MAFEX
Mafex corporate magazine
Spanish Railway Association
Issue 12. September 2017

Great reception of the 6th International Railway Convention

Representatives from 31 countries gathered in Valencia to analyze the future of the sector.

IN DEPTH: AFRICA
Freight railway networks are growing across the continent.

DESTINATION: AUSTRALIA
An ambitious investment program predicts a great future for transport.

INTERVIEWS:
Several international players expose their main railway projects.

6th International Railway Convention: The Industry Analyzes Future Projects

Dear friends,

The balance of Mafex's business plan for these months of 2017 is highly positive. Numerous diffusion initiatives were carried out, new markets were opened and there was also a trade exchange and the sector has been represented inside and outside the Association's borders for more than half of the year. Among them, the 6th International Railway Convention, which was held in the City of Valencia last June, has a special role; once again, there has been a high level of participation, with delegates from 31 countries, and the Spanish industry's weight in the achievement of the latest technological breakthroughs has been made clear.

The section "Mafex informs" highlights the attendance at the General Assembly of the European Railway Industry Association (UNIFE), held in the City of Barcelona, where we participate in various committees and working groups, such as the National Associations and Commercial Policy Groups.

In this edition, we would also like to welcome two new companies "Goratu Máquinas Herramienta S.A." and "SEGULA Tecnologías España S.A.U.", presented in the following pages. On the other hand, we bring forward details the "14th World Metro & Ligth Rail Congress", which is already underway. This event, organized by Terrapinn in collaboration with Mafex, will be held for the first time at BEC, in Bilbao from April 18th to 19th, 2018. This is an annual strategic contest for the main players in the sector around the world and it will benefit from the institutional support of a large number of transport organizations and administrations in its next edition.

The "Destination" section includes a large monograph on Australia, where the "National Railway Program" includes an ambitious economic package for the next ten years, which gives a great impetus to this transport means.

In addition, the "In Depth" section addresses the major railway freight lines in Africa, where historical investments are made for their development and modernization. This also includes 13 of the companies associated with Mafex and eight major technological innovations that have been recently developed.

Once again, we hope that all this content is of your interest and that it will serve to know better the latest innovations of this booming sector that drives continuous progress.

MANAGEMENT: MAFEX.
MAFEX STRATEGY AND COMMUNICATION COMMITTEE: Albatros, Alstom Transporte, ArcelorMittal, Bombardier España, CAF Signalling, Idom, Indra Sistemas, Ingeteam, La Farga Lacambra, Patentes Talgo, Siemens España, Thales España and Stadler Rail Valencia S.A.U. **ADMINISTRATION:** comunicacion@mafex.es. **ADVERTISING:** comunicacion@mafex.es. **SUBSCRIPTIONS:** comunicacion@mafex.es **.** Mafex magazine is not responsible for the opinions, images, texts and works of authors and readers that will be legally responsible for their content. It is understood that the signing authors have given their consent to be included, for which he or she will be responsible. Also, the magazine is not responsible for typographical errors contained in the original documents submitted by the authors.

Above, image of the 6th Railway Convention opening.

Positive balance of the 6th International Railway Convention held by Mafex

THE SIXTH INTERNATIONAL RAILWAY CONVENTION HELD BY MAFEX GATHERED DELEGATES FROM 30 COUNTRIES AND MORE THAN 125 SENIOR MANAGERS OF THE SPANISH INDUSTRY IN VALENCIA.

Valencia has played host to the "6th International Railway Convention" held by Mafex. A global event that has become a benchmark of the sector. Once again, the industry has welcomed this biennial initiative gathering delegates from 31 countries and more than 125 Senior Managers from Spanish companies and organizations.

The opening ceremony was attended by the State Secretary for Infrastructure, Transport and Housing, Julio Gómez-Pomar, the Minister of Housing, Public Works and Integration of the National Territory of Valencia's Regional Government, María José Salvador, the CEO of Icex, Francisco Javier Garzón and the President of Mafex, Víctor Ruiz.

During his speech, Gómez-Pomar recalled the importance of Spanish railway companies, which are essential for their "contribution to economic growth and outreach". For this reason, he stressed out that this sector is "a priority" for the Ministry of Development and that the investment amounts to 50% of its budget. He also emphasized that this is an industry with a "strong and reinforced model and one of the best ambassadors of our country".

On the other hand, María José Salvador highlighted the train's value on the international map in regions like Valencia. In this regard, she said that they want the Community to be a European "logistical leader" in railway transport for its strategic situation, from the parameters of environmental sustainability. Salvador recalled the importance of the development of new infrastructures, such as the Mediterranean Corridor as its maximum strategic reference.

The President of Mafex, Víctor Ruiz, thanked the institutions for their support in the sector and attendance at the convention. He also recalled the importance of establishing "state policies for clear, stable and sustainable railway investments that allow companies involved in the sector to be able to scale and establish strategies to accompany the national railway development."

Extensive Program of Presentations

As on previous occasions, the Convention represented an opportunity to take the pulse of the sector and open up new business opportunities abroad. All this, in a format of technological knowledge with an extensive program of conferences and meetings.

Among the Spanish companies that gave lectures during the Convention we can mention IDOM, Typsa, SENER, Ardanuy, Getinsa-Euroestudios, CAF, CAF Rail Services, Bom-

Valencia became the world railway capital during the Mafex Convention.

From left to right, the CEO of Icex, Francisco Javier Garzón; the President of Mafex, Víctor Ruiz; the Minister of Housing, Public Works and Integration of the National Territory of Valencia's Regional Government, María José Salvador and the State Secretary for Infrastructure, Transport and Housing, Julio Gómez-Pomar at the opening ceremony of the 6th International Railway Convention held by Mafex.

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Canada was one of the countries represented at the Mafex Convention.

Companies and institutions talked about railway advances and projects.

The presentations counted with delegates of the industry and the administration.

The bilateral meetings have gathered international companies and organizations.

bardier, Nem Solutions, Tecnatom, Thales España, Stadler Rail Valencia, Indra, Alstom, Arcelormittal, Jez Sistemas Ferroviarios, SICE, CEIT-IK4, La Farga Lacambra, Danobat and TRN Ingeniería. They have all given a good example of technological advances developed by the industry associated to Mafex, as well as its extensive international implementation as leader in R & D in railway projects of great scale and complexity. Special mention should also be made to the companies that have sponsored the event: CAF, Amurrio, Ingeteam, Stadler Rail Valencia and Zitron.

Conference Panels

On the one hand, the first day's panel focused on the planning of public transport systems, criteria for the design of high-speed networks, the global leadership of European industry, as well as aspects related to the railway maintenance organization and design. In addition to the companies' presentations, Senior Managers of main administrations and institutions from countries like Canada, the United States, Lithuania and Egypt have also participated in. The program of the second session began with the presentation of railway projects developed by Mafex's partners. Afterwards, the discussions were focused on current issues, such as the criteria for the design of stations and the exhibition of projects by international guests from the United Kingdom, Costa Rica, Panama and Argentina. Thirdly, the panels analyzed the new digital gauging control and maintenance solutions. At the same time, the last panel addressed highly topical aspects such as the special features of tramways and light rails,

The presentation of international projects focused the program.

The attendees, during lectures.

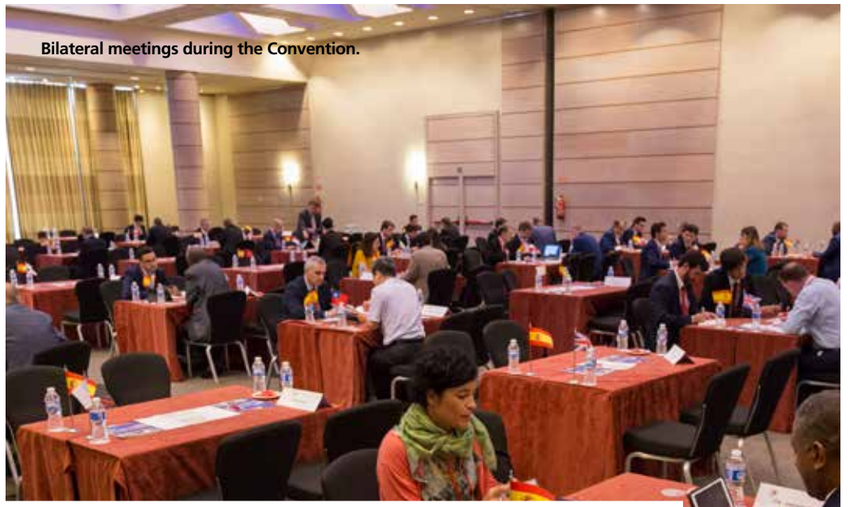
The Convention opens up the doors to the collaboration in the sector.

Senegal was one of the countries invited to the Mafex Convention.

The sixth edition of the Mafex Convention had an extensive institutional and business support.

Moment of one of the attendees' dinners.

the tools for the optimization and management of railway systems, new stocks, as well as tests and technologies associated with energy efficiency. The presentations were also related to cybersecurity, advances in ticketing and passenger information systems. Finally, the closing ceremony was held by the President of EURIF, Antonio Arribas and and the Manager of Mafex, Pedro Fortea. Both thanked the high level of participation of representatives from around the world, the institutional support and the good development of conferences and professional meetings. They also invited attendees to join the future conventions held by Mafex. At the same time, during the days of the event, individual meetings were held between the foreign guests and the representatives of the participating Spanish companies and organizations, with the aim of strengthening commercial links and exploring opportunities for cooperation. The work program also included a technical visit to the tramway and metro of Valencia and another visit to the Adif Control Center. In addition, after the three-day conference in Valencia, international participants had the opportunity to travel through different cities and to see first-hand more than 15 centers and facilities of the main railway companies in the sector.



Bilateral meetings during the Convention.

Moment of the technical visit to the metro and tramway of Valencia.

Extensive Institutional Support

The sixth edition of the event counted on the collaboration of numerous institutions and organizations, to which the organization thanked their support. Among them, ICEX España Exportación e Inversiones, Ferrocarriles de la Generalitat Valenciana (FGV), METROVALENCIA, TMB, Adif, RENFE and international railway associations, such as UNIFE, ALAMYS and EURIF.

INTERNATIONAL PARTICIPATING ORGANIZATIONS

COUNTRY	COMPANY	POSITION
ANGOLA	INCFA-Instituto Nacional dos Caminhos de Ferros de Angola	General Director
ARGENTINA	Secretaría de Planificación (Ministerio de Transporte)	Planning Director
AUSTRALIA	Yarra Trams	Reliability & Performance Engineer
AUSTRALIA	Downer Rail	Production Engineering Manager
BELGIUM	UNIFE	Publics Affairs Manager
CANADA	Infrastructure Ontario	Divisional President, Project Delivery
CANADA	Metrolinx	COO
CHILE	Tranvía de Las Condes	Project Director
COREA	Hyundai Rotem	Manager, Procurement Team
COREA	Hyundai Rotem	Purchaising Manager-Electrical Parts Propulsion System,Signalling System
COSTA RICA	INCOFER-Instituto Costarricense de Ferrocarriles	Executive President
COSTA RICA	INCOFER- Instituto Costarricense de Ferrocarriles	Operation Manager
COSTA RICA	INCOFER- Instituto Costarricense de Ferrocarriles	Manager
CROATIA	Duro Dakovic Special Vehicles	Sales and Project Manager
CROATIA	TZV Gredelj	Reseach and Development Deputy Director
CROACIA	TZV Gredelj	Reseach and Development Director
CZEC REPUBLIC	Správa železniční dopravní cesty (SŽDC)	Deputy director of Civil Engineering Administration
USA	CTA-Chicago Transit Authority	Interim Chief
USA	Nippon Sharyo USA	Deputy Director, Project Management
EGYPT	ENR- Egyptian National Railway	General Manager of Reseach and Development
SPAIN	EURIF	President
THE PHILIPPINES	Schema Konsult	President
THE PHILIPPINES	Schema Konsult	In House Legal Councel
THE PHILIPPINES	Schema Konsult	AVP business Development
THE PHILIPPINES	Ayala-AC Infrastructure Holdings, Corp.	Senior Businness General Manager
CANADA	Thales Transportation Solutions	Sourcing and Contracts Manager
FRANCE	SNCF-Société Nationale des Chemins de Fer Français	Mayor Projects Director
GREECE	Attiko Metro	Manager of Strategic Development
THE NETHERLANDS	Transdev NH	Procurement Director
INDONESIA	PT Jakarta Propertindo	Project Director
LATVIA	RB RAIL-Rail Baltica AS	COO, Board Member
MOROCCO	ONCF-Office National des Chemins de Fer	Director Global Sourcing Department
MEXICO	STC- Sistema de Transporte Colectivo	General Services and Supply Chain Director
THE NETHERLANDS	Transdev	Procurement Director
PANAMA	Panama Metro	Planning Director
PERU	Ministerio de Transportes y Comunicaciones	Railway Director
POLAND	PESA Bydgoszcz	Senior Electrical Engineer
UNITED KINGDOM	HS2	Phase 1 Engineering Director
UNITED KINGDOM	TFL/ Crossrail 2	Head of Scheme development
UNITED KINGDOM	Soutth West Trains	Head of Fleet Performance
SENEGAL	National Railway Network State Secretariat	Secretariat
SPAIN	Siemens	Engineering Head
SLOVAKIA	ZSSK-Železničná spoločnosť Slovensko	Engineering Head
SLOVAKIA	ZSSK-Železničná spoločnosť Slovensko	Member of Board Of Directors. Chief Commercial Officer (CCO)
RUMANIA	Softronic	Head of Quality Department
SOUTH AFRICA	Transnet	General Manager Rail Network - Executive Member's
SPAIN	Stadler Rail	Purchasing Manager
SPAIN	Stadler Rail	Purchasing Team Leader
TAIWAN	Taipei Rapid Transit Corporation	Deputy Director Project Manager

Goratu Máquinas Herramienta: New Mafex Partner

THE SPANISH RAILWAY ASSOCIATION HAS A NEW PARTNER: GORATU MÁQUINAS HERRAMIENTA S.A. MAFEX INCORPORATES ONE OF THE MOST OUTSTANDING COMPANIES IN THE DEVELOPMENT OF HORIZONTAL AND MULTIPROCESSAL LATHES.

Goratu Máquinas Herramienta S.A. has joined Mafex. The company, under the well-known brand Geminis, develops specialized lathes for machining axles, wheels and their assembly provided with the latest advances.
According to the Managing Director of Goratu, Ainhoa Rementeria, the union with Mafex is a strategic step that responds to the specialization and the firm commitment in the railway sector. Formed by a qualified team of experts and with 60 years of proven experience, the company offers customized solutions for highly specialized technologies. Its full range of railway products and work processes are backed by the highest quality management and continuous improvement (ISO 9001) and environmental (ISO 14001) certifications. It also includes the guidelines in terms of machine eco-design (ISO 14006): design, manufacture, distribution, use, maintenance and end of life cycle / recycling.

Goratu Máquinas Herramienta S.A. embarks upon a new stage with Mafex.

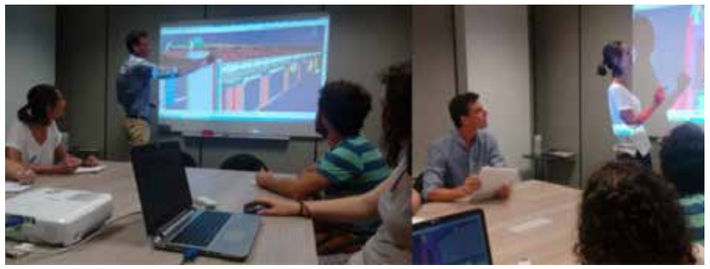
The company's products are endorsed by the highest certifications.

The commitment to innovation is one of the features that have marked its long history. In order to permanently search for options and alternatives, they have their own R & D & I department and allocate more than 7% of their turnover to research and development. In addition, they actively participate in four European, national and regional programs for the design and manufacture of more efficient and safer machines.
Goratu has a clear vocation to export. At present, 90% of the business is directed to the foreign market. It has its own subsidiaries in Italy, China, India and Russia, as well as a wide commercial network.

The SEGULA Tecnologías España S.A.U. Company joins the Association

SEGULA TECHNOLOGIES, INTERNATIONAL ENGINEERING CONSULTANCY GROUP SPECIALIZED IN THE MOST ADVANCED INNOVATION, JOINS THE SPANISH RAILWAY ASSOCIATION.

SEGULA Tecnologías España S.A.U., within the international engineering consultancy group called SEGULA Technologies, specializes in the most advanced innovation. The company has been present in Spain since 2002, offering engineering services. Formed by a large team of experts, with more than 1,000 professionals in Spain, it works for the main railway companies in terms of technical assistance, PLM consultancy and integral projects of high technological value.



Segula Tecnologías España S.A.U., international engineering consultancy group.

