It is the first major expansion of the LIRR in 100 years.

Contracts for implementing structural works, mechanical works and completion were awarded last October 2012 to Schiavone and John P. Picone, subsidiaries of the Spanish ACS, totalling \$ 925 M.



MTA's 5,000 square miles. transport area.

Information provided by the Spanish Commercial Office in Chicago.



## URBAN TRANSPORT. New York.



In the picture, the 86th Street station, with a new access.

### Second Avenue Subway

These same companies signed in June 2014 a contract of \$217 M for the construction of a Metro station on 83rd Street. The contract includes mechanical, electrical and ventilation systems and ancillary facilities for the station. This is the latest of the 10 contracts for the extension of the metro to the Second Avenue. Once completed, this expansion will be the largest held in the Metro of New York in the last 50 years.

In the first phase, the line will run from Second Avenue in the 63rd Street to 96th Street, with a total of 1.7 miles and 3 new stations. This first extension will cost \$ 4,400. It began in April 2007 and will be completed in December 2016.

After this phase, the line will operate as an extension of Q Train, and expects to be used by 213,000 daily passengers, reducing the influx of saturated lines 4, 5 and 6 which run on Lexington Avenue at 13%. In the next 3 phases the line will be extended to Harlem and Second

Avenue to the south of Manhattan. Then the new "T" will be inaugurated with a total of 8.5 miles and 16 stations. Financing and plans for these next stages are still in the air.

### Extension Line 7

The length of the extension will be 1.5 miles and includes the construction of a new terminal at the corner of 11th Avenue and 34th Street. This enlargement will significantly improve the access to the west side of Manhattan and increase space for the terminal garages in Manhattan. The project has a cost of \$ 2,400m and will be fully built in late 2015.

### Spanish presence

The Spanish group OHL, through its New York subsidiary Judlau Contracting, has won two new construction contracts in Manhattan (New York) for a total of \$204.5 M. They have been awarded by the New York City Transit Authority (NYCTA) and will run in the New York

subway and Grand Central Station. The most important project worth \$193.8 M, is the reconstruction of the South Ferry station in New York City Subway, located in Lower Manhattan, which was devastated by Hurricane Sandy in 2012. Metro line 1 Metro passes through this area and works include flood protection. It is anticipated that the works are completed in 2017.

Work for reconstruction include the dismantling and subsequent installation of the new equipment: electrical equipment, communication facilities and fibre optics, air conditioning and ventilation systems, pumping equipment and water extraction, power, signalling, track work, seven elevators and two escalators as well as the architectural finish and painting the entire station. Retractable doors for flood protection will also be installed at all entrances of the station and other points of entry of water, such as vents, manholes and ducts will be protected.

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## CALIFORNIA. High Speed.

US railway plans also include High-Speed lines. The California project will connect San Francisco with Los Angeles; and the Northeast corridor, linking Boston, New York, Philadelphia, Baltimore and Washington.

In relation to High Speed, the California project (1,287 km) that will connect San Francisco and Los Angeles in 2029 in its first phase is the only project of its kind in the country under construction right now. Currently (June 2015) the fourth section (22 miles) of infrastructure construction in the Central Valley is being tendered, and there is Spanish presence in three of the five pre-qualified teams (Ferroviario Agroman, FCC and Corsán Covián and ACS/Dragados). Construction on the section 1 is already underway, and sections 2 and 3 (tendered as a single package) were won by a consortium of ACS/Dragados and its subsidiary Flatiron and the local constructor Shimmick, on the construction side, and Sener and Tyspa (among others) on the engineering side.

"The state governor, Jerry Brown, who strongly supports the project, has spent \$ 500 million from the 2015 - 2016 budget in this project, and there are also funds allocated by the federal government. However, the project is far from having sufficient funding to cover the \$ 69,000 M which is expected to cost," says Maria Jesus Fernandez.

### Project characteristics

Today it takes six to eight hours by car. Plane is an hour. But this line will enable reaching the South, San Diego, near the border with Mexico, in less than three hours and will have a total of 24 stations. On January 6th, construction of the High Speed network in California officially began with a ceremony at the future station Fresno. Despite having already started works, there is controversy surrounding the project expenditure, which is a strong opposition primarily in rural communities through which the route passes without stopping. Some GOP members have pledged to stop the pro-



ject if they govern.

The High Speed project in California is the only proposed new line that is within the federal program. It is estimated to begin operations in 2029 with trains capable of running at more than 220 mph (350 km/h).

In April 2012 the California High-Speed Rail Authority (CHSRA, state agency for planning, design, construction and operation of the network) submitted a new version of the draft proposing a more incremental approach method for its realisation, combining building new sections

and measures to modernize the existing infrastructure. Access to San Francisco will be in Caltrain commuter tracks, to be electrified by the CHSRA. This project is currently under bidding with Spanish participation. When completed, both commuter and High Speed will circulate on the same tracks.

In July 2012, the California Senate approved \$2,600 M for the start of the first works on the first section of the project (Fresno-Merced, 130 miles). At the moment, a total of about \$3,800 M have to be invested in the project, with no

planned new investments to date for next year. In fact, the federal government said that it will not approve new investments until an intense viability plan is made.

The forecast foresees 117 million passengers a year in 2030, with a relatively low passenger per mile cost, with a one-way fare of \$55.

### Signalling and communications

The installation of a sophisticated signalling system and communication is in the early planning stages. One proposal is

the installation of intruder alarms, which would be linked to a central control system that can detect foreign objects on the tracks. The signal box will be able to automatically stop the train if necessary.

### Routes

The Authority began works on the Initial Operating Section (IOS) of High Speed rail in the Central Valley in 2013. The start of HS rail in the Central Valley will generate over 20,000 jobs per year for five years in an area that has one of the highest unemployment rates in the na-

tion.

This High Speed project has been divided into five steps:

Step 1 - Initial immediate benefits for state-wide investments.

In 2013, preliminary works began on building the infrastructure of high-speed rail in the Central Valley between Madera and Fresno, continuing to Bakersfield until the first IOS segment. Once completed, the San Joaquin rail service -the fifth most used Amtrak line with one million passengers per year- will begin using the new tracks in 2018 to reduce travel time





between Northern and Southern California..  
Step 2 - Initial High Speed Rail Operations. The next step completes the 300-mile section from Merced to San Fernando Valley and provides High-

Speed service for passengers. The service for passengers will be launched in 2022.  
Step 3 - Electrified system from the Bay to the Basin. The third step connects the Central Valley with San Jose,

creating a high-speed rail link from the Bay Area to Los Angeles' Basin. The improved Metrolink system will connect San Fernando Valley with Union Station in Los Angeles. The service from the Bay to the Basin will be launched

in 2027.  
Step 4 - Phase 1 of the combined system. In 2029, infrastructure dedicated to high-speed running from San Fernando Valley to Union Station in Los Angeles, joining the improved Anaheim Metrolink corridor and connecting with the suburban and urban rail systems throughout the region in Los Angeles. These improvements will allow high-speed trains traveling the 520 miles between San Francisco, Los Angeles and Anaheim.  
Step 5 - Phase 2 extends the rail network to Sacramento and San Diego and completes the state's 800 miles network. On October 22nd, the CHSRA closed a round of contacts with manufacturers of High Speed railway equipment before bidding for a contract to manufacture up to 95 trains to reach speeds of 322 kilometres per hour, with a capacity of at least 450 passengers. As indicated by CHSRA sources to Efe, a total of ten manufacturers from nine different countries participated in

the bids for the construction of these trains, including the Spanish company Talgo.  
When completed, the California line will be the first real High Speed network in the United States, as currently the only line that receives this consideration in the country is the Northeast Corridor, which runs between Boston (Massachusetts) and Washington, DC, but only it reaches speeds of 240 mph on some sections, significantly below the standards of High Speed in the world.  
**Spanish presence**  
A consortium, in which the Spanish Dragados, a subsidiary of ACS, participates, has been selected as the best bid for the California rail authority to build the second section. The contract is for the design and construction of the 104 kilometres between the towns of North Bakersfield and Fresno in California's Central Valley. This is the first contract awarded to a Spanish company on a project that stands out

as the largest civil infrastructure in the United States.  
The estimated cost of the work is between \$1,230 M. The project crosses three counties in the agricultural heartland of California (Fresno, Tulare and Kings). It includes approximately 36 changes of level that will require the construction of viaducts, tunnels and bridges.  
Spanish companies also participated in the tender for the first package, which occupied three of the five finalists via their participation in various consortiums and offering much higher performance rates: Dragados (1,085 million dollars), Ferrovial and Acciona (1,365 million) and Comsa (1.537 million). Three of them reached the end, and the three with Spanish companies. In one was Dragados, OHL in another one and Ferrovial in the third one. The three companies were left out in the first contest, a section of 46 kilometres between the towns of Madera and Fresno, which are already under construction.

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NORTHEAST CORRIDOR (NEC). High Speed.

Amtrak intends to conduct two complementary plans in this corridor: improving existing infrastructure and the construction and operation of a second track dedicated to True High Speed, in a plan whose cost is estimated at \$150,000 M.

The line known as NEC (Northeast Corridor) linking Boston, New York, Philadelphia, Baltimore and Washington, is the only existing High Speed line in the country, but for all purposes it is high speed according to international standards. With its 735 km long, more than 2,000 daily trains and the density of population it serves, it is the ideal candidate for a true High-Speed line, but the difficulties of implementing a service like this are enormous. The major difficulty is that the existing infrastructure, which has more than 100 years in many sections, also runs commuter trains and cargo, so the construction of a new track exclusively for HS is necessary. The allocation of funds for High Speed on the economic stimulus plan of 2009 launched what has become to date in two complementary plans by Amtrak: one is the improvement of existing infrastructure, in place since 2009 and composed of a multiplicity of projects that have recently been grouped under the NEC UP (Upgrade) plan; and the other is Amtrak's vision for the construction and operation of a true High Speed line, a dedicated track, whose cost is estimated at \$ 150,000 M, named NEC NEXTGEN.