Areas of Expertise

As regards the rolling stock, companies like CAF, Talgo, Stadler and Alstom rely on the experience and the good work of their equipment. In this field, they have six areas of specialization for the global development of integral projects in their Center of Excellence located in Saragossa where they own more than 1000m2 of Technical Office: Structures, interior design, conceptual studies, electrical and mechanical installations, bogies and machinery.
In addition, they carry out other projects of various kinds, such as the design of exterior surfaces, technical documentation, maintenance manuals, part lists, corrective actions, calculation and simulation by FEM finished elements, control station studies, ergonomics, etc., complementing them with technical assistance works in areas as Logistics Engineers, Application, ERTMS / RAMS, Safety, TCMS, SW / HW Engineers and Design Engineers. Regarding its incorporation to Mafex, the Chief Executive Officer of the World Railway Division, José Ángel Martín, believes that this is an opportunity to join efforts and advance the company's strategy for the future years that will focus on the "internationalization of the "know-how" of the International Center of Excellence in rolling stock development, a benchmark in Spain". Therefore, Martin says that, "At present, we are negotiating with large rolling stock manufacturing companies that do not have factories in Spain, with the objective of making an enormous leap with respect to our competition".

The "14th World Metro & Ligth Rail Congress Rail" is set in motion in Bilbao

MAFEX IS THE CO-ORGANIZER, NEXT TO TERRAPINN, OF THIS EVENT, WHICH WILL BE HELD IN BILBAO AND WHICH HAS A WIDE INSTITUTIONAL SUPPORT.

The "14th World Metro & Ligth Rail Congress Rail" is already underway. This event is organized by Terrapinn in collaboration with the Spanish Railway Association (Mafex). On this occasion, Bilbao will be chosen as the next city hosting the event.

Great Institutional Support

On April 18th and 19th, 2018, BEC (Bilbao Exhibition Center) will host this strategic annual event. It will gather agents from the railway sector (operators, manufacturers, suppliers), managers and industry delegates to establish "alliances between the major players in the market".

Among the institutions that support the event are the Basque Government, SPRI group, ETS, Euskotren and Metro de Bilbao. Adif and Renfe will also participate in.

More than 34 countries

This edition will gather 500 participants from more than 34 countries and 150 speakers from around the world. This forum will address relevant issues, such as the management and maintenance of railway systems and the incorporation of technological advances. In addition to an important institutional participation in the opening and different presentations, an expository part will also be organized presenting the solutions and the latest developments of the leading companies in the railway field. Among them, some Mafex partners such as Danobat, ArcelorMittal, CAF, Siemens, Ingeteam, Wabtec, Arteche, Implaser, Ikusi, Jez Sistemas Ferroviarios, Typsa, Stadler, Talgo, NEM Solutions, Idom and Luznor are already registered. The program, which will be presented shortly, will address current issues in the railway sector, from the perspective of urban public transport: new technologies and solutions, intermodality and network integration, safety, environment and sustainability, project financing, maintenance, etc.

The participation expectations are very high, as several personalities in the sector point out. In this sense, the Managing Director of Mafex, Pedro Fortea, has highlighted the "commitment" of the Spanish railway industry with internationalization as a way for "competitive improvement" and has pointed out that this Congress places it "in a sectoral showcase of great importance". Terrapinn's Managing Director, Sean Willis, sees the overall response to the celebration of this international event "extremely positive".

This edition will gather 500 participants from more than 34 countries.

Mafex attends UNIFE's Assembly in Barcelona

THE GENERAL ASSEMBLY OF THE ASSOCIATION OF THE EUROPEAN RAILWAY INDUSTRY (UNIFE) WAS HELD IN BARCELONA FROM JUNE 21ST TO 23RD. MAFEX, AS UNIFE'S PARTNER, WAS PRESENT TO SUPPORT THE WORK AND THE ACTIVITIES OF THIS ENTITY.

Mafex attended the General Assembly of Unife, which on this occasion, was held in Barcelona from June 21st to 23rd. During the Assembly, Jochen Eickholt (Siemens Mobility Division) was appointed as the new President of the Association, replacing Laurent Troger (Bombardier). The incorporation of CAF, represented by its President Andrés Arizkorreta, to the Presiding Board of the Association, the highest governing body of UNIFE is also emphasized.

As on previous occasions, on the first day, different committees and working groups based on which the Association carries out its activity were organized. Therefore, Mafex representatives took part of the "National Associations" and "Commercial Policy" Groups. Then, the Assembly itself was held, where different actions and milestones that have marked the last year were presented. The second day was reserved for the organization of forums and round tables. They addressed opportunities and challenges facing the European sector. The important participation of the representatives of the European Commission and the European Parliament is noteworthy. The presence of the Spanish MEP, Inés Ayala Sender and Begoña Cristeto, Secretary General of Industry and SMEs, Ministry of Economy, Industry and Competitiveness was also observed on this occasion. Members of the European Railway Agency, FGV (Ferrocarrils de la Generalitat Valenciana), TMB (Transports Metropolitans de Barcelona) and Renfe have also participated in.

NEM Solutions: Most innovative technological company Europe 2017

NEM SOLUTIONS

NEM Solutions makes a difference in the digital sector. Global Brands Magazine has awarded NEM the most innovative company in Europe 2017.

They choose the most innovative track records every year, being the technological category one of the most competitive ones.

Innovation, quality, unique, and memorable projects, proven reliability with the consulted clients and a strong bet on the company values are the aspects the jury has remarked. Since its foundation in 2007, the company has been loyal to its principles: UNEASINESS, DIVERSITY AND BRAVERY. The coherence over the time and its capacity to develop has lead NEM Solutions to retain a strongly established innovative culture ten years later.

Stadler Rail Valencia renews its environmental certifications

STADLER RAIL VALENCIA

Stadler Rail Valencia is aware that its industrial activities must abide by environmental legislation and that the company's commitment to environmental policies should be demonstrable both internally and externally. More than 10 years ago the company, dedicated to the design and manufacturing of locomotives, passenger rail vehicles and bogies, established an environmental program in order to prevent contamination and to improve the environmental performance in all its processes. Today, Stadler renews that commitment.

Our environmental management system is certified since 2006 according to ISO 14001:2004, and according to 1221/2009 EMAS (Environmentan Managenet & Audit Scheme) since 2015. Both certifications have been renewed in June 2017.

Following this commitment, we are calculating the carbon footprint annually in order to measure our impact and reduce greenhouse gas emissions for the next few years.In Stadler we are committed to improve the environmental performance of our activities and products continuously, applying a whole lifecycle view to our processes and designs.

Cetest, reference test centre for wagon and special machinerie homologation

CETEST

CETEST is involved in the performance of homologation tests for some of most relevant wagon and special machinery manufacturers.

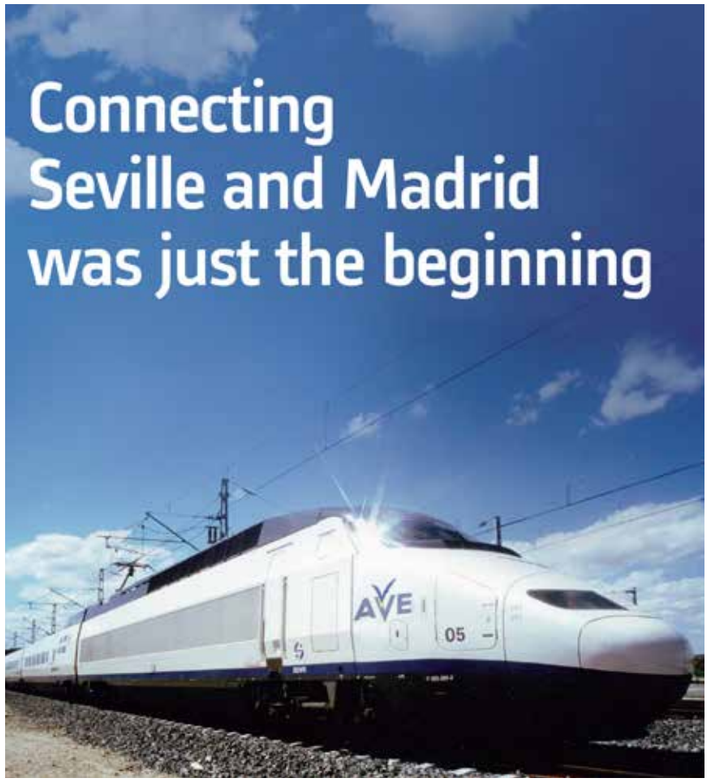
Currently, CETEST is carrying out the complete test campaign for a Swedish manufacturer KIRUNA's new wagon, developed in an European R&D project with FGC, between others.

This campaign includes carbody structural test, safety against derailment, bogie strain gauge tests, noise and brake performance.

Likewise, CETEST has recently completed the dynamic tests for one AREVA wagon, for Indo-French manufacturer TITAGARH WAGONS AFR. These tests were performed according to complete method of standard EN 14363, using 5 instrumented wheelsets, a CETEST's proprietary technology. The special machinery manufacturer MATI-SA also relies on CETEST, who has been awarded, after several previous collaborations, to accomplish the dynamic test campaign for validation in Finland of a maintenance machine, owned by manufacturer SPENO.

Alstom celebrates the 25th anniversary of the first High Speed Train in Spain

ALSTOM SPAIN



In 1992, Alstom was a pioneer in introducing very high speed in Spain. Since then, Alstom has added to this great milestone a long list of innovations, which contribute to designing tomorrow's seamless railway transportation.

Alstom celebrates this year the 25th anniversary of the arrival of the first High Speed train in Spain, a great milestone where the company had a relevant role. Back in 1992, the first train to run at 300 km/h on the Spanish network was a model designed, manufactured and maintained by Alstom.

This first unit was followed by 23 more trains, all of them manufactured in Spain.

Today, 25 years later, these trains continue to operate the Spanish high-speed lines, being a reference for their safety, comfort and punctuality. The series 100 made by Alstom España has also marked, in the last decades, some of the main key milestones of the Spanish high speed. Actually, they are the only high-speed train homologated to run not only on the Spanish high-speed network but also on the French high-speed and conventional highways. Since December 2016, they also offer Wi-Fi on board, becoming the first Renfe units to provide this service.

Denmark trusts Ineco to put the ERTMS into service

INECO

The Danish state-owned company Banedanmark (BDK) has entrusted Ineco with executing the operating scenarios as part of an ambitious renovation programme for the country's railway signalling.

The project, in collaboration with CEDEX, includes drawing up the specifications of the operational trials for the coming into service of the ERTMS (European Rail Traffic Management System). It also includes fine-tuning the details of the work for the two pilot lines executed by the multinationals Alstom and Thales for Banedanmark.

Ineco's extensive experience and leading position in research, development and implementation of the ERTMS was key in Denmark's decision to entrust this project to the company.

In 2015, the European Commission entrusted Ineco with coordinating and overseeing the roll-out of this system until 2020 in the nine European corridors, thus ensuring their interoperability, consistency and compatibility with the rest of the network.

COMSA has been selected to build the Odense tram network (Denmark

COMSA

COMSA has gained access to Denmark with the construction of the tram network for the city of Odense, located to the west of the capital, Copenhagen. Thus, in line with the 2017-2020 Strategic Plan, the company continues to export its century-long railway experience to markets with expanding infrastructure while at the same time extending its network of offices in northern Europe, where it is already active in Sweden, Lithuania, Latvia and Poland.

In Odense COMSA will manage the construction and rollout of more than 14 kilometres of double track tramway between the Tarup Centre and Hjallese districts, in conjunction with the implementation of the 26 stations that make up the line. The contract is valued at 158 million Euros and also includes the installation of the catenary, signalling work, telecommunications, and a control and maintenance centre, as well as testing prior to the launch of service.

The award of this contract is thanks to the company's extensive experience in the development of light rail transport systems in both national and international markets. Some of the most prestigious projects in its portfolio include the construction of Line 1 of Bursa and Line 3 of Gaziantep, both in Turkey, Lines A, B, and C in Dublin (Ireland), the west Madrid light railway, and the tram networks of Barcelona, Murcia and Malaga, as well as track upgrades in the cities of Porto (Portugal), Turin (Italy), and Adelaide and Melbourne (Australia).

Inka Guixà, appointed Managing Director of La Farga

LA FARGA LACAMBRA

Inka Guixà Fisas was appointed as new Managing Director of La Farga. As of this appointment, Inka Guixà becomes the organisation's top executive, while Oriol Guixà continues in his post as Chairman and CEO at the head of the property interests and of the different stakeholders. This duality reaffirms La Farga's strategic positioning and its mission, vision and values. With the appointment of this new position, the company is consolidating a dual leadership, thereby strengthening one of its mainstays as a family business. As the family protocol dictates, we are diversifying

the leadership of the company in the full conviction that we are strengthening La Farga's managerial base, executive capacity and business efficiency as well as preserving the company-family binomial in order to make it sustainable in the long term".

Indra deploys an advanced communications network that improves control and secutity in the trains of Buenos Aires

INDRA

Indra has installed and launched an advanced communications network to provide service for the largest integrated rail network in Argentina, which connects the city of Buenos Aires with urban and suburban towns in its metropolitan area.

The digital communications system, based on the Tetra standard, is a secure and robust system that guarantees the availability of communications by facilitating the transfer of voice and data with neither losses nor delays, both for usual rail operations as well as during emergency situations, in which commercial systems may fail or become saturated. This way, the new communications system improves the control and coordination of transportation and is key to guaranteeing passengers the best service and greatest security.

The system also facilitates the permanent localization of vehicles and operators through georeferencing signals of the communication terminals with which they are fitted. This way, this technology allows for counting with an exact overview of available resources at any given time and place, and facilitates decision-making and suitable responses in the face of any incidents. Furthermore, thanks to a communication recording system, the Indra solution contributes to investigating what actually happened in the event of an accident, for example.

Bombardier appoints Óscar Vázquez Chairman of the Board in Spain and Country Managing Director

BOMBARDIER TRANSPORTATION

Bombardier Transportation has appointed Óscar Vázquez Chairman of the Board in Spain and Country Managing Director. The designation follows the resign of Bombardier's president In Spain and Northern Africa, Álvaro Rengifo, who stated his desire of leaving, due to personal motives, the head of the company and his executive responsibilities. However, Rengifo will remain in the company as a deputy to the Presidency in Spain.

For the new representative of the company: "It is a pride for me to take on this important challenge, which I am facing with maximum energy and enthusiasm. I am sure that the procedure carried out by the company in Spain together with my international experience will enable us to face the future of the rail sector with innovative and sustainable solutions, both in Spain and in other markets".

Óscar Vázquez, the new highest representative of Bombardier in Spain, will keep his current responsibilities as a managing director of the Rolling Stock Equipment in Bombardier in Europe, Middle East and Africa.

Siemens electrifies the train of Mallorca that links Enllaç and Manacor

SIEMENS SPAIN

The project for the electrification of the Mallorca train at the stations between Enllaç and Manacor has been awarded to the JV formed by Siemens, Sampol and Man. This project will reduce the time of travel by eight minutes and will eliminate the transfer of Enllaç in the Palma-Manacor route, which will mean a greater comfort and quality of the trip for the users of the Railway Service of Mallorca (SFM).

The planned execution time of the works is 12 months, in which is being carried out the installation of 34 kilometers of flexible catenary in single track line of aerial contact line (1.5kV DC), as well as the construction of four substations of traction of 1,5kV DC and five transformation centers. In addition, the installation of remote units of remote control of energy and communications, and a medium voltage ring of 15kV will be executed.

The installation of this technology allows annual energy savings of 25% and a 30% reduction in the maintenance costs of trains compared to diesel engines. In addition, railway electrification, compared to a diesel-powered unit, significantly reduces noise pollution, eliminates waste production and emits 59% less carbon dioxide emissions into the atmosphere, up to 632 tonnes less per year.

The process of electrification of the Mallorca train network began in 2011, when the electrification project for the Palma-Enllaç section was started. Now, when electrifying the section between Enllaç and Manacor, progress is made towards the final electrification of the Mallorcan railway.

Turkish State Railways to modernize a 36 kilometre section through Ankara with Thales

THALES SPAIN

Thales has secured the new contract from the Gülermak-Kolin joint venture for Turkish State Railways (TCDD). This new project comes in addition to the modernisation of the high-speed line between Ankara and Istanbul, which was also performed by Thales, and includes the most advanced systems, namely a Centralised Traffic Control System, electronic interlocking systems, ETCS[1] Level 1 and 2 automatic train protection systems, trackside signalling equipment for two-way traffic, and interfaces between high-speed lines, conventional lines and level crossings.

This assignment will help improve passenger mobility and safety in Ankara by modernising the commuter train system, renovating the signalling systems in the capital and extending Turkey's high-speed rail network.

Thales has installed its signalling and telecommunications systems along more than 400 kilometres of the Ankara-Istanbul line and was the first supplier of ETCS systems to Turkey.

Since 2009, Thales has been one of the leading players in the development of high-speed rail transport in Turkey. With this new contract, Thales strengthens its presence in Turkey and its commitment to the national rail market. The Thales subsidiary in Turkey was set up in 2009 and employs more than 80 local signalling experts charged with implementing all the company's programmes in the country.

Getinsa-Euroestudios in Tbilisi metro project

TPF GETINSA-EUROESTUDIOS

Since 2012, Getinsa-Euroestudios has been providing services for the contract "Engineering, Procurement, Construction Management and Supervision of the Extension of Tbilisi Metro Line 2 and Creation of the University Station" in Georgia.

This project is funded by the ADB. At this moment, the construction stage is finishing, and soon we will be ready to start the testing and commissioning phase. The project involves an extension of 2.6 km of the metro line, from Delisi to University Station.