Furthermore Amtrak is working with the Federal Railroad Administration (FRA) in the initiative called NEC FUTURE, whose initial objective is to study evaluate the environmental impact of the various options for future investment in the Northeast Corridor. The planning process comprises three phases of study of alternatives:

- Step 1: Initial Alternatives
- Step 2: Preliminary Alternatives
- Step 3: Tier 1 EIS Alternatives

In 2014, three alternatives were identified for the detailed analysis in the project EIS Tier 1, based on the evaluation of the preliminary alternatives.

This assessment considers the extent of the preliminary alternatives to expand capacity, accommodate growth, rebuild aging infrastructure, improve service efficiency and performance, and increase connectivity. Each Alternative Tier 1 EIS reflects a clear vision for the NEC and the role it will play in the future transport system in the region. Each has different assumptions about the services offered, geographic markets, and the type and general location of the infrastructure needed to support these services. Each alternative has the aim to maintain and improve service to existing NEC, reach a state of good repair, allow growth in rail freight and incorporate the best practices for efficient operation.

Alternative 1: Maintain

Alternative 1 would maintain the current role of railways in the transport system, while improving service and coordinating a good state of repair at the NEC. The ability of the rail system would expand to keep pace with population and economic growth and continue providing a similar level of service as the currently offered. This would be achieved by alleviating bottlenecks that currently limit the ability of the NEC. Key features include:

- Increased long distance service, with double the number of trains in operation
- Increased regional rail service, including more frequent services at peak hours and longer trains
- Extended Service in the NEC
- New tracks
- Third and fourth tunnel in Hudson River
- A bridge between Old Saybrook, CT and Kenyon, RI to avoid restrictions of mobile bridges

Alternative 2: Growing

Alternative 2 aims to increase the use

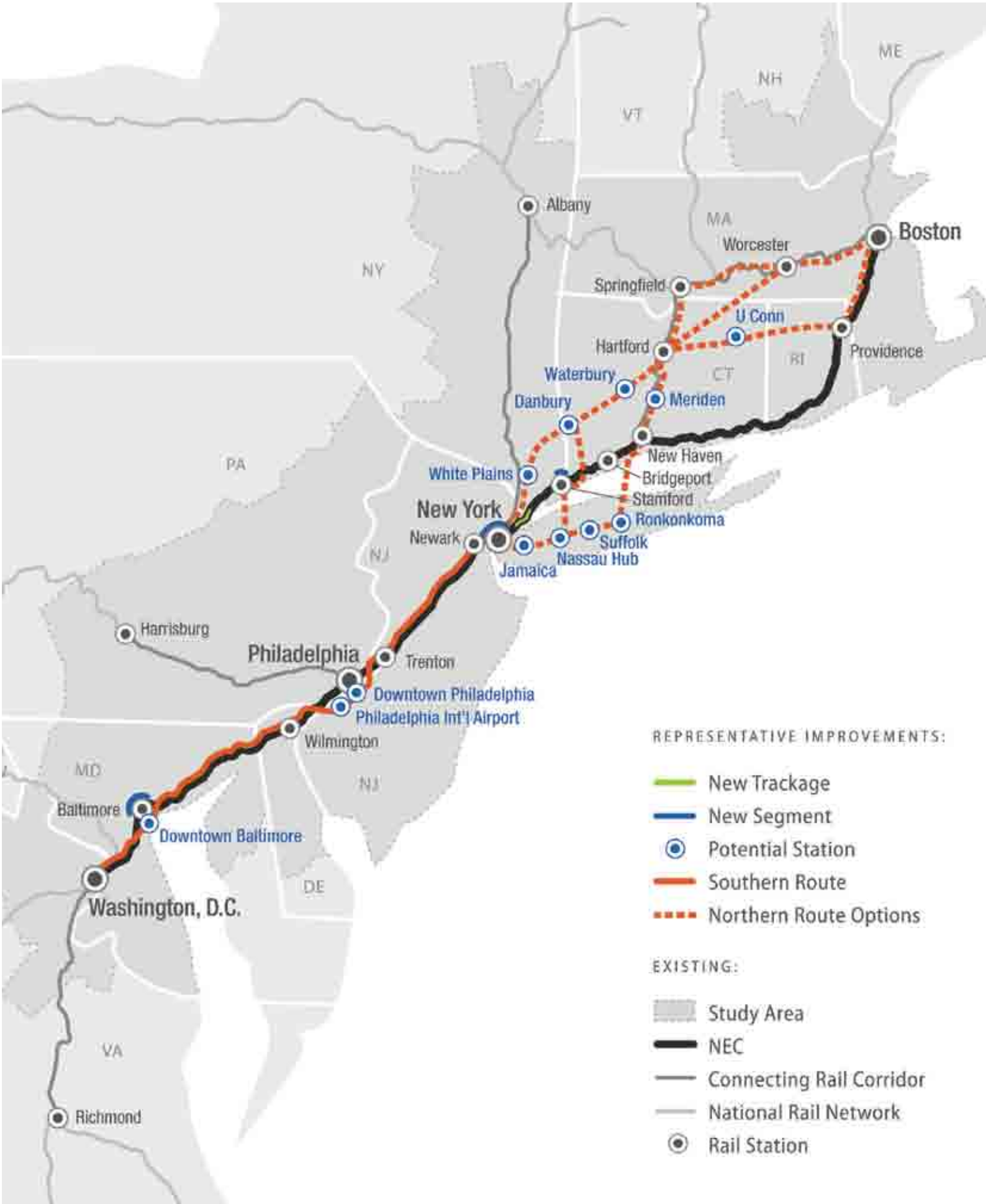
of rail for the rail system accommodate more travelers in the Northeast. Potential Key features include:

- Increased long distance service, with four times the number of trains in operation
- Increased regional rail service, more frequent services at peak hours and longer trains
- Expanded service
- Give service to a larger number of stations
- A complementary route between New Haven-Hartford-Providence to improve the capacity and performance, as well as serve new markets
- New direct service to the Philadelphia International Airport
- Third and fourth tunnel in Hudson River and fifth and sixth in the East River.

Alternative 3: Transform

It aims to transform the role of the railway, so that the rail service reaches a significantly higher percentage of users and new markets. The alternative would fundamentally change travel behaviour in the northeast, and would establish the railway as the dominant mode of transport. Potential key features include:

- Significant increase in regional service and intercity trains, with faster and more frequent trains
- High performance service between Washington DC and Boston
- Further expansion of the service to new markets
- Service to new stations in downtown Baltimore, downtown Philadelphia and Philadelphia International Airport, among others
- Increased service to corridors with which the network is connected
- Two new tracks to connect with six tunnels between Hudson River and East River..





CHICAGO-ST. LOUIS CORRIDOR. High Speed.

The Transport department of Illinois is funding the modernization of the passenger network between Chicago and St. Louis, where it plans to build a second additional track.



routes with different loads. Since 2009, it is carrying out infrastructure improvements that allow passenger service to reach speeds up to 110 miles per hour, which can be considered High Speed. The part belonging to Canadian National (CN) between Joliet and Chicago (37 miles) is already equipped with two tracks. The part of Union Pacific Railroad (UPRR), between Joliet and Godfrey (215 miles), is equipped with a track along 182 miles and double track in 33 miles. UPRR area and Kansas City Southern (KCS), between Godfrey and East St. Louis (29 miles) consists of a single track in the first 10 miles, while the remaining 19 miles are already equipped with two tracks. The section owned by Terminal Railroad Association (GND) within the corridor between St. Louis and East St. Louis, MO (3 miles of double track) is located over the bridge in Mississippi River and St. Louis Terminal.

In addition to this improvement plan, the state is carrying out studies for the implementation of a true High Speed service. Also, it has commissioned the first studies to analyse alternatives and environmental impact to a path that runs from Chicago to the university city of Urbana-Champaign and with two possible ramifications, one to St. Louis and one to Indianapolis, but there are no funds to proceed beyond this preliminary stage.

Activity Program

During 2015 the Illinois Department of Transportation (IDOT) will continue with the construction of additional tracks; it plans to carry out improvement works to bridges and structures; improve existing signalling systems; improve and build new crossings.

In addition, IDOT continues to design future projects, as well as several environmental studies that are already in course, such as the Chicago - Joliet project, Springfield's overpass and the project of Granite City to St. Louis.

The distance between Chicago and St. Louis is 284 miles. Approximately 99 percent of the 35 million annual trips made between these two cities are car-

ried out in car and air transport. Only 1 percent uses rail as their transport mean. Amtrak service uses various railway



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“I see distances getting shorter”

The way to see the future can be through the opening of new routes. Routes such as innovation, developing international markets or integration with the environment are paths the SENER civil engineering and architecture unit is accustomed to travelling.

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## MAFEX MEMBERS WITH PROJECTS IN USA

### CAF

CAF has been present in the US market since 1998 when the company won its first contract to supply metro units for the city of Washington DC. Subsequently, the company signed new contracts to supply articulated units for the cities of Sacramento and Pittsburgh. In the latter, CAF has also carried out refurbishment projects of LRVs of Port Authority of Allegheny County. The company has strengthened its position in the American market with its latest contracts signed in 2010 until today. On the one hand,

in 2010 Amtrak awarded CAF the design and production of 130 passenger coaches for its long distance services. The order includes 25 sleeping cars, 25 restaurant cars, 55 baggage cars and 25 bedroom cars (which combine bed and luggage). The new vehicles will replace and complement the existing fleet by providing a more modern and more comfortable service to passengers. On the other hand, CAF has become in one of the main urban railway cars suppliers in the United States. Cities such as Houston, Cincinnati, Kansas or Boston have trusted in

CAF as a supplier of efficient urban transport solutions. To carry out these projects, the company has its production facility in Elmira, in the state of New York. Furthermore, CAF USA has a commercial office in Washington D.C.



### CETEST

Testing laboratory is setting-up the structural resistance test for a bi-level passenger vehicle carbody. This project

of Nippon Sharyo will serve different clients in EE.UU, among them Caltrans and IDOT (Department of Transport of California and Illinois, respectively). This is an important test as is one of the first cars to be tested and homologated according to PRIIA American standard. The tests are to be performed in the factory that the Japanese company has in Rochelle (Illinois), with a portable test bench specifically designed by CETEST for these tests. Using this kind of test rigs which can be transported to the

client's facilities has a big advantage in terms of saving time and cost and minimizing risk for the client. In addition, the client has the opportunity of following the test development with the presence of more engineers. This is the second project that CETEST will have performed for Nippon Sharyo and which precedes a climatic test for the same project that will be carried out in 2016. Thus, CETEST strengthen the relationship with the Japanese client established in EE.UU.