Nowadays, most of the work has been completed, including civil, architectural and external works, track superstructure, electrification, equipment and systems.

IDOM finalizes PPP Metro Riel Project in Guatemala

IDOM

As a leading company in the design of tram and light metro systems, IDOM has implemented tramway projects in more than 50 cities in 17 countries, all in all, over 760 km. For Guatemala, IDOM has designed and developed successfully a feasibility study of the system for the public entities ANADIE, PRONACOM, FEGUA and the Municipality of Guatemala. Based on this study, an international tender will be launched for the design, construction and operation of the system, under a public-private partnership agreement.

In order to take full advantage of the possibilities offered by this rail corridor, IDOM has proposed a LRT (light rail transit) technical solution. Running along 21 km and stopping at 20 stations, it is expected that over 250,000 passengers will use the service on a daily basis. Known as Metro Riel, the corridor will connect the different points, on the north and south of the city, where passengers can interchange between the different modes of transport available. The line adapts to the urban environment through which it runs, either on a segregated track with overpasses, or along a dedicated tram lane which is shared with other modes of transport (using traffic lights to give right-of-way at the intersections). This is an ambitious project with an estimated budget of USD 770 million, covering not just Metro Riel but also 10 km of new streets and roads in the city. Apart from reducing travel time, one of the main objectives is to improve the quality of the public transport system in general.

To achieve the objectives, IDOM has designed a rail system using low-floor rolling stock, with capacity for up to 440 passengers and the possibility of operating with multiple units. At peak times, the service will be every three minutes, and will have a maximum speed of 27 km/h in commercial operation.

Elizabeth Briceño, President of INCOFER (Costa Rica)

"Current priorities include the rolling stock and the Fast Train (TRP)"

Mafex: Which are the most relevant projects of INCOFER?
Elizabeth Briceño: The Government has two institutional priorities in the railway field. First, the purchase of metric gauge trains for the current track for the purpose of modernizing the fleet of eight to ten compositions. This project, called "Phase O", is financed by a multilateral bank. The "Institutional Strengthening Law of INCOFER" was approved in 2016. The reform of our law allows us a special procurement regime through which, eventually, we could directly procure highly specialized railway services.

Mafex: Are there any additional plans?
E.B.: In the medium term, the national project priorities include the modernization of the system through an initiative called "TRP". This is a fast double track passenger train, provided with a viaduct, and which would allow improving the current frequencies and the passenger flow. The TRP, with a budget amounting to 1700 million dollars (€1,478 million) will be the backbone of Costa Rica's public transport in the "Greater Metropolitan Area", which concentrates 54% of the population.

Mafex: How do you see the Spanish railway business structure?
E.B.: As a solution, because it is a power. Given the scale of these projects, there are two key aspects related to Spain: the close relationship with the Government and the language that unites us and breaks down barriers.

Mafex: What do you think about meetings like the Mafex Convention?
E.B: It was excellent. The Convention has given us the opportunity to get to know the industry even more and to see the possibility of carrying out these projects as soon as possible. We have approached the main manufacturers of trains of Europe. And also with the experts specialized in equipment required for operation: track switches, rails, services, etc.

Germán Bussi, Planning Director of the Ministry of Transport of Argentina

"We have strategic railway projects put into motion"

Mafex: Argentina's Ministry of Transport is newly established. What are the objectives in the railway field?
Germán Bussi: We work to socialize and implement strategic transport programs, in general, and railway programs, in particular. Highlights include the modernization, enhancement and interconnection of the metropolitan railway system in Buenos Aires known as the "RER Project". In total, it has a budget amounting to 14,000 million dollars (€ 12,000 M).

Mafex: How has this large investment been planned?
G.B.: Of this amount, 2,500 million US dollars (€ 2,400 M) is allocated for tunnels, stations for the interconnection of railway systems. Another 1,500 (€ 1,200 M) will be allocated for the tunneling of the Sarmiento Line. There is an item of about 500 million dollars (€ 429 M) for railway viaducts and another 500 million (€ 429 M) for different isolated level crossings, a work that was already being carried out.

Mafex: What other actions does this great project entail?
G.B.: This project also involves the electrification of some lines, such as the San Martín, Belgrano Sur and Belgrano Norte railways, as well as the re-electrification of the Mitre railway, with a third lane. All this, with a standard of electrification with catenary of 25 Kv. It will also join the Northern and Southern broad gauge network. All this, with an interoperable system of the six existing lines. The idea is to strengthen the railway's role as the backbone of the longest movements in the region, with 15 million inhabitants. Also under the vision of a sustainable transport model. To this end, BID provides its support with the maximum guarantees of transparency in all bidding processes.

Donald R. Bonds, Interim Chief Transit the Chicago Transit Authority (CTA)

"Large investments in improvements open up procurement opportunities"

Mafex: Chicago Transit Authority works on major network improvements. What plans are there in the medium and long term?
Donald R. Bonds: Since 2011, a significant progress has been made on Chicago's Red Line. At present, the Wilson station and tracks are being reconstructed, a project amounting to 203 million dollars (€172 M), and the "95th Street Terminal Improvement", which has a budget of 280 million, is being improved and extended. There are also numerous plans for the Chicago Metro. The planned improvements include the rehabilitation of 40 rail stations and the construction of four new rail stations. 70 plus miles (60 kilometers) of track will be also renovated and new 7000 series trains will be purchased, the technology will be modernized and the 4G wireless system will be implemented in subways.

Mafex: Is there any progress regarding the RPM project? What does it consist of?
D.B.: This is the modernization of the red and purple network (Red Purple Modern Project). Phase I, with a budget of 2,100 million US dollars (€ 1,777 M), includes works, such as the bypass near Belmont, improvements in the signaling system from Belmont to Howard, as well as the modernization of Lawrence-Bryn Mawr line. Chicago Transit has received $1 billion US dollars from the federal government to fully fund this project. The procurment phase of this project has begun. This and other initiatives open up new procurement opportunities for Chicago's future infrastructure improvement projects. On the blue line, the Belmont Gateway and Jefferson station will be renovated for 42 million US dollars (€ 35.3 M) and the signaling project for O'Hare Blue Line amounting to 197 million (€ 166 M).

Gregory Percy, COO of Metrolinx. Christopher Gauer, Divisional President of Infrastructure Ontario (IO)

"Railway has a great future in Ontario"

Mafex: The use of public transport in Ontario continues to increase. How will they respond to this growing demand?
Gregory Percy: The Metrolinx transport agency registered 70 million passengers in 2016 and travels are expected to grow by 4%. There are new emerging challenges, as user expectations continue to grow. For this reason, an investment of 30,000 million Canadian dollars (€ 28,000 M) has been approved. This budget includes the extension of services (Go Transit Service); 74 new kilometers of light rail and the unification of the card system, among others. 13,500 million Canadian dollars (10,300 M €) will be invested in the regional railway network RER (Go Regional Express Rail) in the next 10 years. Therefore, the "Union Pearson Express" project will link Toronto's "Union Station" to the international airport.

Mafex: What about the future of light rail?
G.P.: There are two key actions in the capital. On one hand, there is the "Eglinton Crosstown", which by 2021 will have 19 new kilometers, a section of 10 additional underground kilometers and 25 stations. On the other hand, there is the "Finch West", an 11-kilometer network between Finch Avenue and the Finch West Subway Station. It is expected to be completed by 2021. Works are also being carried out regarding the modern PRESTO card system, which will unify the access to different transport means.

Mafex: What role does the government agency "Infrastructure Ontario" (IO) play in the extension of railway networks?
Christopher Gauer: Since 2005, IO has brought 100 projects to market using Alternative Financing and Procurement (AFP) valued at more than 40,000 million Canadian dollars (€ 38,000 M).
IO is working with Metrolinx as procurement lead for a number of their Regional Express Rail and Light Rail Transit projects. Our work will help the government deliver on its promise of faster, more frequent and modern services in the Greater Toronto-Hamilton area."

AUSTRALIA

Australia focuses its investment on a more competitive railway

IN RECENT YEARS, AWARE OF THE INCREASING INFRASTRUCTURE NEEDS, THE AUSTRALIAN GOVERNMENT HAS ENCOURAGED THE RAILWAY INVESTMENTS IN BOTH FREIGHT AND PASSENGER TRAFFIC.

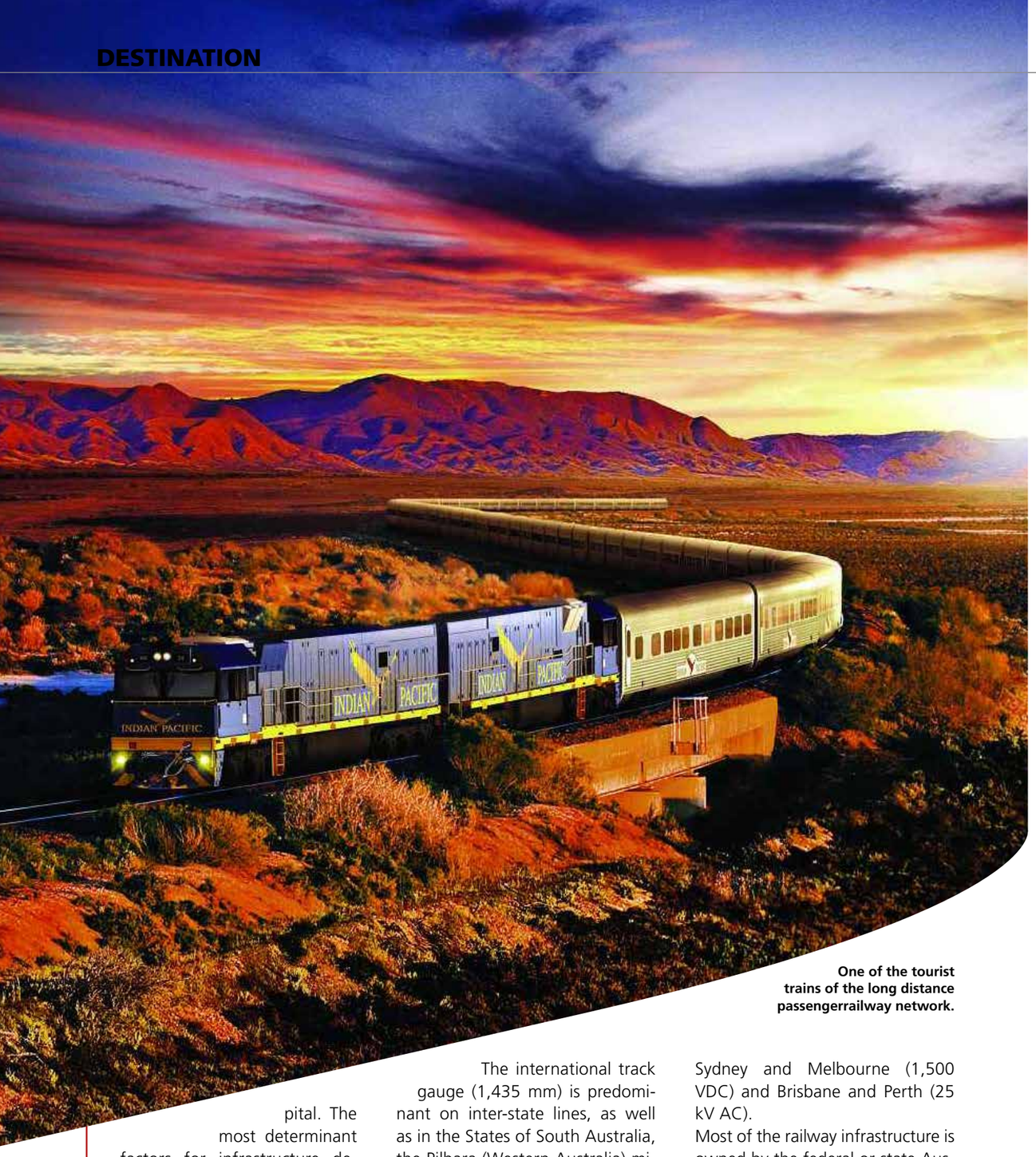
With a surface area of 7.69 million square kilometers, Australia is both the largest island in the world and the smallest continent, with a territory of 3,700 kilometers from North to South and 4,000 km from East to West. It also governs eight other islands and the Australian Antarctic Territory. These peculiarities are also reflected in its connections and investments in mobility and communication networks. Currently, Australia has a population of almost 24 million inhabitants, although this number is expected to double by 2050. More than 80% of its inhabitants live in the Eastern and Western coastal areas, within a perimeter of 100 kilometers, a feature that has encouraged the urban transport.

The country is divided into six states and two territories: New South Wales (NSW), Queensland (QLD), South Australia (SA), Tasmania (TAS), Victoria (VIC) and Western Australia (WA). Canberra, meaning the "Meeting Place", is the national capital and the center of government.

Structure of the Railway Sector

In this extended area characterized by a very concentrated population, the road transport has become an ideal means for freight delivery and urban mobility. That is why Australia's railway network became the seventh largest in the world with more than 33,000 kilometers. Its structure responds to the peculiarities of this expansive country with a population highly concentrated in the cities located in the Eastern and Southeastern Coasts: Sydney, Melbourne, Brisbane, Perth, Adelaide and Canberra, the ca-

One of the objectives of the railway investments is to encourage the freight and passenger links.



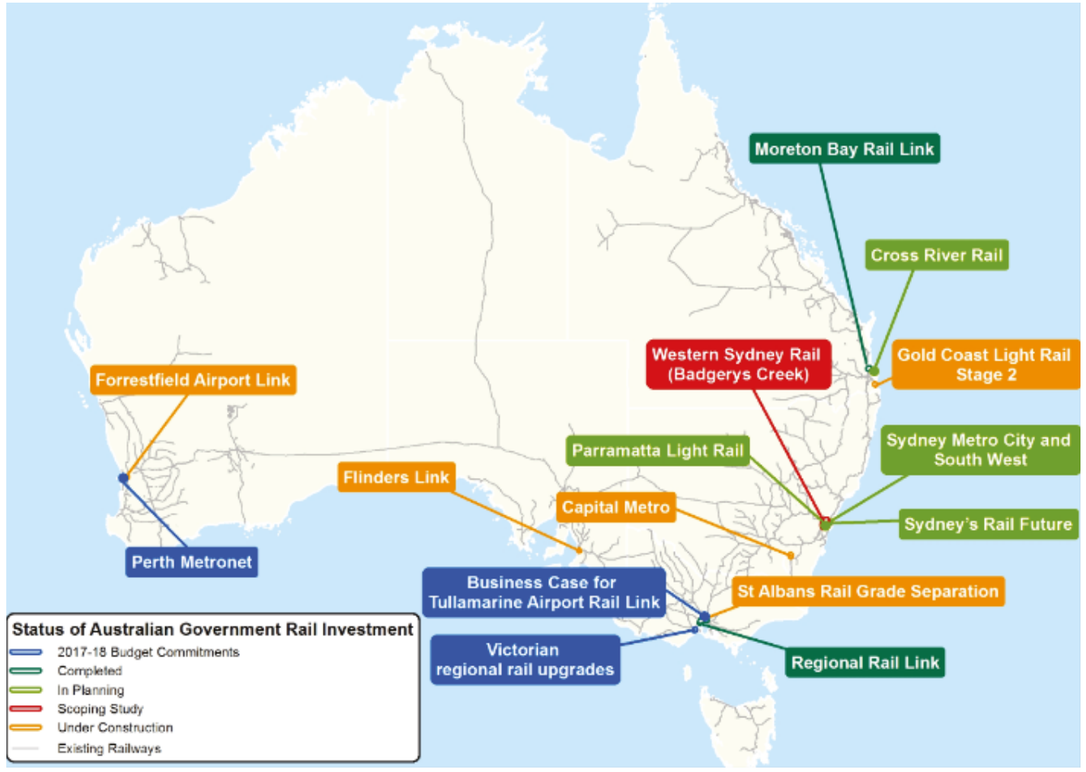
One of the tourist trains of the long distance passengerrailway network.

AUSTRALIA

pital. The most determinant factors for infrastructure development are the long distances between cities and production centers (extractive and agricultural sectors). The network has different sizes. In most cases, in the State of Queensland, Tasmania and in the metropolitan area of Perth, narrow track gauges (1,067 mm) are used for the transport of sugar cane.

The international track gauge (1,435 mm) is predominant on inter-state lines, as well as in the States of South Australia, the Pilbara (Western Australia) mining area, New South Wales and the Northern Territory. The broad track gauge (1,600 mm) has been implemented in the State of Victoria; although it is the less extended in the country. The electrified sections representing 10% of the network (3,222 kilometers) are observed in the metropolitan areas: Sydney and Melbourne (1,500 VDC) and Brisbane and Perth (25 kV AC).

Most of the railway infrastructure is owned by the federal or state Australian Government, which is also responsible for its maintenance and new developments; even if the operation and service management are carried out by private companies. Among the main players in the sector are operators such as Sydney Trains, NSW Trains, Metro Trains Melbourne, Yarra Trams and



Above, Status of Australian Government Rail Investment.