### DANOBATGROUP

Danobatgroup will supply Greenbrier Rail Services, leader in the United States in the supply of equipment and services for rail transport, with two cutting-edge pieces of

equipment for its railway axle maintenance depots. The order for a portal lathe for re-profiling wheel sets and a high performance grinding machine for axle machining reinforces Danobatgroup's commitment to the North American market.

Both developments will give Greenbrier first level new machinery, cutting-edge technology and greater automation in its processes. The Danobatgroup order includes preventive maintenance, the installation, assembly and necessary training to handle the equipment.

For the European firm, this contract endorses its commitment to the North American market, which is one of its priorities in its strategy and where it aims to achieve sustainable growth. In fact, in 2014, the United States became the leading market for Danobatgroup in volume of orders. Danobatgroup, a machine-tool manufacturer with its headquarters in the north of Spain and production plants in Germany and the United Kingdom, has been present in the United States for 20 years.

### IDOM

Idom is established in USA since 2006 through AEC Engineering Company acquisition, founded in 1980. Idom has office in Minneapolis (Minnesota) where more than 100 professionals are working in engineering and infrastructure projects in USA and Canada.

Idom has designed relevant projects such as the Haleakala Observatory in Hawaii and the biggest Central Termosolar Plant in the world Crescent Dunes 110 MWe) in

Nevada, Wind Farms and mines in Alaska in addition to important projects in Virginia, Georgia, Pennsylvania, South Carolina and others in infrastructure, energy, building and architectural fields.

In railways and urban transport projects recently Idom is designing the feasibility study for a Mass transport system in Charleston in South Carolina. The project comprises transport and demand analysis and identification of main corridors in addition to alternatives analysis to choose



best transport solution (train-tram, light railways, commuter train,...) most suitable to the main corridor.

### INDRA

Indra has implemented an Automatic Fare Collection System (AFC) based on the most modern contactless smartcard technology for Metro Transit St. Louis, that is best known as the agency operating the public transportation system for the St. Louis metropolitan region comprising both Light Rail Transit and Buses. Indra implemented its first AFC project for Metro in 2006 and, since then, has become a Metro's long term AFC partner by providing renewed ticket vending and access control equipment, as well as a modern back-office for fare management and other related services. With this new project, Indra is upgrading the Metro AFC system's capabilities with the ultimate contactless smartcard technology, new vending and

access field equipment, a modernized monitoring and fare processing back-office that integrates both rail and buses in a interoperable way, a regional back-office to set up inter-agency products and other region-wide functionalities, a Ticket Purchase Website that definitively extends Metro's commercial channels, and finally a leading-edge Account Based System providing a wide range of new functionalities and services to ease the use of the transportation system by patrons and institutions like Universities and Colleges. Capital Metro, Austin (Texas) transport authority, trusted Indra the design, development and installation of the ticketing system in the new line of light rail transit (LRT) of the capital of Texas. The system consists of a "full service"

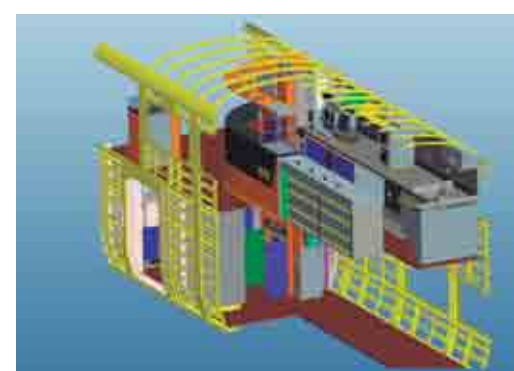


automatic ticket vending systems and station, onboard and hand-held validators. The backend of the system was designed to serve and control the data, auditing, monitoring and handling revenues. Hereby, assuring the fare system implements a method for passengers to purchase and validate the fares for Capital Metro while substantially decreasing boarding time.

### KELOX

Kelox IRT USA, LLC, a subsidiary of the Spanish company Kelox S.A. and located in the United States, was conceived to design, manufacture, and supply galley systems for the Railway Industry in the USA and Canada. Currently, Kelox IRT USA's main project is the design and supply of on-board catering equipment for 21 bi-level train cars to be commissioned by Nippon Sharyo for the

Department of Transportation of California and Illinois. Kelox IRT USA is successfully complying with the 100% Buy America Act – a requirement for this federally funded project. A prototype of the galley is scheduled to be finished after summer. Production will begin later this year and cars will be delivered based on a pre-determined schedule over the next 3 years.



### SIEMENS RAIL AUTOMATION

Siemens Rail Automation has developed a version of his Westrace electronic interlocking for the United States market.

The new interlocking is being installed in the New York Metro, at Dyre Avenue station. The North American market is specially exigent in terms of accomplishment of own regulations as AREMA (American Railway Engineering and Maintenance-of-Way Association).

The Westrace interlocking -the most-installed-worldwide electronic interlocking with more than 2,200 references- had to be adapted for this purpose to these requirements at the same time that the new security modules have been developed.

New York Metro is one of the most exigent clients in the world and has chosen the Westrace interlocking due to its high security, availability and flexibility levels. This last one has allowed the adaptation to

the requirements from the New York Metro in a record time, less than one year, a new milestone in the expansion plan of the Siemens Railway Signalling and Control portfolio to the new markets.



### VOSSLOH SPAIN

In 2003, 33 modern high power commuter locomotives were supplied to New Jersey Transit. These locomotives were completely designed in Valencia and assembled in Hornell, New York. According to NJT, they are currently the most reliable and environmental-friendly locomotives of the entire NJT fleet.

With the experience gained with the NJT project, as well as bringing its knowledge on the European diesel high-speed technology, Vossloh España teamed up with EMD to develop the new F125 locomotive a state-of-the-art diesel locomotive designed to fulfill the latest and the future environmental requirements (Tier IV EPA emission and noise regulation),

as well as to improve the operational and maintenance conditions for North American commuter and intercity operators (higher reliability, fuel savings, maintenance costs reduction, light weight, etc.) and passenger comfort (lower wayside noise). As of today, twenty F125 have been sold to Metrolink (SCRRA) for commuter service in the Los Angeles area.



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**Los Angeles.** One of the neighbourhoods, Hollywood, is characterized by luxury and moments of immense fame, besides being the area with most famous movie stars. The Oceanfront Walk is an ideal place to sit and watch people go by.

**San Francisco.** Make the most of the Golden Gate Park, ideal for walks, with its pleasant beaches and views of the iconic bridge.

**Miami.** In South Beach you will see the Art Deco lifeguards and at night, bright neon lights in red, green, blue and pink tones transform the Ocean Drive in a chic, modern setting.

**Orlando.** It is the perfect place to escape thanks to the Universal and Disney World theme parks. The centre of the city discovers an interesting mix of architecture ranging from Victorian houses to apartment towers.

**Las Vegas.** Lights, casinos, water jets, lasers ... the city will blow you away!

**Washington.** Here are the headquarters of the most important museums in the country (Museum of Air and Space, National Art Gallery). The downtown has extensive and natural green spaces. Walk around Roosevelt Island, the National Mall (National Mall) or Garden of America.

**Chicago.** Each of its 70 districts exhibits a personality. Lake Michigan is also an option if you like shopping.

**Boston.** Its parks are a good way to see the city: Boston Common, with frog pond or public garden. 🍷

## InVitalRail

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# Metro and tram, the traffic solution in Algeria

THE FIVE-YEAR SNAT PLAN 2015-2019 PROMOTED BY THE MINISTRY OF TRANSPORT OF ALGERIA IS COMMITTED TO LAND TRANSPORT IN CITIES WHERE TRAMS AND METROS ARE IMPLANTED AS THE BEST OPTION. AFTER THE CREATION OF ALGIERS METRO, AND TRAMS OF CONSTANTINE AND ORAN, THERE ARE 10 CITIES THAT PLAN TO BUILD ONE. WE ANALYZE THE SITUATION OF EACH CITY.

Algeria has a population of about 38 million, with a forecast of 42 million by 2025. 65% of this population lives in urban areas and 40% on the coast. Because of this increase in population, the Ministry of Transport of Algeria has launched a strong investment plan to equip their cities in a railway network capable of mobilizing citizens. Today there are 10 cities that are being

built or are in various stages of studies for metro or tram networks, so that Algeria is positioned as a country of high business interest for Spanish companies. "Algeria is an attractive country for Spanish engineering companies due to the major projects being carried out in the country. The needs cannot be covered only with domestic companies, for which the country is increasingly demanding foreign

participation in their projects. Their own national companies are seeking foreign partners to access more business opportunities and leverage the know-how that is not available," says Jose Antonio Doroño de los Ríos, market analyst at the Economic and Commercial Office of the Embassy of Spain in Algiers.

Currently the Algerian economy still has a protectionist behaviour

that prevents reaching full economic liberalization. "The requirements imposed by agencies to carry out projects are becoming ever more complicated -Doroño continues-. It should also be noted that the proceedings that Spanish companies must carry out have to be realized event before starting to develop their activity, such as approvals, obtaining documents, etc. and drawbacks with which

it can subsequently encounter to remit profits. So those Spanish companies wishing to operate in the country should be aware that Algeria is a country with a higher business risk than in, for example, European countries, as it is in constant legislative changes, especially in those cases that require a capital investment in the country. In the case of commercial operations this risk is lower, but





still present." Despite these drawbacks, many Spanish companies are already operating and working in Algeria because the current projects and investments are positioning the country as a business opportunity.

**Metros and trams in operation**

Urban rail transport is in full development. Currently, the country has metro in Algiers and tram in Algiers, Oran and Constantine, thus railway routes are planned in more than 10 cities.