Transdev. For the freight transport, Aurizon (formerly, QR National), Genesee & Wyoming Australia and Pacific National are some of the major freight operators in the network, while

Great Southern Railway, NSW TrainLink and Queensland Rail are the main long distance railway passenger operators. Metro Trains Melbourne, Sydney Trains, V/Line and Adelaide Metro provide railway passenger services in major suburban areas. In addition, an important number of private mining railways also operate in the country.

Increased Investments

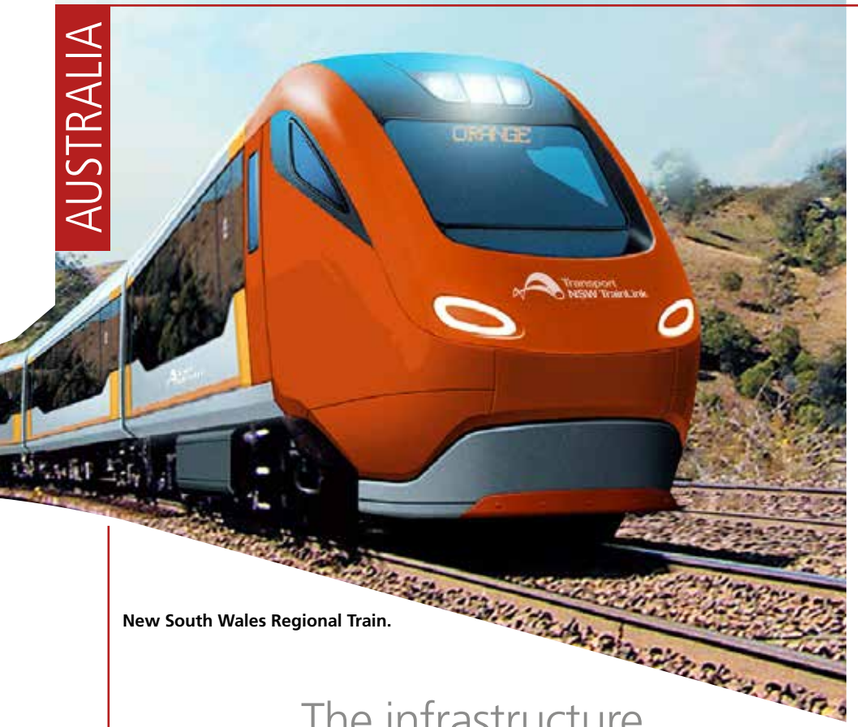
In recent years, aware of the increasing infrastructure needs, the Australian Government has encouraged the railway investments for both freight and passenger traffic. Its objectives consist of improving national productivity, supporting

AUSTRALIA 2017-2018: MAIN INVESTMENTS IN RAILWAY

INVESTMENT	AMOUNT (M€)
National Railway Program:	10,000
- Urban networks	
- Regional links	
Western Australia (Perth Metronet)	1,570
- Extension of the Thornlie – Yanchep Line	
- Level crossing removal (Denny Avenue-Davis Road)	
- Relocation of Herne Hill Depot	
Line improvements in Victoria:	500
- Gippsland	
- Geelong	
- Northeast and Shepparton	
Tullamarine Rail Link (Melbourne) (Victoria)	30
Murray Basin Freight Project	20,2
Speed increase (Faster Rail)	20
Cities and surroundings	
High Speed Analysis (Melbourne-Brisbane via Sydney and Canberra)	
Inland Rail: Melbourne-Brisbane	8,400

Australia will experience a major change in the railway field in the coming years.

AUSTRALIA



New South Wales Regional Train.

The infrastructure modernization is very present in the federal budgets.

freight transport, decongesting growing cities and improving links to adjacent areas.

In the budgets for 2017-18, 20,000 Australian dollars (€ 13,543 M) are allocated for infrastructure modernization works in all areas. Among these, there are seven key sections. First of all, the "National Railway Program", for which an investment of 10,000 million Australian dollars (€ 6,832 M) has been approved for the next ten years.

New and Better Links

This initiative is aimed at improving urban and regional railway networks in the main cities. In addition, there is a special package for the State of Western Australia. Moreover, in Victoria, the railway link to the Melbourne Airport, the improvement of the "Murray Basin" freight corridor and the "Inland Rail" project, which links Melbourne to Brisbane, deserve a special attention. Finally, there is an impetus given to faster links, especially to the regional ones.

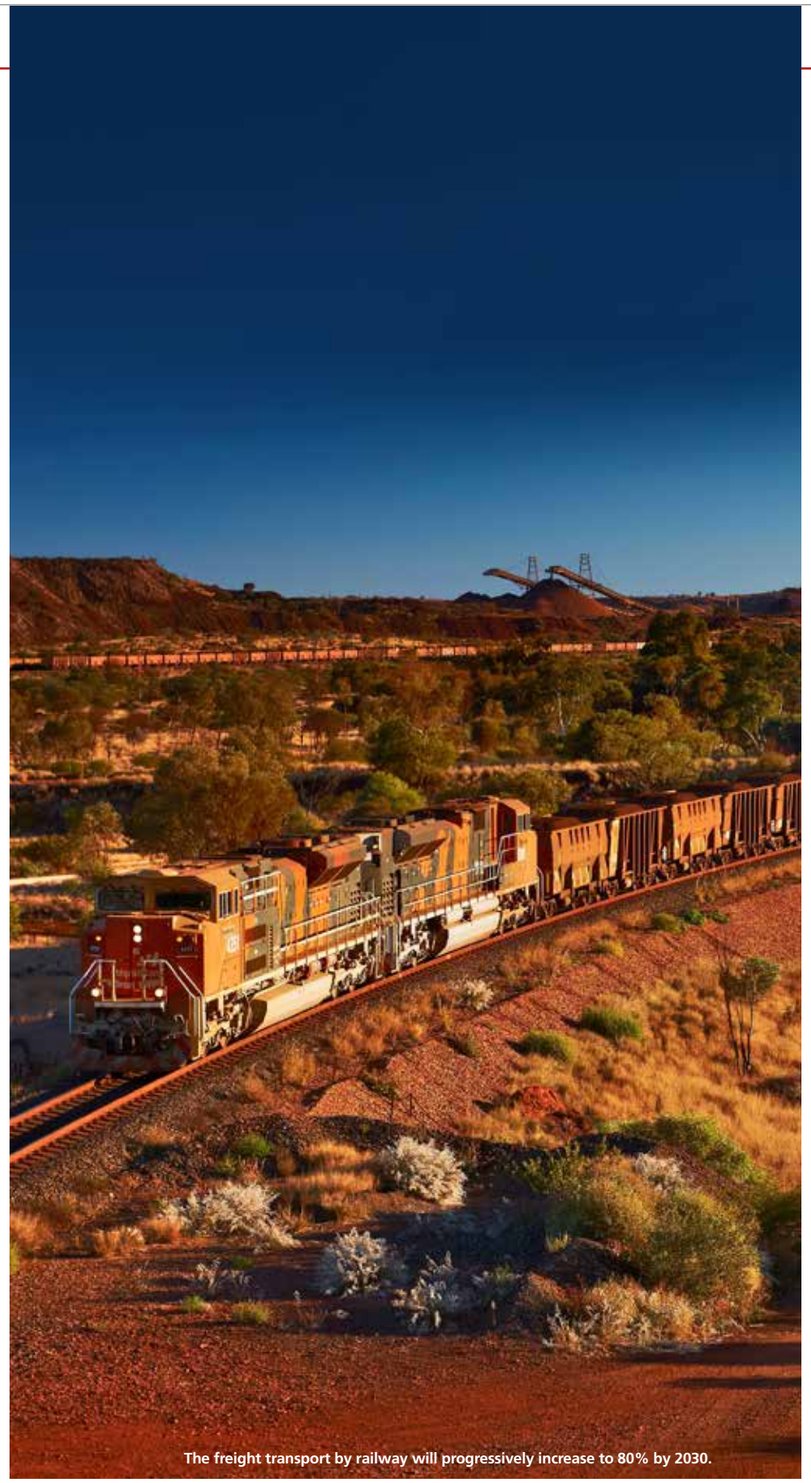
AUSTRALIA

Freight: A powerful network with great vision of the future

69% OF AUSTRALIA'S FREIGHT IS TRANSPORTED BY RAIL. IT IS A VERY COMPETITIVE SECTOR, WITH HIGH EXPERIENCE ON LONG DISTANCES.

69% of Australia's freight is transported by rail. This sector stands out for being very competitive, with a high experience in long distances. The infrastructure and rolling stock are adapted to the needs of the extractive industry, with heavier axle loads, longer trains and very solid solutions. The transit of raw materials in bulk represents 81% of the invoicing. Of this figure, the iron (53%) and the coal (33%) are the two minerals that are in the center of most operations.

Despite its reinforcement, this type of traffic is expected to progressively increase to 80% by 2030. For this reason, the country's federal government has included specific items in its investments to improve productivity and support this growing demand. A clear example is the increased use of intermodal "inland ports", as well as the railway's weight as structural axis of the domestic market and raw material exports.



The freight transport by railway will progressively increase to 80% by 2030.

Australia wants to be prepared for an increased trade and transport of raw materials.

MURRAY BASIN (VICTORIA) FREIGHT RAILWAY

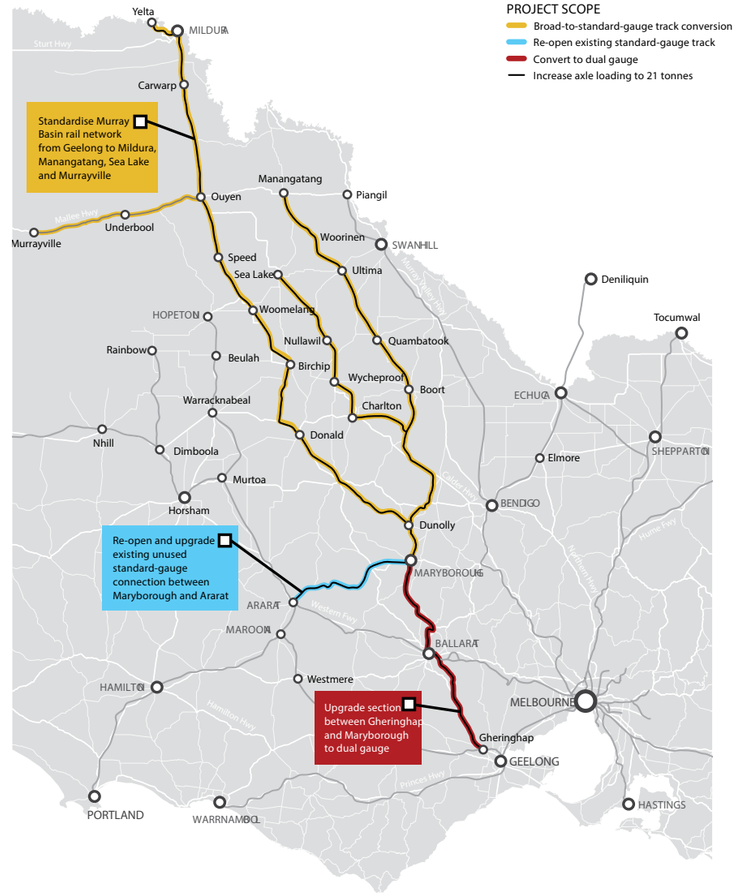
One of the projects with the greatest impetus in the federal budgets for 2017-2018 is the modernization of the "Murray Basin" railway. The biennial item amounts to 20.2 million Australian dollars (€ 13.3 M), supporting the project's total investment, which amounts to 440 million (€ 291.8 M).

The planned improvements will have a positive impact on the infrastructure map, provided that more than 20,000 road trips to the Geelong, Melbourne and Portland Ports will be avoided per year due to its increased capacity. Thus, the regional freight industry will be revitalized by increasing export volumes until reaching an additional capacity of 50,000 tons per year.

Project

The project involves standardizing 1,300 kilometers of network in the region of the Murray Basin, in the Northwest of Victoria. The planned works include the increase of the axle load throughout these lines, which will increase from 19 to 21 tons. Likewise, the Ararat-Maryborough line will be renewed, which will link the Port of Portland to this basin.

This link will allow minerals to be transported to Hamilton by removing a long road link. In 2017, the second phase focused on changing the track gauge on the Yelta-Maryborough and Ouyen-Murrayville branches will be carried out. The third stage will be focused on converting the Sea Lake-Manangatang branches by 2018.



Above, the illustrative map of works included in the Murray Basin railway project.

BYPASS AND INTERMODAL TERMINAL OF KALGOORLIE-BOULDER (W. AUSTRALIA)

The State authorities have approved the "Western Australian Regional Freight Transport Network Plan" program, whose objective is to meet the growing volume of freight transport by 2031.

The volume of operations is expected to grow to 126% by that date and to increase from 50 million tons to 130 million tons per year. One of the proposals to meet this increased traffic is to improve the Kalgoorlie-Boulder intermodal terminal.

The freight railway links will be essential for the trade in Australia.

AUSTRALIA

"MELBOURNE-BRISBANE INLAND" RAILWAY NETWORK

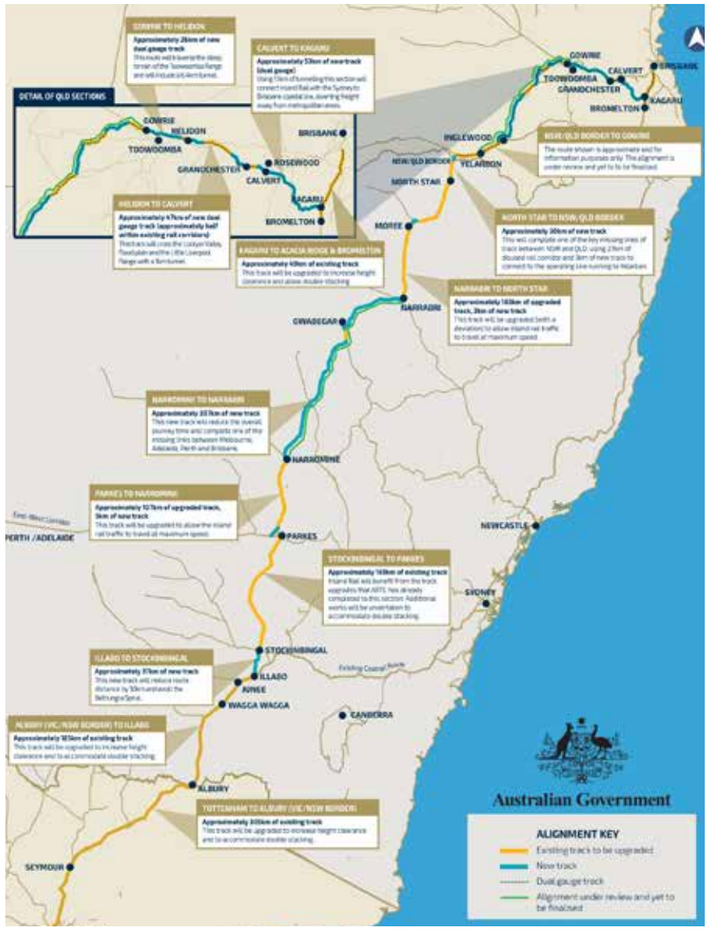
This new 1,700-kilometer line will provide a high capacity link between Melbourne and Brisbane through the Victoria, New South Wales and Queensland regions; where, 700 kilometers will be newly built. The freight branch will improve the link of agricultural, mining and urban areas to the global market through ports so as to encourage the international trade. Inland Rail is a strategic infrastructure on the East Coast that will contribute to national productivity by reducing train operating costs and improving the service standard so as to meet the needs of major freight clients.

With this corridor, the Melbourne-Brisbane railway market share will increase to 62% by 2050. The Australian Government has entrusted the project to the Australian Rail Track Corporation (ARTC); it will be financed through an investment of 8,400 million Australian dollars (€ 5,571 M) and additional public-private partnership (PPP) agreements.

Project Advantages

This innovative funding approach will allow the Government to leverage the private sector experience in design, financing, construction and maintenance of the more technically complex section, the Toowoomba-Kagaru (Brisbane) section, which includes the construction of more than 8,000 meters of tunnel. Among the main advantages is the great reduction of distances, about 500 kilometers, between Brisbane Perth and Adelaine; and also the travel time between Melbourne and Brisbane, which will be of less than 24 hours. Therefore, the emission of 750,000 tons of carbon will be avoided by reducing 200,000 road trips per year.

This will also be the first railway infrastructure linking the entire Southeastern area of Queensland to Melbourne, Adelaide and Perth; a further step towards Sydney's highway decongestion. At an early stage, trains measuring up to 1,800 meters will be able to circulate, and, in a progressive way, the infrastructure will be prepared for trains of up to 3,600 meters, with standard double-height stacked containers.



The "Melbourne-Brisbane Inland Rail" is one of the most ambitious projects.

Melbourne's transport links will benefit from large items for their improvement.

MOOREBANK INTERMODAL TERMINAL (SOUTHEASTERN SYDNEY LINE)

One of the initiatives is to recover disused corridors in order to meet the new demands.

One of the main projects being carried out in the Southeast of Sydney is the Moorebank intermodal terminal, which includes a railway link to the "Southern Sydney Freight Line (SSFL)", with direct access to the site.