One of the priorities of the government in 2010 was to give the big cities a proper transport network for their citizens. Therefore, the government invested 890 million euros in building the country's first subway in Algiers, consisting of 9.5 km, ten stations and transports a million people monthly. Its construction was carried out by Sener and GESI-TP (Engineering), Siemens, Vinci and Systra, while rolling stock is CAF. It also has a tram line, Algiers-East, whose construction began in 2006 and ended in late 2010. Its construction was carried out by the international grouping Mediterrail (which includes Alstom, Todini and ETRHB Haddad). Although currently the Algerians do not use the subway much due to the high cost of the ticket that represents to them (50 cents), the fact that it is expanding its network leads to the conclusion that it will cover more area and therefore will be more effective. Its tram network is also expanding (see following pages). Another city that has a tram line that is now operational is Oran, in operation since May 2013. It has a length of 18.7 kilometres and 32 stations. Engineering works were carried out by Isolux Koran and rolling stock owned by Alstom. Finally, Constantine has a tram line of 8.9 km, with 11 stations and was inaugurated in 2013. Its construction was carried out by a consortium formed by Isolux Corsán, Alstom and Cosider.

ALGIERS

**Public transport in the city is expanding its subway and tram line to satisfy population increase.**

**Metro extension under construction**

Algiers is currently immersed in the expansion of its subway. Subway cars come from Spain, specifically manufactured by CAF. 14 units with 6 cars each, giving the convoy a length of 108 meters, with 208 seats and capable of carrying 1,216 people. Trains are capable of reaching speeds of 70 km/h. Line 1 has a transport capacity of 21,000 passengers per hour and direction. The total cost of metro line 1 is estimated at 1,000 M €, of which 380 correspond to the civil engineering carried out by the Siemens-Vinci-CAF group and the rest to the necessary equipment. The company RATP-El Djazair (Algerian subsidiary of the RATP-DEV Régie Autonome des Transports Parisiens) has obtained the concession of Metro Algiers for €130 M during a for the first eight years by a 130 M €.

Currently, expansion works are being carried out in three different sections:

- Between Haï El Badr and El Harrach Centre, with which the network will extend 3.9 kilometres and have 4 stations. Works began in 2008. The section also includes a 280 m viaduct, a tunnel under 408.48 ml, a vaulted underground tunnel of 2166.54 ml 3 works for air extraction. Civil works are in charge of the Algerian-German group, GAMEX, and the implementation of the integrated system was entrusted to the Algerian-French group KOUGC COLASRAIL - CRK.
- Works between Haï El Badr and Ain Nadja, with 3.6 kilometres and 2 stations, started in 2010. To carry out this work, a 132.5 ml viaduct, a 241.5 ml main tunnel and a vaulted underground 1840.88 ml tunnel. All stations will have lifts to ensure accessibility for people.
- Finally, the stretch between Place Emir Abd el Kader and Place des Martyrs, with 1.7km and 2 stations, which is under construction since 2009. The monitoring and control of part of the works was awarded to Euroestudios. In addition, as published by the Ministry

of Transport of Algeria, there are other sections subject to studies with which a substantial improvement in traffic would be achieved. To achieve this, the following have been studied:

- El Harrach -Bab Ezzouar - Haouari Airport. It extends over a length of 9 km and 10 stations, which allows the connection between the central district of El Harrach They Badi, the university area El Harrach, the business center of Bab Ezzouar and Haouari airport and offer a connection to the tram in the connection with the University Houari Boumediene. Civil engineering of this extension has been awarded to Cosider TP.
- Ain Naadja - Baraki, which extends over a length of 6 km with 6 stations. The realization of civil engineering of this extension has also been awarded to Cosider TP.
- Place des Martyrs - Bab El Oued-Chevalley, with an area of more than 8 km long and 8 stations. This will join the neighbours of Bab El Oued, with a large residential area and difficult to access by public transport, with the neighborhood of El Biar and Chevalley.



The graph shows the stages of development of the railway line as well as the technical details of each of the phases..

- Chevalley -Delly Brahim - Cheraga - Ouled Fayet - El Achour - Draria, which will have a length of about 14 km, with a branch to Chevalley - Delly Brahim - El Achour - Draria of about 8 km and 8 stations and another one to Delly Brahim - Cheraga - Ouled Fayet of about 6 km and 6 stations.

If the latest extensions that have been studied are implemented, the metro will reach 40 km and 37 stations in 2020, connecting the most populated areas of the city. In addition, as part of the investment plan for the development of public transport in Algiers, the prospects for 2025 say the city will have an underground network of 54 kilometres and 50 stations.

**Tram extension under construction**

The first section of the Algiers tramway went into operation in May 2011 with Alstom: 40 rolling stock units that reach 18 million passengers. The operation of the tram ETUSA (Etablissement suburbain Transport Urbain et d'Alger) is concerned, although the consortium Mediterrail (Algeria Alstom, Alstom Transport, ETRHB and Todini) who has taken care of during the last 10 years of most of the civil engineering, platforms, roads, electrification, signalling, workshops and deposit Bordj El Kiffan, the control centre of the Citadis fleet of rolling stock maintenance and

all system equipment. The first section of the line, which became operational on May 8, 2011, connects neighbourhoods of Bab Ezzouar and Bordj El Kiffan. It has a length of 7.2 kilometres and thirteen stops, as well as the capacity to move 10,000-15,000 daily passengers. The second section, between Mohammadia and Hussein Dey, became operational in late 2011 and with it, the service network is 23.2 kilometres long. The stretch of Tamaris (Mokhtar Zerhouni City) to Ruisseau (The Fusillés) through Mohammadia Algiers Fair, became operational in June 13, 2012. The tram Bordj El Kiffen to Fusillé has a total length of 16.2 kilometres, 28 stations and 8 exchangers. Designed as a comprehensive transportation system, the tram is structured to effectively link the eastern suburbs of Algiers. Currently, expansion works from Dergana of Bordj El Kiffan are being carried out, with a length of 6.2 km, 8 stations and 2 exchangers at Cafe Chergui and Dergana Center. This extension will cover denser neighbourhoods of the population, including Ben Merabet, Sidi Driss, Faizi, Coffee Chergui and Dergana. Among the plans provided, according to the Ministry of Transport of Algiers, the feasibility study for a new extension of 4 km and 6 new stations is being carried out.



## ORAN

### Extension of the tram under construction

Since its entry into service on May 1, 2013, the city of Oran has a new mode of transport linking the Western area of Essenia Sidi Maarouf. It consists of 18.7 kilometres and 32 stations. Engineering works were supplied by Isolux Corsán, and the rolling stock by Alstom.

In addition, studies for future extensions to the west are being carried out:

- Extension A. With a length of 8.25 km and 12 stations.
- Extension B. With 8.37 kilometres and 12 stations.
- Extension Es Senia to Es Senia Airport, with 4.65 km and 5 stations.
- Extension Bus Station Hatab to Ben Arba, with 8.3 kilometres and 13 stations.

### Metro under construction

Entreprise Métro d'Alger (EMA) has awarded the Spanish firm Sener, in an international public bidding, the contract for conducting studies of Metro of Oran. This project extends from the preliminary study to choose the most convenient route for the city until the conditions for the operation of the line with the project layout in different areas. The initial esti-

Underground network of the city of Oran with its connection to the tram, and future upgrades.



mate, which will have to be confirmed during the preliminary study, considered two lines of 17 kilometres and a total of 20 stations. The resulting investment

would therefore be €1,200 M. The development of the line is carried out in four phases and is estimated that it could be finalized in 2040.

### Summary of Oran's tram, with its technical features.



- Line Length: 8.6 km
- Number of stations: 12 units
- Number of garages: 1 unit
- Number of crossings: 11 units
- Travel time (rotation): 46 minutes
- Frequency: 6 minutes during peak hour
- Speed: 20 km/h
- Number of trains: 11 trains
- Total number of passengers at peak hour 2015: 44,000 passengers
- Users attended: 17.5 million passengers a year in 2015
- Garages total area: 6 hectares (with a reserve of 2.5 hectares more for future extension)

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## CONSTANTINE

### Tram extensions. Under construction.

A consortium of Alstom, Isolux Corsan, the Algerian constructor Cosider with Idom's control resulted in June 2014 with the award of the expansion project of the first tram line in Constantine (in operation since July 4, 2013), a railway infrastructure of more than 13 kilometers long with 14 stations and which will also involve the construction of a parking lot for cars. The consortium formed by the Spanish company Isolux Corsán (33.3%), the French company Alstom (37.7%) and the Algerian constructor Cosider (29%) will execute this project, which has had a budget of over 313 million euros.

The work of this extension, awarded by Enterprise Metro d'Alger (EMA), contemplated the realization of two sections of rail lines that will give service to the areas of Ali Mendjeli and University.

The first, Zouaghi- Mohamed Boudiaf



The first section of Constantine's tramway is in operation since July 2013 and the rolling stock was supplied by Alstom.

Airport, will be 2.8 km long and will have 4 stations. The second section, Zouaghi –Ali Medjeli, 10.3 kilometers long and 10 stations, will also have a parking for vehicles. The initial sec-

tion of 8.1 km, from Benabdelmalek to Zouaghi, is operated and maintained by Setram, a consortium of RATP Dev, France, EMA and ETUSA under a 10 year contract.

## SIDI BEL ABBES



### Tram under construction

The tram of Sidi Bel Abbes has a length of 17.7 km and 26 stations.

The study released by Metro of Algiers and carried out by the French consultan-

cy Egis Rail, defined the layout of the first tramway line of Sidi Bel Abbes. Sener, Spanish consultant, has performed engineering services for technical support to the tendering of the works, which began



To the right, an infographic of the tramline. Above, the outline of the future tramway.

in September 2013 and which are in an advanced stage of construction. It is estimated that the tram will have intervals of 5 min. and at the end of construction of 3 min.



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## SÉTIF

### Tram under construction

Sener has carried out engineering services during the bidding phase of the tram.

A joint venture between Alstom and the Turkish construction company Yapi Merkezi was awarded a € 380M con-

tract to build the first phase, scheduled to be completed in 2017. An Alstom Citadis fleet will run at intervals of 4 min, and is expected to transport about 5,000 passengers/h.

The first line consists of two sections. The first, with a length of 15.2 km and

a total of 30 stations, will connect the town of El Bez (West) with major developments and two universities, while the second (7.2 km) will join the centre of the province and the intermodal bus station projected in Ain, south of the city of Setif..