This logistics park will operate as an open access facility with capacity for up to 1.05 million TEU (Twenty Foot Equivalent Units) per year and 500,000 interstate containers per year by 2030.

The terminal will increase productivity and improve transport links in Australia's largest city, allowing import and export load passing through Sydney to and from Port Botany to be transported by railway rather than by road.

The funding will be mostly private, up to 1,500 million Australian dollars (€ 1,024 M) provided by SIMTA (Sydney Intermodal Terminal Alliance), although it will benefit from a Commonwealth item, through the MIC, in the amount of 370 million (€ 252 M).

BOYANUP-CAPEL AND DONNYBROOK-WILGA CORRIDORS (WESTERN AUSTRALIA)

Regarding the freight transport field, the potential of disused or non-operational railway corridors is also being studied. The objective is to meet regional development needs, including the long-term viability of the newly commissioned branches to provide emerging regional products and expansions of industrial parks. Initial planning investigations include the Boyanup-Capel and Donnybrook-Wilga Corridors.

LEONORA-ESPERANCE LINE (WESTERN AUSTRALIA)

The Goldfields Esperance and Southwestern regions of West Australia also have projects in place to improve freight transport; among them, the extension of the Leonora-Esperance Line. Consideration is given to partial track duplication works, as well as to the construction of new crossing loops, which will allow higher axle loads.

In the Southwest, the future growth of the Collie-Bunbury railway line has led to investments for its capacity improvement, therefore, the line between the Brunswick Junction and Bunbury Port will be doubled.

Network improvement works in Australia.

INVESTMENTS IN THE MODERNIZATION OF BROOKFIELD RAIL (WESTERN AUSTRALIA)

Beside the projects counting on federal support, there is also another type of initiative, such as the Brookfield Rail private operator. At present, efforts are being made to increase the network's capacity in order to meet the growing demand for open access multi-user railway infrastructure in the resource and agriculture sectors. In the Southern half of Western Australia, Brookfield Rail is committed to working with the industry and the government to strategically plan and increase capacity in this vital part of the transport infrastructure since it has recently completed investment projects in MidWest, Goldfields, Esperance, Wheatbelt and South West.

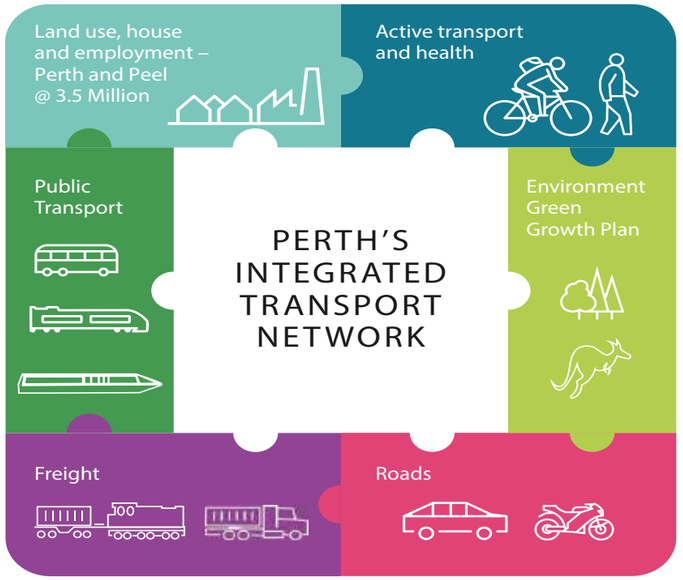
INTERMODAL IMPROVEMENTS IN PERTH

Perth authorities have approved the "Transport @ 3.5. Perth and Peel transport Plan" program.

The strategic priorities include the improvement of regional links to the national and international markets.

To this end, a more efficient and modern freight network is sought. The "Perth Freight Transport Network Plan" is implemented in this context, highlighting the future investments in transport means.

Among them, a strategic freight corridor from Muchea to the inner and outer accesses of the "Fremantle" Port, which is the largest one and with the most traffic in the country.



AUSTRALIA

AUSTRALIA

Passenger transport: Impetus given to cities and regional links

THE NATIONAL RAILWAY PROGRAM AWARDED WITH 10,000 MILLION AUSTRALIAN DOLLARS (€ 6,832 M) FOR A PERIOD OF TEN YEARS IS AIMED AT IMPROVING AND EXTENDING BOTH URBAN AND REGIONAL RAILWAY NETWORKS.

Southern Cross Station (Victoria).

The federal government included, among its priority points for 2017-2018, the impetus given to the metropolitan urban transport, as well as the improvement of local and regional networks. In particular, there are several specific items for this purpose.

On one hand, the "National Railway Program" awarded with 10,000 million Australian dollars (€ 6,832 M), with a validity period of ten years. On the other hand, the investments in the states with greater population are reinforced. In addition, a program is approved for a faster railway network, which includes the analysis of a possible high-speed line.

National Railway Program

The National Railway Program awarded with the amount of 10,000 million dollars for a period of ten years aims to improve and extend both urban and regional railway networks.

These initiatives aim to give an impetus to the promotion of public transport, the improvement of urban planning and a regeneration of sustainable mobility.

One of the trains of the NSW TrainLink fleet.

XXX

The list of priorities includes the future project of a high-speed railway network of 350km/h. Its route would be along the Eastern Coast, linking its most important cities and regional centers. For now, the most suitable route of 1,748 kilometers is already defined. In a first stage, it would link Sydney, Southern Highlands, Canberra, Wagga Wagga, Albury Wodonga, Shepparton and Melbourne. In a second phase, the line would go from Sydney to Central Coast, Newcastle, Taree, Macquarie Port, Coffs Harbour, Grafton, Casino, Gold Coast and Brisbane. This area concentrates great movements and that is why this high performance network has been designed as an alternative to highways and airplane. The Sydney-Melbourne air route fluctuates between the 3rd and 5th busiest air corridor in the world. As pointed out in the feasibility studies carried out, if the high-speed train network will be fully operational by 2065, the forecasts indicate that it would reach 83.6 million passengers per year. The proposed route includes four stations in the city center and four other peripheral stations and 12 regional stations. ARA believes that the Canberra station should be located at the city's airport and consideration should be given to the possibility of linking the network to the Airports of Sydney and Melbourne.

The first stage of the project would require 49,900 million dollars (€ 33,501 M). Of that amount, 23,000 million (€15,436 M) would be allocated to link Sydney, Southern Highlands and Canberra with a 64-minute travel time on the Sydney-Canberra route. This stage would also require an additional amount of 26,900 million Canadian dollars (€ 18,045 M) to extend the line towards Melbourne, linking Australia's two largest cities and four key regional centers with a 2 hours and 44 minutes travel time on the Melbourne-Sydney route. The highest cost of construction, 29% would be for 144 kilometers of tunnels, almost half of which (67km) are required to travel in and out of Sydney.

The list of priorities includes the future project of a high-speed railway network of 350km/h.

AUSTRALIA

Victoria: Urban mobility, in the spotlight of priority projects

The Australian Federal Government will support railway investments in the State of Victoria. On the one hand, an item of 500 million Australian dollars (€ 331.6 M) will be allocated for the period 2017-2018 to the improvement and reinforcement of the regional network. On the other hand, another 30 million Australian dollars (€ 19.8 M) has been allocated to the branch linking the Melbourne Metro to the airport. In general, Victoria will also benefit from federal funds allocated to urban mobility plans across the country, as well as from an increased speed at the level of regional branches.

The larges investment

Beside the federal support, the State Government has a specific plan in place, with the largest investment in the history of public transport. This plan aims to respond to the need for better and faster links so as to address the growing number of people, which

The State of Victoria will make the biggest investment of its history in public transport.

is higher than in other states. The Victorian budget 2017-18 follows the investment line from past years regarding this type of infrastructures in cities and communities. The item will be in the amount of 1,100 million Australian dollars (€ 729.6 M) for 2017-2018.

Certain funds will be allocated for the purpose of making the railway networks more efficient, safe, comfortable and sustainable transport means. It will also invest over 879.5 million Australian dollars (€ 595.2 M) in order to increase the frequency of public transport systems. These improvements are coordinated by Public Transport Victoria (PT).

Revival of the Regional Network

The main regional operator is Australia's largest company called V/Line, which provides services between Melbourne and Geelong, Warrnambool, Ballarat, Maryborough and Ararat. During 2015-2016, there were records of more than 17.6 million passenger journeys by train and bus. This figure indicates the high demand for its services. Given the increased use of these services, the Government has developed a plan for the revival of regional networks in Victoria. The pro-

Train unit belonging to the V/Line regional operator.

AUSTRALIA

Modernization of Melbourne railway stations, one of the priorities for network improvement.

gram, called "Regional Rail Revival Plan", has been awarded with 1,500 million Australian dollars (€ 1,010 M) to improve the existing infrastructure. The 2017/18 budget has significant investments aimed at improving the links, safety and frequencies. The regional plan allocates 435 million Australian dollars (€ 293 M) to modernize the "Gippsland Rail" railway.

Improvements

These works include track duplications, station improvements and the removal of 22 level crossings. Another 43.5 million Australian dollars (€ 29.3 M) will be provided for the improvement of transport connectivity between Seymour and Shepparton, with an infrastructure aimed at increasing train services. Likewise, improvements are approved in the Warrnambool, Bendigo and Echuca lines, among other projects. The works on the Hurstbridge Line benefit from an item of 5 million (€ 3.3 M). The 2016-17 state budget includes 518 million Australian dollars (€ 348 M) to double the Ballarat-Melton Line, thus increasing the frequency of services for the region of Ballarat and the Western Melbourne. Updating the Ballarat Line includes the track duplication of 17 kilometers between Deer Park West and Melton, a new parking area in the Rockbank station, additional platforms in the Bacchus Marsh and Ballan stations, and extended platforms in the Rockban station. New facilities will also be created in the garages from Melton and Rowsley and the Bacchus Marsh garages will be renewed.

These funds allocate 311.1 million Australian dollars (€ 209 M) for new regional trains; i.e., 39 VLocity carriages. This rolling stock will be linked to 27 additional units that were purchased in 2016 and it will help providing a more comfortable and a faster travel by train within the regional links. In addition, 65 new high capacity trains and units will be purchased for the North-East-Seymour, Gippsland-Traralgon-Sale, Bendigo-Kyneton, Epsom, Eaglehawk-Echuca, Geelong, Marshall and Waurn Ponds, Ballarat-Melton, Bacchus Marsh, Ballarat, Wendouree, Ararat and Maryborough Lines. Victoria's busiest corridor covering the two population centers of Geelong will be reinforced with 18 additional services per week.

In addition, the maintenance of the regional network and the V/Line fleet will be highly encouraged. The investment of 316.4 million Australian dollars (€ 213 M) will support the punctuality, safety and reliability of regional trains.

Melbourne Tramway Network

Melbourne has the world's largest tramway network with a 250-kilometers double-track. There are more than 1,700 tramway stops across the network, with over 400 leveled access stations (25%)

The improvement of this transport means is due to the current train park improvement. Therefore, this year, 218.1 million Australian dollars (€ 144.6 M) is allocated for the purchase of new rolling stock. In particular, 10 high-capacity E-Class tramways from Bombardier Transportation will be built in Dandenong. In the 2017-2018 budget, within the "Keeping Melbourne Moving" program, 62.5 million Australian dollars (€ 41.4 M) is also allocated to reinforce the city's operating lines. This section includes eight additional trains for the service of the Werribee Line, at Shoulder Peak. In addition, the Government of Victoria has allocated 1,100 million Australian dollars (€ 736.9 M) for the incorporation of additional tramways, as well as for the support infrastructure based on which the entire network will be revived.

The plans include improvements to Route 96 (the first to receive the new tramways), the remodeling of two warehouses, accessibility and modernization works related to power supply. 14 substations will be built in strategic locations; two substations that already exist will be modernized and new contact overhead lines will be installed.

Melbourne will improve the world's largest tramway network with 250 kilometers.

Metro Tunnel of Melbourne

The well-known "Metro Tunnel" is a project that includes the design and construction of two nine-kilometer railway twin tunnels from South Kensington to South Yarra. There will be five underground stations: Arden, Parkville, Northern CBD, Southern CBD and Dominio. A Public Private Partnership (PPP) will be in charge of this initiative, the largest in terms of transport in the city, as indicated by the Metro Rail Authority, the public body of the Government of the Australian State of Victoria and promoter of the work. The main objective is to decongest the traffic concentration in the so-called "City Loop", the city's business center. While the works are being carried out, 50 additional services have been enabled on the tramway routes no. 57, 58 and 59. The branch will run from Northwest to Southeast and it will link the Sunbury line to the Cranbourne-Pakenham line. While the railway tunnel is the centerpiece of the project, works will also be carried out on the Craigieburn and Upfield lines and the existing projects on the Dandenong line will be complemented for the purpose of creating four independently operating rail lines. These improvements include the provision of high-speed signaling, level crossing removal, track and station improvements. In addition, new high capacity trains will be purchased.

New Line and Stations

The modernization of infrastructures and facilities is also included in the state transport plans. This year, 8.7 million Australian dollars (€ 5.8 M) will be allocated for the design and improvement of the busiest stations in Melbourne. The budget also includes the construction of new stops, e.g. Hawkstowe. It involves the extension of the Morang line, in the South. This project plans to build eight new kilometers between South Morang and Mernda and three new stations in Hawkstowe, Marymede and New York. In addition, new stations such as Southland have also been planned.

Removal of Level Crossings

One of the current initiatives represents the removal of 50 worst level crossings in Melbourne. A program awarded with 846 million Australian dollars (€ 566 M) for the next four years that aims to improve traffic safety. While these works are being carried out, the Hurstbridge line is duplicated. These works benefit from a budget of 5 million Australian dollars (€ 3.4 M).

Safety Systems

One of the state programs is aimed at preserving and improving the public transport network infrastructure safety. The initiatives also include the replacement of the control center, train services through the Melbourne train system and the infrastructure deployment for the Digital Train System (DTRS), with more than 70 new facilities in the network since September 2009. The next stage will be focused on the implementation of devices on the train.

Cranbourne Pakenham Corridor

This corridor, the busiest in Melbourne, will experience the greatest transformation in its history. As part of this improvement, works are being carried out for the introduction of new trains. The fleet consisting of 65 trains will transport 20% more passengers and they will be commissioned by mid-2019. Works are also being carried out to remove nine dangerous and congested level crossings and to build five new stations between Caulfield and Dandenong. Works are currently being carried out in terms power and signaling improvement, extension of station platforms and optimization of railway infrastructure between Southern Cross and Cranbourne and Pakenham.

One of the programs set in motion is the crossing removal.

The major level crossings from Victoria will be removed.

AUSTRALIA

In Western Australia, the public transport systems will attract the major investments in the future years.

Western Australia:
Impetus given to Public Transport

The current Western Australia Government has approved a historical public transport investment plan. This program, called "Transport @ 3.5 Million", is aimed at providing services to the growing number of people on the territory, which will reach, according to the latest forecasts, 2.7 million by 2031.
For this reason, we want to give an impetus to the improvement of the entire communication network over the next 15 years.Within this ambitious initiative, the urban mobility has great weight. The "Public Transport Plan 2031" section is aimed at improving the network in the City of Perth and a peripheral radius of 15 kilometers. It identifies the city's main linking needs, with special emphasis on key areas such as the University and the airport. In particular, faster corridor projects, the expansion of light metro lines and the procurement of new rolling stock are being encouraged. This will be carried out in two stages; the first, by 2020 and the second by 2031.

Rolling Stock Fleet

The public transport network reinforcement for Perth includes the modernization of its train fleet. Therefore, 1,200 million Australian dollars (€ 804 M) were allocated under the "Public Transport Plan 2031" investment program for the purchase of new rolling stock. Most of these funds will be allocated for the purchase of additional trains that will reinforce the current services, in particular, 156 units in the amount of four million Australian dollars (€ 2.6 M) each; also for 29 new light rails in the amount of 313 million Australian dollars (€ 209.8 M).

Railway Infrastructure in Perth

An investment of 2,900 million Australian dollars (€ 1,943 M) is estimated for public transport in Perth for the next 21 years. The major plans will be focused on the expansion of the current system, with a special reinforcement of the railway in its different modes (light rail, suburban trains, etc.). 180 million (€ 120 M) will be added to this item for workshops and maintenance and light rail areas, as well as interchangers and new parking facilities awarded with 135 million Australian dollars (€ 90.4 M).

The "Transport @ 3.5 Million" program is aimed at providing services to the growing number of people.

Extensions of Existing Lines

The extension of railway lines will add 220 kilometers to the network. These new works are aimed at meeting the demand, especially in the fastest growing corridors and providing an efficient access between the adjacent areas and the Perth City Center. Future proposals include the extension of the Northern branch in the surroundings of the Butler-Yanchep suburb with stations in Alkimos, Eglinton and Yanchep (13.8 kilometers).
A line linking the Eastern peripheral area to the central line at Bayswater will also be built. There will also be new stations and interchange facilities on the Mandurah de Success and Karnup line. More extensions are planned in the longer term, such as the additional 15 kilometers of the Armadale-Byford and Mundijong lines (15 kilometers) or the extension of the Thornlie network so as to be linked to the Mandurah branch.

The Perth train fleet will also be renewed with the procurement of new rolling stock.