## MOSTAGANEM



### Tram under construction

Mostaganem, a city of 700,000 inhabitants, located northwest of the

country, is part of the modernization program of urban transport launched by the state. Isolux Corsán and Alstom

were awarded its construction for an amount of 250 million euros.

The project achieved now is the construction of a railway infrastructure of 14 kilometres, which will have 24 stations and is expected to provide service to about 150,000 passengers.

The work includes the construction of six exchange points between the tram and the bus, ten car parks, and the development of different areas.

It also includes the construction of a maintenance centre that will house garages, workshops and an administration building, in addition to underpasses and a viaduct 177 meters long in order to reconcile the tram traffic in the city.

## ANNABA AND BATNA

### Trams: public tender for the realization

Both cities are, in July 2015, tendering its execution. In the case of the city of Annaba, Entreprise du Métro d'Alger has selected the consortium of Dae-woo and GS Engineering & Construction to build its first tramway line.

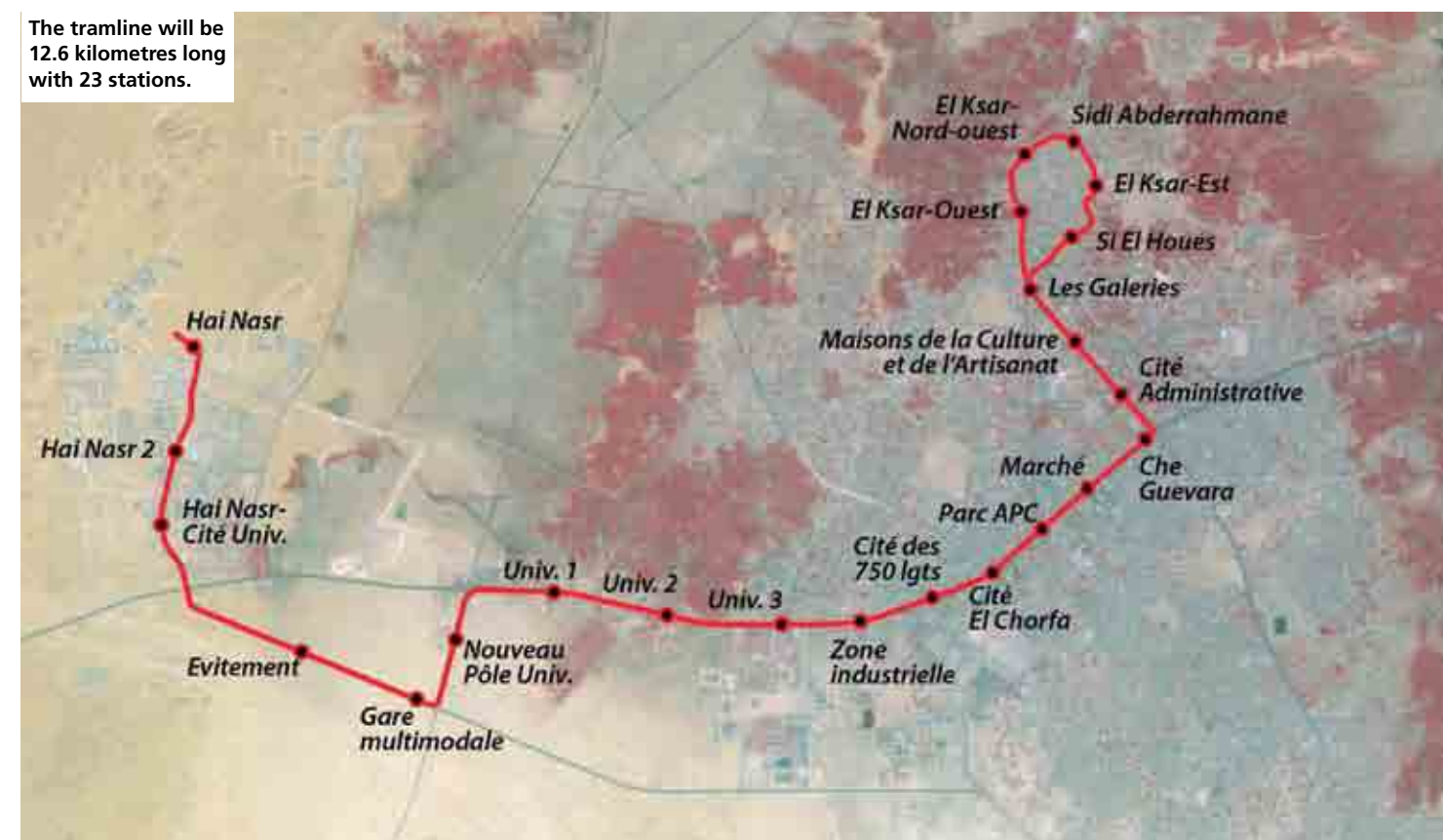
Another of the cities under a tram study is Batna. General studies from Metro Algiers has defined the route of the tram line from the region Bouzerane Hamla, to the university and exchange points with the bus and railway SNTF stations. Systra has carried out detailed studies.

It is a line of 15 km, with 24 stations, where it is expected that the entire line has an estimated travel time of 41 minutes and a frequency of 4 minutes at rush hours.



## OUARGLA

The tramline will be 12.6 kilometres long with 23 stations.



### Tram under construction

Ouargla has a population of about 250,000 people. Within the Algerian government's objective of providing modern transportation to major cities, Ouargla is one of the cities where the realization of a tram was planned in order to facilitate transport within the city.

The proposed tram line has a total length of 12.6 km, of which 2.4 are single track and the rest is double-track (the single track section is a loop around Ksar). The tram takes place in reserved platform and contains 23 separate 550 m stations in average. This tramline will connect the new city of Hai Nasr, located west of the town (and

where it is expected future growth of the population), with the old city, reaching the main arteries of the population. The University is included within that route, which will facilitate the transport of students.

The commercial speed of the tram will be about 20 km/h with 4-minute intervals during peak hours.

The rolling stock planned are 23 40 m compositions of Alstom's Citadis 402 type.

A tram maintenance centre will be located in the same route of the tram, where administrative buildings are going to be built, as well as hangars for maintenance and storage of the trams. The implementation contract was di-

vided into two lots:

► Lot 1: infrastructure and buildings

► Lot 2: energy and systems

Lot No. 1 was awarded to the Spanish joint venture formed by Rover Alcisa-Elecnor-Assignia amounting to about €230 M, Lot No. 2 was awarded to Alstom.

Lot No. 1 includes the realization of infrastructure and buildings, as well as the track, catenary and urbanization. A bowstring bridge is contemplated in the works in order to save a road. The works of this lot are carried out in two phases. The first includes the maintenance centre and 8 km of double track, with the remainder works being part of the second phase.

## BÉJAIA, SIKKDA, BÉCHAR, BLIDA, TLECMEN, TÉBESSA, DJELFA

### Trams: feasibility studies

The Spanish company Sener is conducting feasibility studies in the city of Bejaia, which has aimed to identify early potential for what will be the tramline routes. It has set a route of 9.7 km and

19 stations. The same has happened with Skikda, for which Sener is also carrying out its study. Moreover, the city of Biskra also has on-going feasibility studies. In addition, other cities are considering

a tram, such as Djelfa (14.8 km and 25 stations), Tebessa (14.2 km and 25 stations), Tlecmén (21.5 km and 33 stations), Béchar (13 km and 23 stations), Blida (11 km and 18 stations).



## MAFEX MEMBERS PRESENT IN PROJECTS IN ALGERIA



#### ASSIGNIA

The company, part of Essentium Group, is performing the construction works for the first tramway line of Ouargla city, that involve the infrastructure and superstructure works, in addition to the catenary, street lighting, signing and traffic-light installations. This infrastructure project represents 200 M€ of investment and has started on September 2013. The works are scheduled to be completed during the year to come according to the forecast execution deadline. The rail line will

#### ARCELORMITTAL

ArcelorMittal has contributed to the construction of the first tram line in Oran together with Isolux Corsan by



#### ALSTOM

Algeria is one of Alstom Transport's main global markets and Spain has become the Group's export platform for tram projects in this country. Numerous urban projects in this country are currently managed and implemented by Alstom Transport in Spain. Alstom's industrial and engineering centres in Madrid and Barcelona have developed tram systems (including supplying rolling stock, power supply systems and signalling systems) for the Algerian cities of Annaba, Algiers, Constantine,

connect Ouargla city centre to its university area. The new transport service expected capacity is of 5,000 passengers / hour and includes 34 double trips a day with a 12-minute frequency. The execution of this rail stretch requires the construction of a Cable-stayed bridge, with a bowstring type design, above the RN49, one of the main city roads. The bridge will be made of a structure composed of reinforced concrete and structural steel. The construction of two walkways will be carried out at the same time. Assignia will use 7,000 cubic

supplying more than 4,500 tonnes grooved rail (tram). ArcelorMittal as a leading manufacturer of rail, including metro and tram, will continue playing an

#### CAF

CAF is one of the suppliers of urban railway transport solutions in Algeria. In 2006, the company signed a contract with EMA (Entreprise Metro d'Alger) in consortium with Siemens and Vinci Constructions for the design and manufacture of the first metro line in the city of Algiers to connect Haï el Badr with Tafourah Grande Poste.

The project includes the system infrastructure, signaling and electrification, as well as the supply of trains and workshop equipment. CAF has provided 14 metro units, as well as the workshop equipment and the supply of auxiliary vehicles. The company is also in charge of maintenance of this new fleet

Ouargla, Mostaganen, Oran, Sétif, and Sidi Bel Abbès

The Alstom Spain centres responsible for implementing these projects are:

- The industrial plant in Santa Perpetua (Barcelona) for tram manufacturing.
- The technology laboratories and engineering centre in Madrid, for the development of signalling systems, control centres, safety installations and passenger information systems.
- The infrastructure teams for the supply and installation of substations and power supply systems.



metres of reinforced concrete, 630 tons of corrugated steel and 145 tons of high strength structural steel.

active role in the modernization of urban transport in Algeria as it has already done in neighboring countries such as Tunisia and Morocco..

#### CETEST

CETEST testing laboratory carried out, in 2011, tests for the evaluation of vibration levels and passenger comfort on the new units of Alger Metro. Interior and exterior noise emitted by the units was also evaluated.

#### GETINSA

Euroestudios, company member of TPF group associated to Getinsa-Payma, is part of the JV that will supervise the construction of the extension of Algiers metro between El Harrach suburb and the airport. The project involves the construction of 9.560 km of underground metro line implemented by TBM system, 10 ventilation shafts and 9 stations. This 60-months supervision contract amounts to around 17.7 mill EUR.

#### IDOM

In recent years, Idom is designing in Algeria an important number of urban transport projects ( metro, Tramway and railway). Idom has had an office in Algeria, providing support to the these and other many projects being undertaken in architectural, energy and consultancy fields.

One of most important urban transport projects IDOM is developing for the public company Métro d'Alger, is undertaking an ambitious Extension Plan, increasing the current line 1 (8.2 km) in operation to a network of 55 km with more than 55 stations. The project developed by Idom is for the Ain Naadja-Baraki section. With a length of 6.2 km and 6 new stations, this section will serve two densely populated districts giving them access to the city centre. This integral project

#### SENER

Since the implementation of its first project in the country relating to the extension of the port of Arzew in 2006, SENER has undertaken a large variety of projects in Algeria within the infrastructure and transport sector, some of them, as relevant as the Master Plan for Algiers airport, the Control Towers for the 5 most significant airports in the country, the Study for the modernization of Oran's Dockyard, or the emblematic project for the Refurbishment of Algiers Bay Area.

#### ROVER ALCISA

The company is carrying out works in the tram of Ouargla. The lot n° 1 was awarded to the joint venture formed by Rover Alcisa-Elecnor-Assignia by an amount of about EUR 230 million and the lot n° 2 was awarded to Alstom.

The lot n° 1 comprises the accomplishment of infrastructures and buildings, as well as the track line, the catenary, urbanization and non-railway facilities of the maintenance buildings. Within works is included the accomplishment of a bow-string bridge to save a highway. The works of this lot will be executed in two phases, the first of which is composed of the maintenance centre and 8 km of double track, being the rest the

has considered all the technologies that will be required for the definition of future works, from civil engineering, urban integration, demand, studies on operations, and all the necessary for the section electrification, signalling, telecommunications equipment and commercial management.

In addition IDOM is designing and supervising Tramway extension in Constantine Ali Mendjeli to the airport with 13,1 km length and 15 stations. Also EL Khorub tramway Constantine extension project with 13,5 km and 11 stations is designed by IDOM.

In Ouargla Tramway IDOM is detailed designer for the constructor Consortium (Elecnor, Rover Alcisa and Assignia) in a Design and Build project of 5 km length and 11 stations.

Regarding the railway sector, the most relevant projects to be highlighted are the Project for signaling and civil works of the section Saida-Moulay Slissen (120 km), the entire project for the Oran Metro Network (19.5 km and 20 stations), or the project for Haï el Badr-El Harrach section within Algiers' Metro Network (4 km and 4 stations). Additionally, SENER has been involved in various tramway projects such as the Project and works supervision for one of the first tramway lines operating in Algeria in 2013, Oran Tramway Network,

objective of the second phase.

The works began in September of 2013, being the accomplishment of a camp and the services deviation the first works made. At this moment, the work has an approximate advance of 35% and the conclusion of phase 1 is anticipated for June of 2016.

The works are developed in a particularly difficult environment with extreme temperatures in summer that arrive at 50 degrees. It has had to deploy a team of about 40 technicians for the execution of the works, who are supported by the equipment in Spain for the development of the project and to coordinate the logistics of the provisions. The project must adapt

#### SIEMENS RAIL AUTOMATION

Siemens Rail Automation was awarded in 2006 with the contract for the supply of the signalling sub-system for the Line 1 of Algiers Metro which includes an underground line of 8.5 km, 10 stations and 1 Depot.

The contract includes the supply of 4 Electronic Interlocking Westrace, Jointless Track Circuits FS 3000 5K, Electrical Point Machines MD 2000 as well as the optical signals and the corresponding signalling cables.

The equipment of Siemens Rail Automation is part of the Automatic Train Control System (ATC) of CBTC technology to be supplied by Siemens France and is based on the same equipment and interfaces for Barcelona Metro Line 9.

with 30 stations and 18 km length, as well as different feasibility studies for the tramway lines of Bejaia, Ouargla, Sidi Bel Abbès and Skikda. SENER is also carrying out the study for the intermodal station of Sidi-Maarouf, in Oran, with a relevant architectural component.

Considering the large number of project undertaken over the past decade in different cities and with many diverse clients, SENER is nowadays a reference within the infrastructures and transport sector in Algeria .



to the conditions of the climate and the sand of the desert that affects the elements of itself, reason why the facilities and equipment must design with these inputs. The experience acquired in railway works in Spain, especially by Rover Alcisa and Assignia, both members of Mafex, will contribute to the success of the project.



# HealthHub, a new predictive maintenance tool

ALSTOM SERVICES TEAMS IN SPAIN HAVE DEVELOPED HEALTHHUB, A NEW PREDICTIVE MAINTENANCE TOOL ABLE TO MONITOR THE HEALTH OF TRAINS, INFRASTRUCTURE AND SIGNALING ASSETS

**H**ealthHub is a new predictive maintenance tool able to monitor the health of trains, infrastructure and signaling assets using advanced data analytics to predict their remaining useful life. It is an innovative approach designed to shift from traditional mileage-based maintenance to condition-based predictive maintenance, thus reducing the lifecycle cost for the operator.

HealthHub is supported by various high technology data capture solutions such as TrainScanner, an automated diagnostics portal capable of measuring the condition of three key consumables of a train as it moves through the portal: wheels, brake pads and pantograph carbon strips. It allows up to 15% of material costs to be saved by replacing them only on an as-needed basis. For infrastructures, TrackTracer will allow similar monitoring of the track and catenaries.

HealthHub strengthens the implementation of the "pit-stop" approach by anticipating maintenance activities. Everything is ready when the train arrives so that maintainers can complete the tasks swiftly and without waste. It has been specifically designed to issue recommendations to carry out the tasks that are actually needed, at the moment they are required. For operators, the advantages are multiple: they



optimize their fleet-size thanks to the increased train availability, the time in depot is reduced and the total lifecycle cost is lowered. Alstom already has significant experience in using remote condition monitoring of trains to optimize operations and maintenance and over 25 fleets have

been equipped since 2006. This first real predictive maintenance application, HealthHub with TrainScanner, is undergoing a series of tests and will be in service at the end of 2014. This first version of HealthHub will be upgraded in the near future with new data analysis tools.



Idom has been responsible for the complete design of the metro in Riyadh.



## Energy efficiency in line 3 of Riyadh Metro

IDOM IS COMMITTED TO THREE CLEAR GOALS: REDUCING ENERGY AND WATER CONSUMPTION, USE OF MATERIALS WITH LOW ENVIRONMENTAL IMPACT AND MINIMIZING MAINTENANCE OF THE DIFFERENT BUILDINGS

Idom is responsible for the detailed design (construction) of the track and its associated components (viaducts, tunnels, false tunnels and platform at ground level), workshops and garages, park & rides (and ride) parking, 20 stations and all the complex at street associated with the immediate passage of the Line 3 of the Metro Riad. The commitment to energy efficiency and sustainability assessment is one of the of the building's design highlights proposed by Idom with three clear objectives: Reducing energy and water consumption, use of low environmental impact materials and minimize maintenance.

The buildings of workshops and garages proposed by Idom are a case in point. Since the competition phase the workshops and garage buildings sought to create a functional and low energy demanding buildings through the architecture design. Riyadh's weather conditions are extreme with a dry climate, a very high



solar radiation and high temperatures that can reach 48°C. In the original design of Idom, the main strategy to reduce the energy consumption was based on bioclimatic concepts.

Due the roof's design, the building is able to reduce direct solar incidence while allowing maximum daylighting levels. For this purpose a series of skylights were installed facing north, reducing the demand for cooling and artificial lighting simultaneously. The roof itself was defined by means of an optimization study of photovoltaic panels, which produced 45% of the consumption of fixed installations of the building.

The design is complemented with solar protection devices in façades, and a high reflectance with continuous high thermal insulation ( $U = 0.33W / m^2K$ ) envelopes

to minimize heat gains. The active ventilation, thermal conditioning and lighting systems are robust and highly efficient. All water fixtures are highly efficient in order to reach a maximum potable water savings. The reuse of water is the other key strategy for assuring the water savings, gray water is recycled for cleaning and irrigation, and sewage is al reused for irrigation after the required treatment.

The stations are based on a pre-defined design, for which Idom is developing the project implementation. As in workshops and garages, the design focuses in reducing the energy needs of the stations, based on shading and high performance envelopes, along with the installation of solar PV panels that contribute to the reduction energy consumption of the stations.



# New Railway Signalling Competence and R&D&I Centre



H.M. the King listening to the explanations on the simulators during the inauguration.

LAST MAY SIEMENS OPENED A NEW SPACE FOR INNOVATION COUNTING ON 350 EMPLOYEES AND CHANNELING AN ANNUAL INVESTMENT OF €20 M PER YEAR.