Railway Linking to the Airport

Another of the most important urban mobility initiatives will be performed in the City of Perth. The well-known "Forresfield Airport Link" project, which has a budget of 1,860 million Australian dollars (€ 1,246 M) is jointly funded by the Federal Government and Western Australia. After its commissioning, the East of the city will be provided with railway services. There will be three new stations in Belmont, Airport Central and Forrestfield. The railway link will be connected to the existing Midland line, near the Bayswater Station, and it will be directed to Forrestfield via a double tunnel. The main contract for this project was awarded in early 2016 to the U.T.E. SI-NRW (Salini Impregilo - NRW).
This award includes the design and construction of eight kilometers of railway tunnels and three new stations; besides the infrastructure maintenance for a period of 10 years, once the project is completed in 2020.

Forresfield Airport Link, in Perth, is one of the railway links set in motion.

Forrestfield railway station is the proposed terminus station of the Forrestfield-Airport Link.

AUSTRALIA

New South Wales: Railway is gaining strength in the transport field

New South Wales is Australia's most populous state, with more than a third of the country's residents. The need to improve communications in large urban centers favored the approval of an ambitious transport program for the next 20 years by the State Government, during 2012-2013. The program includes the "NSW Long Term Transport Master Plan", with a global investment of 260,000 million Australian dollars (€ 174,278 M) for transport services and infrastructures throughout the state.

First Phase of the Sydney Metro

"Sydney Metro Northwest", formerly "North West Rail Link", is the first stage of the Sydney Metro. It will also be the first fully automated railway system in the country. Trains will pass every four minutes at rush hour, with an average of 15 trains per hour. In June 2016, the Consortium managed by ACS CIMIC, together with John Holland and Dragados, completed the works of this project in the Northwest, with an investment of 8,300 million Australian dollars (5,615 million Euros). The works included the construction of 15 kilometers of tunnels and five stations. This section is expected to be commissioned in 2019.

This corridor will provide new railway infrastructure and services to 300,000 residents in the Northwest of the city (Epping, Macquarie Park, Chatswood, St Leonards, North Sydney and the CBD). This is a fast growing area in the surroundings of the city.

Metro City & Southwest

The second stage of the Sydney Metro, the project known as "Metro City & Southwest" will extend the network from Northwest, under the city's port, to Bankstown. It will have 66 new kilometers and new underground stations and it is expected to enter into commercial operation in 2024.

At present, there are several lots involved in the bidding process. In June 2017, the Australian construction company CIMIC, subsidiary of ACS, was awarded the new metro line under the city's bay for the amount of 1,902 million Euros. The project includes the construction of two twin tunnels of 15.5 kilometers. The works also include the demolition of existing buildings in the places crossed by the line and the construction of six new stations. These works are expected to be completed by mid-2021.

CBD and South East Light Rail

This new light rail service is expected to enter into commercial operation in early 2019. In December 2014, the ALTRAC Light Rail consortium was awarded by the Government of New South Wales in Australia the construction of a 12-kilometer light rail network in Sydney. The joint venture will also be in charge of the current Inner West Light Rail line. This project is intended for the Central Business District and South East Light Rail and has a budget of 2,100 million Australian dollars (about 1,400 million Euros). The consortium consisting of Acciona, Transdev Sydney, Alstom Transport Australia and Capella Capital, is responsible for its design, construction, operation and maintenance.

As part of the project, the works include 12 kilometers of tracks, 19 stops, a bridge over the Eastern Distributor freeway, a tunnel under Moore Park, control center facilities, depots for light rail units, a maintenance depot and substations and other service buildings across the route. Given that this is a highly complex project, significant relocations of power, telecommunications and gas service infrastructures have been required, as well as an extensive urban regeneration, such as the transformation into a pedestrian promenade of a part of George Street, which is one of the main arteries of the city in the Central Business District. Therefore, in addition to Transport for NSW, various design improvements, including larger train cars with a capacity exceeding 15 buses, have been approved. As a result, the new light rail network will be able to transport up to 15% more passengers at peak times. The project includes a wireless infrastructure to preserve the aesthetics of the Central Business District.

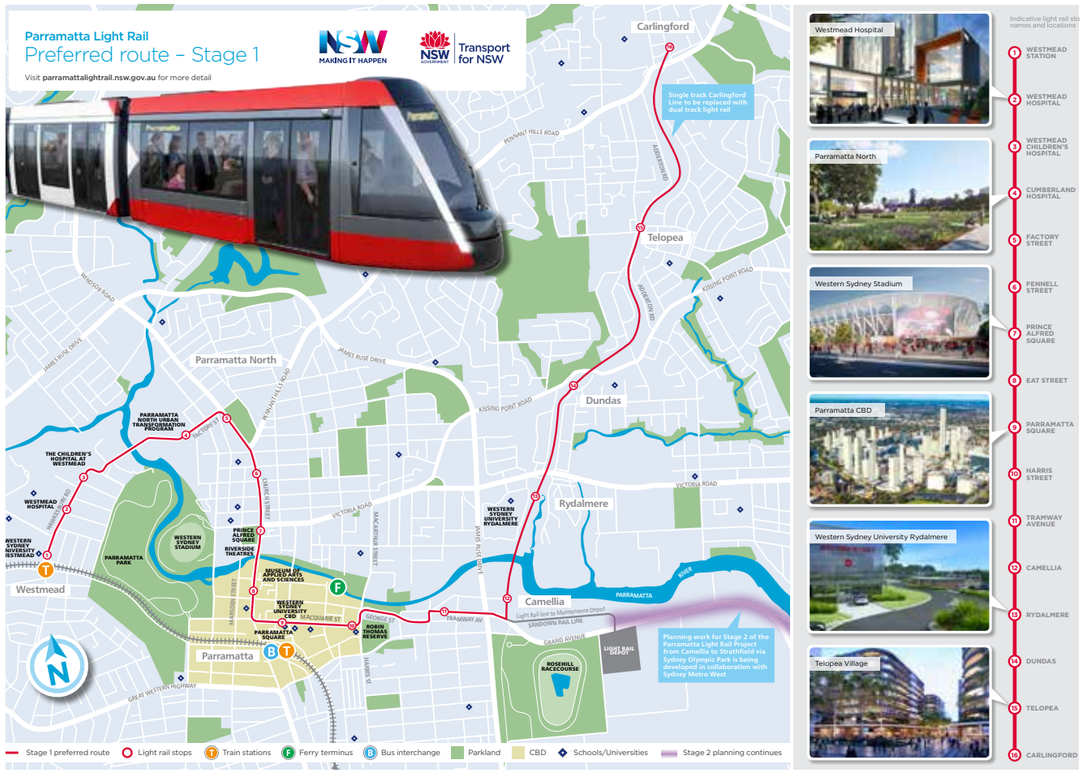
Urban transport plans are also booming in other cities such as Newcastle or Canberra. The railway is once again chosen as a

> The Sydney Metro has one of the most important extension plans in the State.

Above, an image of one of the stations in the "Sydney Light Rail" network.

The Sydney Metro is one of the networks that will attract the most investments in the medium term.

AUSTRALIA



Parramatta Light Rail is one of New South Wales' most recent infrastructure projects.

means of mobility that is essential for the population growth.

Newcastle Light Rail

Newcastle, the sixth most important city in Australia and the second of the State of New South Wales also bets on the railway. The City Council, along with the Government support, has implemented a project for a light rail line. This is a 2.7-kilometer network that runs from the Wickham interchanger to the Pacific Park in the East.

The route will follow the old railway corridor for about a third of the route before crossing the Hunter and Scott streets. Trains will pass every 7.5 minutes during peak hours and they will be able to transport 1,200 people per hour. This new fleet of vehicles has been entrusted to the CAF Company.

Parramata Light Rail

"Parramatta Light Rail" is one of New South Wales' most recent infrastructure projects aimed at reinforcing Sydney's urban mobility. In the first stage, it will link Westmead to Carlingford via the "Parramatta CBD" with a double track network covering 12 kilometers and it is expected to be opened in 2023. Works on the 20-kilometer line will begin at the end of 2018 and their completion is expected by 2023. The route is expected to run from Westmead to Strathfield, with a second line deflected to Carlingford. The network will include stops at up to six train stations in the West of the city. There are also plans regarding the construction of transport interchangers at the Westmead, Parramatta, Olympic Park, Strathfield and Carlingford railway stations.

Canberra Light Rail

Capital Metro Light Rail is a "Transport Canberra" project that is expected to enter into commercial operation in 2019. Its budget is in the amount of 500 million Euros. In a first stage, there will be 13 km and 12 stops that will link the area of Gungahlin to the City Center. At present, the second phase is also carried out with the aim of extending the network to the South to Woden passing through the area of the Parliament. This extension takes into consideration a length of between 10 and 13 additional km and up to 13 stops.

In 2016, the "Canberra Metro" Consortium was in charge of the first phase of the well-known "Capital Metro Light Rail", which will link the Australian capital to the Gungahlin area. This joint venture benefits from the presence of CAF, which will supply 13 tramways belonging to URBOS family, Pacific Partnerships and CPB Contractors, both belonging to the CIMIC Group.

The Consortium also consists of other companies, such as John Holland, Mitsubishi Corporation, Mitsubishi UFJ Financial Group, Aberdeen Infrastructure Investments and DB Engineering & Consulting.

The Parramatta Light Rail highlights the commitment to the railway in the cities.

AUSTRALIA

Queensland and South Australia: Innovative Infrastructure Projects

The States of South Australia and Queensland also bet on the railway as a transport means for the main cities. Metros, tramways and railway passenger links figure among the priorities.

This is reflected, for example, in investment plans such as the "Queensland Transport and Roads Investment Program 2017-18 to 2020-21 (QTRIP)".

One of them stands out especially for being the first that will combine the bus and metro. In addition, in collaboration with Queensland Rail, 2,500 million Australian dollars (€ 1,661 M) will be invested in the regional infrastructure improvement and network maintenance.

Items such as 4,156 million Australian dollars (€ 2,762 M) will be added for the purpose of purchasing 75 new six-car trains to be incorporated into the Southwest Queensland route.

South Australia

Likewise, in South Australia, which is undergoing a period of great economic growth, the investment in transport infrastructure is also one of the most important in its history. The Government's initiatives include, for example, the Seaford line works, the electrification of the Gawler railway, as well as the numerous network improvements and the infrastructure improvement works also include the remodeling of the railway station included in the urban project known as "Adelaide Riverbank".

All these actions put the focus of interest on railway as the urban mobility solution that is more in line with the new needs of the population, especially for its multiple advantages in terms of efficiency, capacity and integration.

UBAT PROJECT: UNDERGROUND BUS AND TRAIN (BRISBANE-QUEENSLAND)

The Underground Bus and Train "UBAT" project will be the first in the world to combine a railway and bus into a single two-storey tunnel between the Brisbane River and the Central Business District of Brisbane (CBD).

The new infrastructure will also be linked to the current Legacy Way tunnel, once the works are completed. With an estimated cost of 5,000 million Australian dollars (€ 3,323 M), this is the most important transport initiative in the City of Brisbane. The tunnel will be of five kilometers, with 15 meters in diameter and two levels. The upper level will be reserved for bus traffic and the lower level for railway. According to the action plan, it is expected to be operational in 2021.

"UBAT", Underground Bus and Train will be the first project in the world to combine the railway and bus into the same tunnel.

ADELAIDE TRAMWAY (SOUTH AUSTRALIA)

In July 2016, the Government of the State of South Australia approved an item in the amount of 50 million Australian dollars (€ 33.4 M) for the first phase of the tramway called "AdeLINK".

This budget is part of the annual accounts and it is added to the extra amount of 20 million allocated for the procurement of three tramway units and the construction of a new station in Festival Plaza. The extension of this network to the Eastern area (EastLINK) is aimed at linking this peripheral area of the city through Kent Town.

This project includes the construction of four new stops, one at "King William Road" and three additional stops that will serve in key areas such as the museum, library, universities and Old Royal Adelaide hospital center.

In the state of South Australia, the light rail projects are reinforced by new investments such as the Adelaide tramway.

SOME MAFEX MEMBERS WITH PROJECTS IN AUSTRALIA

ARCELORMITTAL

ArcelorMittal was the sole steel supplier for the first phase of Sydney Metro project, Australia's largest public transport infrastructure project, which will transform the city of Sydney, being the first fully automated metro rail system in the country; as well as other projects around the country. ArcelorMittal was chosen for the Sydney Metro project as it is a worldwide reference, able to offer rails that combine excellent reliability and the highest quality, without forgetting other requirements such as safety, durability, cost efficiency, service and environmental-friendliness.

ALSTOM SPAIN

Alstom in Spain will supply to the city of Sidney the latest generation Citadis X05 trams. Alstom's technology laboratories in Spain will also be responsible for developing and implementing signalling, security and passenger information systems

The State's public transport authority, Transport for New South Wales, awarded in 2015 to the ALTRAC consortium (made up of Alstom, Transdev, Acciona and Capella) a contract for the new Sydney tramway line. Within this project, Astom in Spain will be in charge of the manufacturing of 30 coupled Citadis X05 trams, as well as the development of the security and signaling systems. The new 12-kilometer-long, 19-stop line will be commissioned in early 2019. With a population on the rise, the city of Sydney is facing road traffic congestion issues. The new light rail system will improve access to two major parts of the city: the Central Business District and the South Eastern suburbs. Citadis X05 integrates new technologies such as permanent magnet motors to reduce energy consumption and easier sub-system integration and maintenance to decrease lifecycle costs. Citadis X05 for Sydney will offer high-end comfort, including double-doors for improved access and passenger flows, large balcony style windows, multi-purpose areas and ambient LED lighting. It also offers the highest levels of customer safety including constant CCTV [4] monitoring, emergency intercoms and the latest way-finding aids for real time passenger information. The new Citadis X05 to be manufactured in Snata Perpetua (Barcelona) will integrate new technologies such as permanent magnet motors to reduce energy consumption and easier sub-system integration and maintenance to decrease lifecycle costs. Citadis X05 for Sydney will offer high-end comfort, including double-doors for improved access and passenger flows, large balcony style windows, multi-purpose areas and ambient LED lighting. It also offers the highest levels of customer safety including constant CCTV monitoring, emergency intercoms and the latest way-finding aids for real time passenger information.

CAF

CAF has become one of the leading suppliers of sustainable mobility solutions in Australia, thanks to its Urbos tramway platform. These accessible, high energy efficiency tram vehicles currently run in the city of Sydney. In addition, Canberra and Newcastle have also opted for the Urbos range of trams for their new fleets.

On the one hand, the first contract of the company in the country took place in 2012. Transport for New South Wales (TfNSW) then awarded the manufacture of Urbos trams for the Inner West Light Rail line in the city of Sidney. The units provide commercial service since 2014.

On the other hand, CAF is member of the Canberra Metro Consortium entrusted with the design, construction, maintenance and operation of the new tram line for a term of 20 years. This line will be 12 kilometres long and have 13 stops to link the area of Gungahlin with the centre of the Australian capital. CAF is responsible for the supply and maintenance of the rolling stock, which is composed of 14 low-floor Urbos trams.

CAF also signed in 2016 a new contract with TfNSW to supply 6 Urbos units for a new tram line in the city of Newcastle.

SOME MAFEX MEMBERS WITH PROJECTS IN AUSTRALIA

DANOBAT

DANOBAT builds the world's most advanced automated train repair shop in Australia. The manufacturer of machine tools and production systems has supplied a fully automatic digital solution for the leading mining company BHP Billiton, which repairs a freight wagon every 28 minutes. The project, which is already operational, is located in a remote area some 1700 kilometres from the nearest town.

Comprehensive solution

The site of the workshop was chosen because of its proximity to the railway line. In addition to normal wear, the railway cars are exposed to extreme climatic conditions. This comprehensive solution was designed to repair trains for the transport of minerals from mining areas to port terminals, without any other human intervention than programming, maintenance and inspection. One of the main challenges facing the engineers and experts of DANOBAT was the need to develop a fully automated solution for the entry, disassembly, repair and reassembly of wagons in a time of 28 minutes. The contract between DANOBAT and BHP, which underwent several extensions since the start of the project in 2013, amounted to a total of more than 100 million Euros.

The workshop is divided into four distinct areas, each equipped with its own facilities and automatic handling systems for maintenance work of the wagons, bogies and wheelsets.

INDRA

Sydney Trains, the entity offering railway services in the city of Sydney and its area of influence, awarded Indra a contract to modernize the railway network video surveillance system, using state-of-the-art technology, in Australia's largest, most populated urban center.

Indra is implementing its technology in the two control centers for managing the entire video surveillance system using closed-circuit television (CCTV) in a network of over 150 commuter stations and the state-of-the-art software for its operations and control. The multinational is replacing 11,400 analog cameras with IP cameras that are connected to the existing trunk communications network through a new network deployed in the stations.

The new video surveillance system includes all of the advantages of IP (Internet Protocol) technology, given that by connecting directly to the cameras of the Sydney Trains computer network, any user station may operate as a control console for visualizing the images of any camera in real time and for recovering video recordings. Mobile devices connected to the network may also access video. Likewise, any tablet or cellphone may become a mobile console with which patrolling security employees may view images, thereby increasing their effectiveness.