Siemens, a global leading company in technology, inaugurated the Railway Signalling Competence and R&D&I Centre last month of May with the presence of His Majesty the King of Spain, Felipe VI. The R&D&I Centre is born with the double aim of producing, testing and developing the most modern railway signalling and traffic control systems, and, at the same time, training professionals from this field in these technologies. Among the 350 people working at its premises, most of them graduates in Engineering (Industrial, Telecommunications, Computing...), although there are also mathematicians and physicists,

near 200 will work in the field of Research, Development and Innovation, and about 150 in Project Execution. This Centre brings together knowledge and technique to design, test and deliver products or systems customized according to the latest safety requirements and needs of the market and will encourage the research and development of technologies that improve the current ones, among which ERTMS (European Railway Traffic Management System) or CBTC (Communications-Based Train Control) stand out. Staff will also work there in other systems such as the signalling interlocking Westrace, the PTC (mining and freight transport) or the traffic control centre Rail 9000. Moreover, it will be equipped with a laboratory with field simulators so that they can virtually work on the effectiveness of the developed systems, and with a thermal fluctuation resistance control area. At this moment, the company is

developing international projects for New York, Changsha (China) or Singapore undergrounds; Sao Paulo and Istanbul commuter lines; Meca-Medina (Saudi Arabia) or Ankara-Konya (Turkey) High Speed Lines and Nacala Freight Railway Corridor (Mozambique), and also different projects in Spain, such as the High Speed Lines between Madrid and Valencia or Córdoba and Málaga. Together with this Centre, a 'ShowRoom' conceived as a meeting place to show Siemens's technology to partners, customers, institutions and other public was also inaugurated. It is a multidisciplinary space equipped with the latest technology where the main lines of the company's activity can be displayed by means of videowalls and workstations, and in which people can attend virtual demonstrations of some of its most symbolic projects. In addition, this centre will be devoted to training sessions as well as to every type of operation tests.

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# The European project SAVASA creates an innovative platform for video file search and analysis



IKUSI AND VICOMTECH-IK4 HAVE DEVELOPED, TOGETHER WITH OTHER 8 PARTNERS, EXPERTS IN THE IMPLEMENTATION, DEPLOYMENT AND MANIPULATION OF MULTIPLE VIDEO SURVEILLANCE SYSTEMS, THE SAVASA PROJECT, SUPPORTED BY THE EUROPEAN COMMISSION'S 7TH FRAMEWORK PROGRAMME

The various technologies in video surveillance used by infrastructure operators (airports, railway, underground, etc.) have led to the installation and operation of diversified and non-interoperable video archiving systems. Thus, the exploitation of video surveillance information by law enforcement agencies in a legal framework is both technically and operationally impeded. This problem is exacerbated by the fact that diverse technologies are used for the compression, indexing, storage and access of video surveillance information. In order to overcome the current problematic, the SAVASA project

proposes the creation of a video archive search platform that allows authorised users performing semantic queries over various remote and non-interoperable video archives. Access to the application is performed remotely (Cloud infrastructure) and platforms capabilities are offered as software services.

The project implements a prototype platform capable of demonstrating unified archive search and retrieval based on a Cloud infrastructure and provides a set of tailored video analytics and semantic tools, ready to be implemented within the current legal and ethical framework.

The partners of SAVASA Consortium are: Angel Iglesias S.A. – IKUSI, Vicomtech-IK4, Studio Professionale Associato a Baker & McKenzie, Hi-Iberia, Dublin City University, CLARITY, University of Ulster, IN-ECO, NCSR The National Centre for Scientific Research (NCSR) DEMOKRITOS, Sintel Italia, RENFE Operadora, DGT – Dirección General de Tráfico, Jefatura Central de Tráfico

More information: <http://www.savasa.eu/>

Video Summary: <https://www.youtube.com/watch?v=U3xdgXS-Eaw>



## The train OARIS integrates AURIGA OBS solution to meet the requirements of ERTMS

CAF INCORPORATES ERTMS SOLUTION FROM ITS SUBSIDIARY CAF SIGNALLING IN OARIS HIGH-SPEED TRAINS, CAPABLE OF REACHING 350 KM/H.

This onboard ERTMS solution marks a significant milestone for CAF Group's company specialized in signalling systems with one of the most compact hardware packages in the market. AURIGA OBS is an ERTMS solution which conforms to ERTMS requirements for both Level 1 and Level 2. The outcome of CAF Group's experience and focus on R&D, CAF's proprietary ERTMS solution is being successfully implemented on OARIS very high speed train. Additionally, CAF Signalling also boasts AURIGA L1 and AURIGA L2 wayside ERTMS systems, which round off the company's offer in the railway signalling sector.



**AURIGA OBS answers the needs of both ERTMS level 1 and level 2.**





# Battery powered trains



BOMBARDIER TRANSPORTATION PRESENTED THE INDEPENDENTLY POWERED ELECTRIC MULTIPLE UNIT (IPEMU), WHICH CAN BE DRIVEN ENTIRELY BY BATTERY TECHNOLOGY, IN ADDITION TO DRAWING POWER FROM ITS PANTOGRAPH.

**M**odified from an existing Stansted Express Class 379 ELECTROSTAR electrical multiple unit (EMU) train, it's part of a research program partly funded by Network Rail and the Rail Executive arm of the Department for Transport. Working with industry stakeholders during a 7-month design phase, Bombardier reconfigured an ELECTROSTAR Class 379 train to enable the installation and integration of an operational traction battery system. The alteration required engineers to modify the carriage creating the necessary space in the underframe to accommodate the lithium iron magnesium battery cells. Engineers also added high voltage and communications cabling, standard safety features and battery controls as well as integrated the traction and train control

management systems. The new design uses existing line converter equipment to charge the batteries and connects the motor converters to the batteries when the 25 kVAC overhead line is not available. In addition to its low noise and reduced energy consumption, battery operation's main benefit is that it enables the train to cross non-electrified lines or can be used in the event of electrical failures without using overhead wire systems or diesel power. They can also use branch lines where it is not cost-effective to install additional overhead electrification as well as expanding rolling stock capacity by increasing the flexibility of existing diesel powered trains. After a phased approval process and dynamic track testing, the train entered passenger service in January 2015 as part of a trial.



Thanks to Sima reduced uptime and errors is achieved.

## Comprehensive system for railway maintenance in mobile devices

INECO IS DEVELOPING SIMA, WHOSE MAXIMUM USE OF NEW TECHNOLOGIES FOR THE IMPROVEMENT OF INTERNAL PROCESSES IN THE MAINTENANCE OF RAILWAY LINES

**W**hen it comes to railway maintenance, working methods have varied due to new technologies and computer systems. The transport engineering and consultancy firm Ineco is developing a comprehensive system for asset control of all the technical areas involved in railway maintenance. SiMA's objective lies with the utilisation of new technologies for the improvement of all the internal processes in railway maintenance. Thanks to this new tool, a reduction in the activity times will be reduced, as well as that of errors, when it comes to developing support tasks through a clearer and faster search of the works to be executed. This project aims to complete the working method initiated with the development of SIOS Inventory and Maintenance, the web

platform developed by Ineco for the comprehensive management of railways, in use since 2012 in the entire Spanish High Speed Network for the Infrastructure and Track technical areas. SiMA adapts to the real environment and implements the same concept in mobile devices, providing the processes with an increased quality and a freedom of movement when it comes to direct fieldwork. Ultimately, this is the first step of the implementation of mobile devices in comprehensive working methods. This methodology eases the tasks of the agents involved in the railway infrastructure, and offers diligence identifying the causes and aspects that are creating pathologies, problem-solving and implementing corrective actions in the prevention and corrective maintenance stages.



UPCOMING MAFEX ACTIVITIES

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► September 28 - October 2

United States

Los Angeles, San Diego, San Francisco, Sacramento

► November 19-23

South Africa and Mozambique

Johannesburg and Maputo

► November 28-December 3

Saudi Arabia

Riad, Damman and Jeddah

INVERSE MISSIONS

► November 16-20

Business opportunities in rail freight transport and logistics

Valencia (Spain)

EXHIBITIONS

Assistance

► July 7-9

UIC High Speed World Congress & Exhibition

Tokyo (Japan)

► October 4-7

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Actia is a company based in Spain with a number of subsidiaries in more than 15 countries, devoted to the research, design and manufacturing of electronic platforms, on board and fixes systems, using the latest technologies for the railway industries, not just in security, information and entertainment but also in the communication and transferring of data. It's available with a wide range of electronic equipment and services which meets all needs for different means of public transport like High Speed train, InterCity, Regional train, Suburban train, Train-Tram, Tram and Underground.

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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.

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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.



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Aries Ingeniería y Sistemas is a worldwide leading company specialized in turn-key test systems projects for the railway industry (rolling stock and infrastructure). Aries's services range from feasibility studies and concept design, to turn-key solutions, including maintenance.

Aries develops its own state-of-the-art technology, which it incorporates into its solutions.

The company, is featuring over 25 years of experience in the sector, also offers client-specific R+D consulting for both: railway rolling stock and infrastructure.

Aries relies on its modern technology and its highly qualified team to create successful and efficient solutions.

Aries is present in more than 22 countries, employs a strategy directed at specific markets which allows a strong, stable, and profitable growth. The company has offices in Madrid, Miami and Shanghai



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#### **ASSIGNIA INFRAESTRUCTURAS, S.A.**

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► info@assignia.com  
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Assignia Infraestructuras 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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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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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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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 (Bagneres 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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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 deliver high reliability solutions adapted to each and every client's specific needs in compliance with railway standards.



## CAF SIGNALLING

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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

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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

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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

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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.

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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.



## DANOBAT

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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 qualifi-

cation 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.

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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.

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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.

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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.

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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 technical support. Elektra Group is composed of an extensive Spanish national network and has companies in Romania, India and USA.



### FAIVELEY TRANSPORT IBERICA, S.A

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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.

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Founded back in 1972, Fundiciones Garbi has evolved from a traditional foundry 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.

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Castings in carbon steel, alloy steel and stainless steel.

Our products:

- Steel casting.
  - Raw castings or fully machined.
- Examples:
- Bogie components.
  - Pivots.
  - Motor housings.
  - Pressure rings.
  - Axle boxes.
  - Links...



**Gamarra, S.A.**

### GAMARRA, S.A.

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► [www.gamarrasa.es](http://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 INGENIERÍA S.L.

### GETINSA INGENIERÍA, S.L.

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Established in 1984, Getinsa Ingeniería, S.L. has grown into a top engineering firm in Spain and an international benchmark in the transport and environmental sectors. In Spain, Getinsa 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.

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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.

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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 m² 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.



### IBERTEST, S.A.E.

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Ibertest is a company that since 1970, designs and manufactures machines and complete laboratory installations "Turn Key" for high precision materials testing. Our equipment offers a global solution for R&D Investigation and Quality Control of all types of materials, englobing static and dynamic testing of the different elements in conventional and high speed railway, that includes: Tracks, Sleepers, Track Support Assembly, bogies & etc. Our solutions guarantee the high demanding safety requirements established by national and international standards.