SOME MAFEX MEMBERS WITH PROJECTS IN AUSTRALIA

CETEST

CETEST has recently worked in Australia. Safety against derailment test campaign for Metro Sydney, for ALSTOM, has just been completed. Thanks to CETEST' s portable test rigs, this campaign was performed at ALSTOM' s facilities, in India, where the units are being manufactured.

Furthermore, CETEST has been awarded the complete on track test campaign for the validation of CAF Canberra tram, including comfort and ride dynamics, EMC and noise.

In the past, CETEST was also involved in the on-track test campaign for the validation of a series of CAF streetcars (LRV) for Inner West line of Sydney Light Rail.

THALES SPAIN

The company has been selected to provide the Central Control System and Communication System for the first fully-automated metro rail system in Australia, which opens in the first half of 2019 with a train every four minutes in the peak. Thales will deliver both systems to the Northwest Rapid Transit consortium (NRT) as a key supplier to NRT's Systems Joint Venture.

With an approximate value of €5.5 billion (AUD 8.3 billon), Sydney Metro Northwest is the first stage of Sydney Metro. The objective is to deliver a new standalone 36 km metro rail system for Sydney, including eight new railway stations, five existing stations upgraded and 4,000 commuter car parking spaces. The NSW Government has announced metro rail will be extended from the end of Sydney Metro Northwest, under Sydney Harbour, through new underground stations in the CBD and southwest to Bankstown.

As a world leader in transport solutions, Thales is bringing to Australia expertise gained from projects in some of the world's most high-profile cities: London, Paris, Dubai and Hong Kong.

The Central Control System will ensure seamless rail operations, including real-time control mechanisms and data for various diverse systems, while providing a 'big picture' holistic view of the entire network. The Communication System will connect the public address, the passenger information systems, the CCTV and digital information boards, to a centralized system allowing a fully integrated approach to information management.

Thales helps urban transport operators increase capacity and offer new services that enhance the passenger experience and make public transport more attractive. Thales provides supervision to over 100 metro lines in 46 cities around the world.

TYPSA

TYPSA opened its Australian office in May 2016, establishing a wholly owned subsidiary through which it is actively working on the railway, ports and renewable energies market, with a close attention to the rest of the areas covered by the Group.

The main work in which TYPSA has been working in Australia has been its participation on the D&C Sydney Metro City & Southwest Tunnel and Station Excavation Contract, as part of one of the two consortia which tendered for this huge 2.8 Bn AUD contract.

The job includes a 15.5 km twin tunnel under Sydney Harbour and Sydney CBD, six new stations (some of them in caverns) and 57 cross-passages connecting both tubes. In spite of not being finally awarded the project, this job has allowed TYPSA find its place in the local market and prove our experience and knowledge in the design of tunnels through very complex geological ground conditions as it is the crossing of the Harbour. For this job, TYPSA had a highly experienced team onsite, working hand in hand with our local partners, showing the skills and strength of our teams.

CAF POWER

CAF Power & Automation has been awarded with a new international project for a catenary-free tram. The Company will supply the POWER DC 750V, COSMOS traction equipment and the FREEDRIVE energy storage system (ESS) for 6 URBOS tram units in the Australian city of Newcastle. Transport for New South Wales and CAF signed an agreement last year for the delivery of the 6 URBOS units, which will add to the catenary-free trams that operate around the globe equipped with CAF Power & Automation's energy storage systems. This is CAF Power's third contract in Australia, with previous contracts won in 2016 for the supply of POWER DC 750 V and COSMOS control equipment for the 14 URBOS trams in Canberra, in addition to 12 URBOS trams in Sydney in 2013.

FREEDRIVE, One-Of-A-Kind in Australia

The strategic significance of this project lays in the uniqueness of this vehicle on the Australian continent, being the only one fitted with the energy accumulation FREEDRIVE technology. The FREEDRIVE catenary-free operation system will provide the City of Newcastle with a reliable and comfortable means of transport that will in addition preserve the city's current architecture. The Newcastle tram will run along a 2.7km route with 6 stops - from Wickman to Pacific Park - a new means of urban transport which is a constituent part of the general regeneration plan for the metropolitan area

Energy Optimisation Systems

Amid increasingly populated environments and growing pollution indices, today's cities require less pollution with more environmentally-friendly and less invasive transport systems. Since its foundation, CAF Power & Automation has worked on on-board energy storage equipment to provide a solution to these current issues in cities.

GREENTECH is the family of energy storage systems developed by CAF Power & Automation which has been implemented on trams already since 2010. The GREENTECH energy optimisation systems make use of state-of-the-art technology based on high-density Li-Ion batteries and high-powered ultra capacitors, or a combination of both, to achieve the energy and power rates required by trams.

Turism

AUSTRALIA:

A GEM OF NATURE AND AN EXCEPTIONAL DESTINATION


Australia, a tourist destination with a wide range of options.

AUSTRALIA HAS UNIQUE NATURAL GEMS, SUCH AS THE FRASER ISLAND, THE WORLD'S LARGEST SAND ISLAND, DECLARED A WORLD HERITAGE SITE IN 1992.

Australia is a tourist destination with a wide range of options. Unique natural destinations, national parks or cities like Sydney make it an exceptional place to visit.

Its capital, established in 1788, with the famous Sydney Harbor, is known as the gateway to the country. Among the most interesting places of this cosmopolitan city there is its greatest icon, the Opera, built in 1973, as well as the City Hall, the **City Recital Hall** and several theaters, such as the **Royal** or **Wharf**.

You can also enjoy the sunsets from this harbor's bridge and the wide night-life in the **Newtown** and **Annandale** area. Another very famous city is Cairns, because of its tropical climate and its proximity to the **Great Barrier Reef** at less than an hour by boat. This is also the point where the routes to **Cooktown**, the **Cape York Peninsula** and the **Atherton Tableland** begin.

As for the well-known beaches for surf lovers, the perfect place would be the **Gold Coast**, a city with ample areas to practice this sport in the Pacific. Stops are also recommended in **Currumbin**, **Palm Beach, Burleigh Heads**, **Nobby Beach, Mermaid Beach** and **Broadbeach.**

If you are looking for a more isolated area, lacking an overcrowd, the most indicated places would be the **Sunshine Coast in Caloundra**, **Mooloolaba**, **Maroochydore**, **Coolum Beach** and **Noosa Heads**, where forests reach the seashore. Australia has unique natural gems, such as the **Fraser Island**, the world's largest sand island, declared a World Heritage Site in 1992. In the language of the aborigines, K'gari means paradise and stands out especially for a unique ecosystem and its biodiversity.

Other great natural gems are the **Magnetic Island**, known as the place of "compass disturbances", because in 1770, James Cook noticed that the needle of the compass of his ship was disturbed as he passed by; a fact that marked his reputation of having a "magnetic effect". Next to it, the 74 **Whitsundays Islands**, which stand out for being bordered by a great coral reef. A tropical paradise.

One of the most requested trips is the great ocean route, which consists of traveling from **Melbourne** to **Adelaide**, the Southeastern coast of Australia, bordering the sea and its giant monoliths. This route includes the **Otway National Park's** waterfalls, whale sighting in **Warrnambool**, Australia's well-known vineyards and wineries and **Cape Bridgewater** cliffs. If you are looking for adventure tourism, **Tasmania** is the perfect state. On its West Coast you can practice various activities such as rafting on the rapids of the Franklin River. You can also get on board in the historic train from **Queenstown** and enjoy its unspoiled nature and its small cities.


Whale watching in Wassnambool.

Africa modernizes its large freight lines

ONE OF THE PRIORITIES IS TO MAKE THE RAILWAY A STRONG PLAYER IN THE TRANSPORT OF RAW MATERIALS AND MINERALS. FOR THIS END, THE GOVERNMENTS ARE PREPARING MULTI-MILLON INVESTMENTS.

Africa, with a total surface area of 30,272,922 km², is the third continent by its extensive nature, after Asia and America. Its vast territory is divided into 54 countries, however, its population of one billion inhabitants, is less than 15% of the world total. Communications are essential for trade exchange, exports and the transport of raw materials and minerals from their extraction areas. At present, one of the priorities is to make the railway a strong player of these strategic links, and that is why many governments have approved transport plans of great investment. The idea is to have better networks, with greater capacity and with more modern systems. This represents a much needed infrastructure update work so that some freight lines that, in many cases, are too old to operate may be redesigned.

In West Africa, initiatives such as doubling over 2500 kilometers of track are a step towards modernizing its rail links. The Ghana and Senegal projects are also taken into consideration. To the South, countries such as Botswana and Namibia, Zambia and Tanzania, Mozambique, Swaziland and Zimbabwe work together to achieve more efficient international freight links. In the central area, Gabon works on the rehabilitation of the Trans-Gabonese line; while the Central African Republic aims to give an impetus to transport corridors and Cameroon and Chad co-operate in improving links such as the Yaoundé-Kousseri line. In addition to these, there are projects such as those in North Africa and Sudan, among others. This set of projects highlights the multi-million investments that allocated in the coming years to the freight transport across the continent.

Freight networks will undergo a major change throughout Africa.

WEST AFRICA

NIGERIA: LAGOS-IBADAN TRACK DUPLICATION

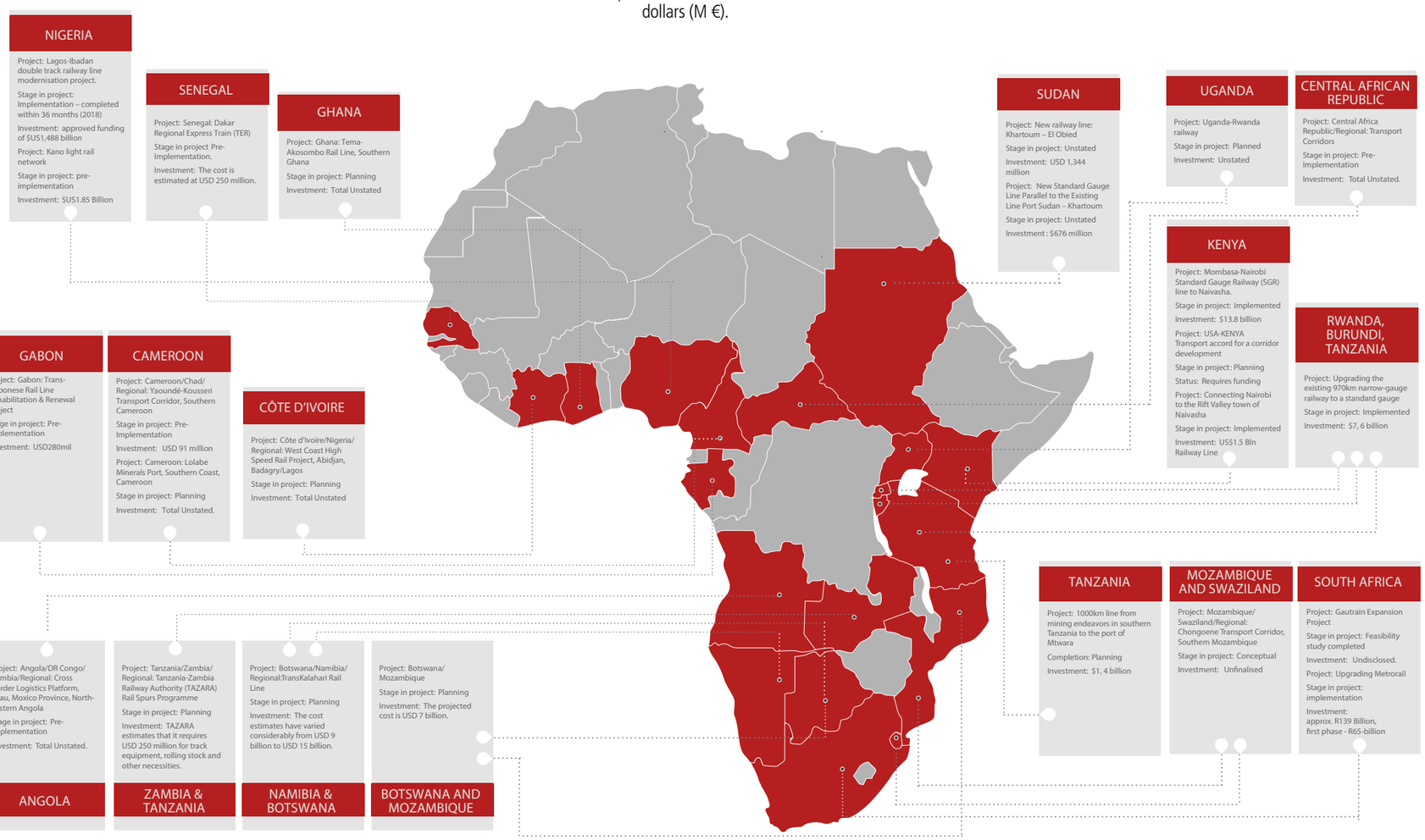
In March 2017, CCECC Nigeria Ltd., a subsidiary of China Railway Construction Corp., started the 2,733-kilometer track duplication project in Nigeria, aimed at modernizing the networks from the country's largest port, in Lagos, to the City of Ibadan, in the Southwest. The works have been divided into six phases and, once renewed, the standard gauge line (1,435 mm) will be used to transport freight and passengers. The trains will reach speeds of up to 150 kilometers per hour. The route will run between Lagos, Ibadan, Ilorin, Minna, Kano. There will also be a link between Minna and Abuja.

SENEGAL: DAKAR REGIONAL EXPRESS TRAIN (TER)

The Senegal investment promotion agency, APIX, awarded the French companies called Thales and Engie the contract for the design and construction of the regional express train, called "Dakar Regional Express Train". The branch will have three passenger routes and one freight route, of a metric gauge. This is a 55-kilometer line starting from Dakar that will link the city to the new international airport of Blaise Diagné. The project will be carried out in two phases: Dakar-Diamniadio (36 kilometers) and Diamniadio-airport (19 kilometers). It is estimated to enter into commercial operation in 2018.

GHANA: TEMA-AKOSOMBO LINE

In January 2017, works officially began on the extension of the Tema port, which will quadruple the current size and will make it one of the most important lines in terms of capacity from the entire Africa. The project includes the design and construction of four stations, two terminals with associated operational infrastructure and equipment. To reinforce the growing demand, projects such as a multimodal line, of 84.8 kilometers, that will link this port to that of Akosombo, will also be carried out. This initiative is supported by Banco de Exportación e Importación of India with which the authorities of Ghana signed an agreement in the amount of 398.3 million US dollars (M €).



NORTH AFRICA

SUDAN: KHARTOUM-EL OBIED LINK

Among the improvements in terms of transport, the authorities are studying a new railway line that would run in parallel to the current Khartoum-El Obied branch. This network would be mainly used for freight transport. The project has an estimated cost of 1,344 million US dollars (M €)

EAST AFRICA

RUANDA, BURUNDI AND TANZANIA: GOING FROM NARROW TO STANDARD TRACK NETWORKS

The three countries are working on the modernization of 970 kilometers of network, which will go from narrow to standard track gauge. The project will link the railway from Dar es Salaam to Isaka in Northwest Tanzania and Kigali in Rwanda, with a link from Keza to Musongati in Burundi. This will be a freight transport line intended for trains of 32.4 tons of load per axle, although its use for passengers is not excluded. The planned investment is in the amount of 7,600 million US dollars. (€ 6,594 M).

KENYA: LAPSSET RAILWAY CORRIDOR

This project was designed by the Government a few years ago with the aim of channeling oil exports in East Africa. The objective is to develop a 1,700-kilometer corridor linking the new Port of Lamu, 200 kilometers North of Mombasa, to Ethiopia and Southern Sudan. The estimated cost is in the amount of 7,100 million US dollars (€ 6,142 M). Of this item, 480 million US dollars (€ 3,010 M) are for civil works; another 1,200 million dollars has been approved for track infrastructure (€ 1,038 M) and 1,220 million (€ 1,055 M) for rolling stock. It also includes the signaling and telecommunications field, with 520 million US dollars (€ 453 M) and a building, with a budget of 300 million US dollars (€ 259 M).

The network is included in an initiative, called "LAPSSET Program", to give an impetus to the country's industrialization in the medium term and to make Kenya a commercial reference by 2030. Under this program, besides the described branch, new roads, airports and an oil pipelines will be carried out in Southern Sudan.

The Port of Lamu, located in the Northeast of the country, will put in motion 24 million tons of freight each year by 2030.

KENYA: STANDARD GAUGE RAILWAY (SGR)

In May 2017, Kenya's President, Uhuru Kenyatta, commissioned a part of the first phase of this ambitious project. This involves a 472-kilometer branch, under the responsibility of China Harbor Engineering Company, which runs from Mombasa to Nairobi, the capital of the country. This section will be completed in three years.

The next stage will be the construction of a 505-kilometer route from Nairobi to Malaba and, subsequently, a 132-kilometer branch will be added to Kisumu. In total, this passenger and freight corridor has a budget of 3,200 million US dollars. This is the largest infrastructure in history. Later, it will extend to Uganda, Rwanda, Southern Sudan and Ethiopia, making Kenya the center of East African railway links.