### IDOM

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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, Portu-

gal, Rumania, Turkey and United Kingdom.

More than 2.500 staff possesses 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 - ÁNGEL IGLESIAS, S.A.

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► [www.ikusi.com](http://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.



### ASOCIACIÓN IK4 RESEARCH ALLIANCE

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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.

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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/m². 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

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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.



#### INDUSTRIAS E. DÍAZ, S.A.

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- www.industrias-diaz.com

Industrias E. Díaz, S.A. founded in 1968, manufactures side and cab WINDOWS for railways, metro and tram.

It counts with highly qualified personnel as well as a technical staff able to make any kind of design. Its facilities of 11,000 m² of built, contains the most sophisticated technology and means of test and homologations.

It is certificated ISO 9001:2000. In order to respect the environment, it does not use hexavalent chrome in its modern installations of chemical treatments, decreasing toxic substances emissions.



#### INECO

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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.



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- www.ingetteam.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

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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 conti-

nents 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.

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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 man-

ganese crossings or spare tongues.

At JEZ Sistemas Ferroviarios, S.L. we fit our developments to meet clients needs.



#### KELOX, S.A.

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28034 Madrid (MADRID)
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- F: +34 91 358 05 64
- marketing@kelox.es
- www.kelox.es

Kelox launched its railway activity in 1977, manufacturing catering equipment 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.



**LKS INGENIERÍA, S. COOP**

► Goiru kalea, 7  
20500 Arrasate  
(GIPUZKOA)  
► P: 902 03 04 88  
► F: 943 79 38 78  
► arrasate-mondragon@  
lksingenieria.com  
► www.lks.es

Through more than 25 years of existence, LKS DIARADESIGN has experienced a progression toward its consolidation on areas such as transport design, engineering and transport infrastructure.

Rolling Stock Design: Design consultancy, Concept design, Exterior styling, Interior styling, Design engineering, Branding, colour & trim. Railway Infrastructure: Feasibility studies, Landscape architecture, Infrastructure design, Technical assistance, Program & Project Management, Environmental consulting.

**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.**

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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.**

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► 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.**

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28864 Ajalvir (MADRID)  
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► 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 freight trains, taking the latest technological advances of the rubber world, vibration control and damping systems.

**NUEVAS ESTRATEGIAS DE MANTENIMIENTO, S.L.**

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► 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)  
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► 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.**

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► 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.**

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► 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.**

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► 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 stretch and conventional rail network.

■ Engineering services and integral management for electrical welding factories and management of rail stockpiles.

■ Regeneration of used rails to make LBS.

■ Providing fastening complet sys-



tems. Manufacture of metallic 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  
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► 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.



#### SEIB- SERVICIOS ELECTRÓNICOS INDUSTRIALES BERBEL, S.L.

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28320 - Pinto (MADRID)

► P: +34 91 692 53 71

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► seib@seib.es

► www.seib.es

We are designers of products and electronic processes that since 1994 industrialize the knowledge of our clients in their products.

Currently, SEIB boasts the most advanced range of products and services on the market in industrial electronics and an own Know-How present in all activities of the company, from the simplest solutions to more complex developments and projects. In 2008, we started the development of own products and now launched the generation 2.0 in which we apply the design to reduce the consumption of raw materials and processes, using components and cutting-edge techniques to increase functionality and reduce the cost of products in rolling stock.

What do we have to change about these products to transform into that you need?



#### SEMI, S.A. (GRUPO ACS)

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► P: +34 91 701 77 00

► F +34 91 521 85 97

► ferrocarril@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 in-

frastructures 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)

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► 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

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► 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)



#### SIEMENS RAIL AUTOMATION S.A.U.

► Ronda de Europa, 5

28760 Tres Cantos (MADRID)

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► 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.

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33192 Llanera (ASTURIAS)

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► 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

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► www.tecnatom.es

Tecnatom has more than 50 years of experience in the application of Non Destructive Testing (NDT) to the inspection 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



#### TEKNORAIL SYSTEMS, S.A.

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► 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.



### TELICE

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► 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.



### THALES ESPAÑA GRP, S.A.U.

► Serrano Galvache, 56  
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► jose.villalpando@thalesgroup.com  
► www.thalesgroup.com

Thales is a World leader in Mission Critical Solutions for Land Transportation. Thales Spain, with more than 60 years of experience, has been pioneer and leader in the technological development of the Spanish railways, being 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.



### TYPESA

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► F: +34 91 651 75 88  
► madrid@typsa.es  
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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.



### VALDEPINTO, S.L.

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► 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.



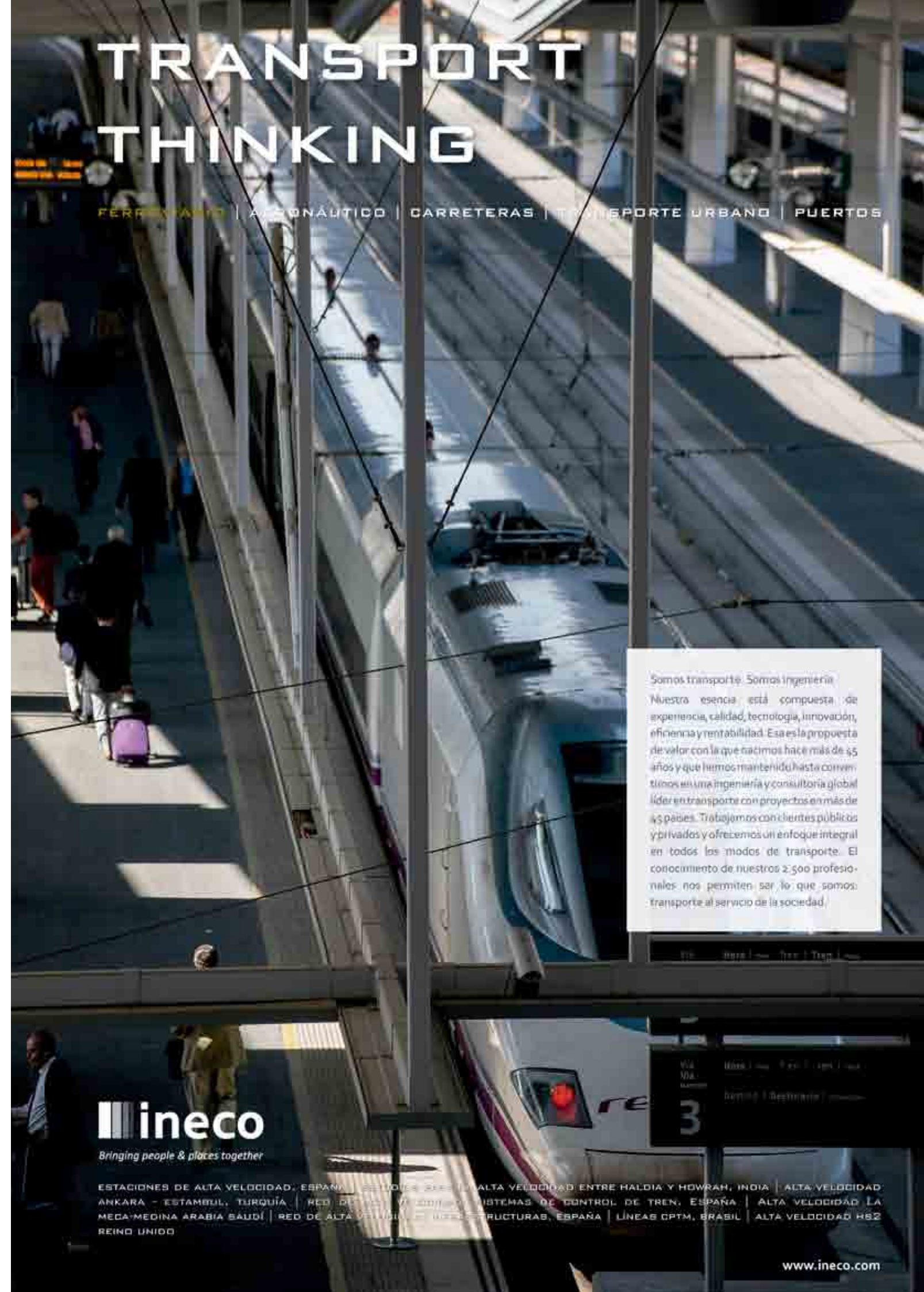
### VOSSLOH ESPAÑA, S.A.

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(VALENCIA)  
► P: +34 96 141 50 00  
► F: +34 96 141 50 02  
► info@ve.vossloh.com  
► www.vossloh-rail-vehicles.com

The Vossloh España Engineering Center has a commitment to innovation. State-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.



# TRANSPORT THINKING

FERROVIARIO | AERONÁUTICO | CARRETERAS | TRANSPORTE URBANO | PUERTOS

Somos transporte. Somos ingeniería.  
Nuestra esencia está compuesta de experiencia, calidad, tecnología, innovación, eficiencia y rentabilidad. Esa es la propuesta de valor con la que nacimos hace más de 35 años y que hemos mantenido hasta convertirnos en una ingeniería y consultoría global líder en transporte con proyectos en más de 45 países. Trabajamos con clientes públicos y privados y ofrecemos un enfoque integral en todos los modos de transporte. El conocimiento de nuestros 2.500 profesionales nos permiten ser lo que somos: transporte al servicio de la sociedad.



ESTACIONES DE ALTA VELOCIDAD, ESPAÑA | SERVICIOS DESDE ALTA VELOCIDAD ENTRE HALDIA Y HOWRAH, INDIA | ALTA VELOCIDAD ANKARA - ESTAMBUL, TURQUÍA | RED DE ALTA VELOCIDAD EN CHINA | SISTEMAS DE CONTROL DE TREN, ESPAÑA | ALTA VELOCIDAD LA MECA/MEDINA ARABIA SAUDI | RED DE ALTA VELOCIDAD EN INFRAESTRUCTURAS, ESPAÑA | LINEAS CPTM, BRASIL | ALTA VELOCIDAD HS2 REINO UNIDO



# Talgo

The exclusive supplier  
of the **Very High Speed Haramain trains** for the  
Kingdom of Saudi Arabia



[www.talgo.com](http://www.talgo.com)