TANZANIA: CONNECTION OF MINING AREAS WITH PORTS

Tanzania Transport and Infrastructure has planned investments of $ 14.2 billion (€ 12.3 billion) over the next five years to fully modernize the rail network. Among the most relevant projects is the improvement of a 1,000 kilometer line from the southern mining areas to the Mtwara port.

SOUTH AFRICA

BOTSWANA AND NAMIBIA: TRANSKALAHARI RAILWAY

The 1,447-kilometer TransKalahari railway line would link the coal fields of the Mmamabula mine, in Botswana, to the Port of Walvis Bay, in Namibia. The governments of both countries have signed a second memorandum of understanding to carry out the project, under the public-private formula (PPP), in a viable way. The plans, still being analyzed for the necessary financing, aim to create a powerful freight network between both countries. For this, a terminal of five lines for coal load and a terminal in bulk will be required among other proposals. The preferred route would pass through the City of Gobabis and the Okahandja Village. Cost estimates have considerably varied since the beginning and these are now estimated to be around 15,000 million US dollars (€ 10,307 M).

Freight transport will attract large investments in Africa.

One of the projects is the modernization of TAZARA infrastructure.

ZAMBIA AND TANZANIA: MODERNIZATION OF TAZARA INFRASTRUCTURE

Zambia's Development and Planning Minister, Lucky Mulusa, has announced an investment in the amount of 1,200 million US dollars (€ 824 M) for the revitalization of the infrastructure of the well-known "Tanzania-Zambia Railway Authority" (TAZARA). This budget is part of the national "2017-2021 SNDP" program.

The main works include the modernization of links to the ports of Bagamoyo, on the coast of Tanzania, as well as those of Itungi and Kasanga, in the Tanganyika Lake area. TAZARA estimates that 250 million US dollars (€ 171 M) would be necessary for track equipment, rolling stock and other needs.

MOZAMBIQUE AND SWAZILAND: CHONGOENE TRANSPORT CORRIDOR

Transport authorities will work with the mining companies that manage the extraction of heavy sands in Chibuto, one of the twelve districts composing the Province of Gaza in Mozambique, for the development of the Chongoene Transport Corridor.

This route would facilitate the transport of products from the mines. The idea is to commission a 600-kilometer rail link to Swaziland and a port access in Mapai, near the Zimbabwe border.

SOUTH AFRICA: INVESTMENTS IN NETWORK IMPROVEMENT AND MODERNIZATION

South Africa has one of the continent's most modern rail networks, with 33,400 kilometers. Due to the weight of infrastructures in the economy, in recent years, the investments were directed to the improvement and maintenance so as to follow the growth path.

As a result of this commitment to the freight transport, the "MDS Plan" (Market Demand Strategy) is designed in the short term with an investment of € 22,000 M.

This program prioritizes the development and expansion of rail infrastructures so that the freight transport would be rather performed by railway than by road and to increase the capacity to respond to the current demand. In 30 years, TRANSNET takes into consideration an even greater impetus to the network, within the "Long-Term Planning Framework (LTPF)", with new freight and rolling stock terminals. One of its objectives is to increase the railway load capacity from 79.7 to 170.2 Mtpy.

Two key projects are the improvements in the Sishen line, which links the iron ore network to Gauteng, Botswana and the Waterberg mine through the West Rand-Mahikeng branch and the Trans-Kalahari railway, which provides a way out for coal from the Port of Walvis Bay in Namibia.

ANGOLA, DEMOCRATIC REPUBLIC OF CONGO AND ZAMBIA: CROSS-BORDER REINFORCEMENT

Angola's Ministry of Transport has announced the development of a cross-border railway network through which it will link to Angola, the Democratic Republic of Congo and Zambia. This corridor will start from Luau, the Province of Moxico, in Northeastern Angola. The Benguela railway line will be used for the new infrastructure.

MOZAMBIQUE, BOTSWANA AND ZIMBABWE: RAIL FREIGHT LINE

Mozambique, Botswana and Zimbabwe have also signed an agreement to create a freight railway corridor. This network would establish a new link between Francistown (Botswana) and the Port of Techobanine (Mozambique), via Bulawayo (Zimbabwe). Therefore, the transport in Southern Africa would be improved and an impetus would be given to the international integration and cooperation in terms of infrastructure, together with the private sector, which is vital to the necessary investments. The memorandum of understanding signed between the three countries indicates that this network will have 1,500 kilometers and that each state will contribute with 200 million US dollars.

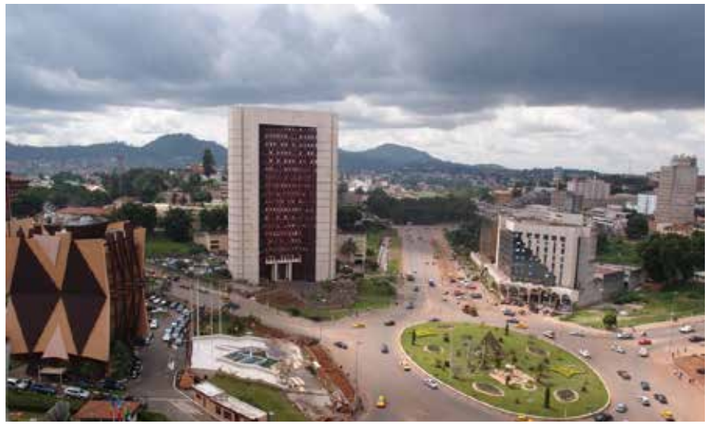
The rest of the capital is expected to be collected through Public-Private Partnerships (PPP) with the private sector. The estimated cost of the project is in the amount of 7,000 million US dollars. In addition, the developer will have to finance the construction of the facilities at the Port of Techobanine, Southern Maputo, in Mozambique. With this new line, two landlocked countries, Zimbabwe and Botswana, would be linked to the facilities of the Port of Mozambique. The project will facilitate investments in the mining industry, as well as transport and production in regions directly crossed by railway and in adjacent regions. Once entered into operation, this will boost the trade with Asia, Europe and America.

CENTRAL AFRICA

GABON: REHABILITATION OF THE TRANS-GABONESE LINE

The International Finance Corporation (IFC) and the French development agency, called PROPARCO, co-operate with Gabon to give an impetus to its freight links. This is the first stage of the rehabilitation and renovation project drafted for the "Trans-Gabonese" railway line of 660 kilometers. This branch goes from Franceville, inside the country, to the Port of Owendo, near the City of Libreville. Société d'Exploitation du Transgabonais (Setrag), a subsidiary of the manganese mining company, called COMILOG, as Concessionaire, will be responsible for improving the network, which will be provided with new rolling stock. 280 million US dollars will be invested in this initial phase.

Image of the Gabon coastline.



CAMEROON AND CHAD: YAOUNDÉ-KOUSSERI

The World Bank finances the improvement of the Yaoundé-Kousseri transport corridor with 71 million US dollars (€ 61 M). This is a 987-kilometer line going from Southern Cameroon to the far north province, near the border of Chad. Works are part of the country's multimodal road and railway transport project and has a total cost of 91 million US dollars (€ 78 M).

The project is under the responsibility of Camrail, the national freight and passenger railway concessionaire.

Although more than 70% of the corridor is in good condition, in recent years, the corridor has experienced a large increase in traffic and this is why new investments have been approved for the improvement of aspects, such as traffic signaling and control systems and the rehabilitation of bridges.

CAMEROON: NEW PORT IN LOLABE WITH RAILWAY ACCESS

The development of a port in Lolabe, a coastal town in the South of Cameroon, is still in the planning stage. The idea is to receive the iron production from several mines, of 35 million tons per year, such as Mbalam, Nabeba and Badondo in Cameroon and the Republic of Congo. The project also includes the "Edea-Kribi-Lolabé" railway line, which would facilitate the transport of minerals.

CENTRAL AFRICAN REPUBLIC: IMPETUS GIVEN TO TRANSPORT CORRIDORS

The Government of the Central African Republic aims to promote railway transport corridors for the purpose of boosting exports in a landlocked country. The two main trade ports are Douala, in Cameroon, for road links and Pointe Noire, in the Republic of Congo, for maritime links. The studied lines include a new route in the Southwest towards Cameroon, routes to Sudan and a Southwestern link to the TransGabon railway.

SOME MAFEX MEMBERS WITH FREIGHT PROJECTS IN AFRICA

TPF GETINSA EUROESTUDIOS

TPF GENTISA EUROESTUDIOS has been involved in the development of the Algerian railway network since 2006.

At present, the company has a large number of ongoing projects related to the electrification and upgrade of the railway infrastructure in the country, which cover 2,684 km of railway lines and make the company a leading player in this field of activity.

These assignments are framed within an ambitious plan for the extension and modernization of the rail network. The purpose of this plan is to increase the operation speed for lines that connect the main cities of Algeria, as well as to extend the railway network up to 12,000 km. Nowadays, the Algerian railway network comprises 4,200 km, most of which have not been electrified yet.

INDRA

The Spanish consortium formed by Adif and Indra will install the Da Vinci technological platform as a computer solution for the integrated management of traffic on the Moroccan railway network. The contract, among other aspects, includes the design, monitoring and supervision of the strategic transport operating plan of the ONCF (Moroccan Railways) railway network.

The DaVinci platform is a breakthrough in the multi-disciplinary integration of the railway environment and aims to provide the comprehensive management of processes, systems and users. This makes it possible to group all of the previously independent subsystems into a single system.

From a functional standpoint, the system envisages the integration of all remote systems (enclaves, power, ERTMS, detectors, etc), operational planning, a real-time traffic monitoring system, traffic predictions, automatic routing of trains, a geographical information system, delivery of data to train drivers, traffic regulation, statistics, passenger information, invoicing, simulation and reconstruction of earlier incidents.

It also allows the dissemination of information via internet and the remote monitoring of all systems.

SIEMENS SPAIN

1. Railway signaling of the Moatize-Nacala freight line in Mozambique: Last May, the Nacala Integrated Logistics Corridor was inaugurated, a 900-km freight line linking the Moatize copper mines with the Nacala port, both located in Mozambique, although the line includes a section of 200 Kilometers that runs through Malawi.

Contract awarding companies, Vale and state railway operator Caminhos de Ferro de Moçambique have entrusted Siemens España to supply their railway technologies, including the Train Sentinel PTC (Positive Train Control) system; the integral train monitoring system; electronic interlocking Trackguard Westrace and telecommunications system based on a microwave network and Tetra system for train-track transmission. The contract also includes the development of a Traffic Control Center (CTC) in Nacala and the maintenance of all systems for one year

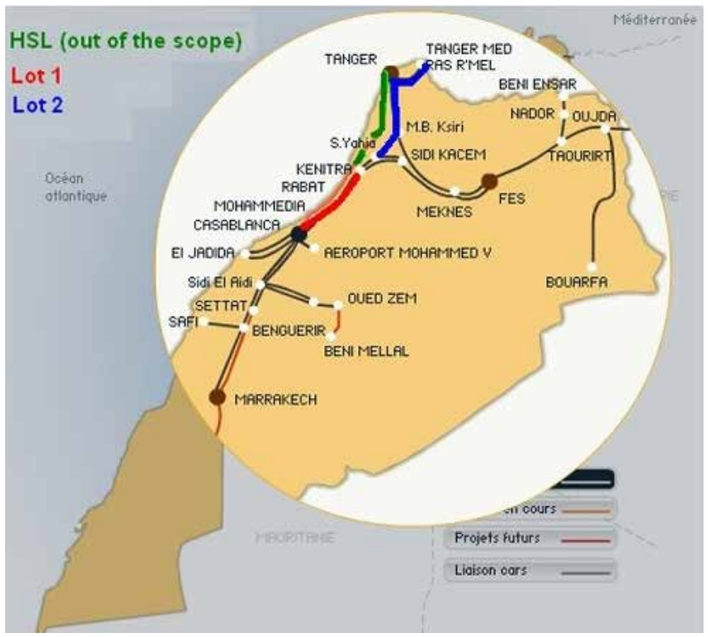
2. Railway signaling of Moatize and Nacala yards in Mozambique:

Siemens is also developing in Mozambique the signaling project for the Moatize and Nacala yards, a contract that also includes their maintenance. These depots are located at each end of the Nacala Integrated Logistics Corridor, the 900-kilometer freight line.

BOMBARDIER SPAIN

Bombardier Transportation, through its Rail Control Solutions division, is present in Africa with several projects for long-distance railway lines. The signaling project for Morocco covers two lines: the first between Tangier and Kenitra and the second between Kenitra and Rabat. The scope of the project is the design, installation, testing and commissioning of the signalling system with ERTMS level 1 technology.

The signalling systems Center of Excellence in San Sebastián de los Reyes (Madrid) is performing the engineering, as well as the support to the installation of the system and subsequent tests. The project involves a modernization of signaling facilities, increasing their safety and performance, as well as reducing travel time and increasing comfort. Bombardier's footprint in Africa also extends to Ethiopia and Algeria where it's carrying out ERTMS level 1 projects, specifically in the Awash-Weldia and Saida-Moulay lines respectively.



A virtual "Google maps" to electrify trains

ALSTOM SPAIN IS DEVELOPING A PIONEERING R&D PROJECT THAT SEEKS TO APPLY AUGMENTED REALITY AND VIRTUAL TECHNOLOGIES TO THE ELECTRIFICATION TASKS OF TRAINS.

Within the Industry 4.0 strategy at the Santa Pèrtua plant, Alstom is developing a pioneering R&D project that seeks to apply augmented reality and virtual technologies to the electrification tasks of trains. The preparation and design of train wiring systems is one of the most complex and precise tasks of a train manufacturing process. Dozens of kilometres of wires go over a train in order to supply energy to the motors, feed the air conditioning systems, run the signalling systems, on-board technologies, passenger information devices, lighting, etc. In one metro unit, such as each one running on line 9 of the Barcelona metro, there can be over 5000 wiring systems.

The Alstom manufacturing plant at Santa Perpètua (Barcelona) has begun an R&D project to virtualize this process and thus make it more efficient and accurate. Virtual reality technique will capture and "map" the train electrical internal system, in order to guide operators - equipped with augmented reality glasses- along a pre-designed path. The installation of the entire wired network will become, consequently, more simply, efficiently and accurately. It is estimated that, thanks to this virtual guiding along these fastest and most efficient "paths", the time used in this process will be reduced by 12%. The project, which is being developed jointly with the company Aumenta Solutions, is co-financed by the Generalitat de Catalunya and the European Union through the European Regional Development Fund.

In 2016, Alstom's industrial site in Santa Perpètua de Mogoda (Barcelona) began a digital transformation process to become the first 4.0 factory of the railway sector in Spain. This project includes both integration of the latest technologies and empowerment of the human capital.

Innovative timer relay delayed on drop-out without auxiliary supply

THE RELAY, DEVELOPED BY ARTECHE, HAS BEEN DESIGNED ACCORDING TO THE REQUIREMENTS OF THALES TRANSPORTATION SOLUTIONS IN CANADA, WHO INCLUDES IT IN THEIR ONBOARD RAILWAY SIGNALLING AND CONTROL SYSTEMS CBTC (COMMUNICATIONS-BASED TRAIN CONTROL).

The range of time delay relays from Arteche offers multiple timing functions in one single device. With regards to the delay on drop-out function, normally two different signals are available (command and supply) to operate the relay.

Following the client´s requisite, who for security reasons needed to provide only one signal to their design, Arteche has developed the TDF-4DO delayed on drop-out timer relay. This relay, unlike the conventional ones, is able to hold its four output contacts in the working position (relay energized) without any help from an auxiliary supply, as it feeds itself by means of a capacitor system located inside the relay. Thus, it is possible to set a delay from 0 to 1.000 ms with a single signal that acts as command and supply at the same time.

Additionally there is the possibility to choose between a fixed and an adjustable (through a potentiometer) timing variant. This way during the testing phase the client can manually adjust the timing according to the specific requirements of each project. Once the particular delay is set, the client selects a factory-configured fixed timing model, avoiding therefore unwanted manipulations due to the relevance of the relay within the system and saving field configuration time and costs.

Among others, the relay will be installed in the onboard CBTC system of the trains belonging to the "Doha Metro" project in Qatar, one of the world's largest metro systems, whose completion is expected by October 2019.

New locomotive TRAXX

BOMBARDIER TRANSPORTATION PRESENTED ITS NEW PRODUCT PLATFORM FOR THE LOCOMOTIVE SECTOR.

Bombardier Transportation presented its new product platform for the locomotive sector at the Transport Logistic trade fair in Munich. Alongside the BOMBARDIER TRAXX AC3 locomotive, which is powered by alternating current, the product platform is now complete with the introduction of new BOMBARDIER TRAXX MS3 (multi system) and DC3 (direct current) locomotives.

The propulsion systems prototypes of the new locomotives, both multi-system and direct current (DC), will be developed at Trápaga's factory, in Basque Country, in a new expression of the Bombardier's Transportation confidence in the Trápaga's factory know-how and technology, which today is one of the most advanced manufacturing excellence centre of the group in the world.

RENFE currently has 100 locomotives belonging to the Bombardier TRAXX platform (series 253), whose propulsion systems were developed at Trápaga's factory. The TRAXX family locomotives have been operating in Spain for a long time in both the Atlantic and Mediterranean corridors, which has contributed to demonstrate to the European operators, the maturity and experience of Bombardier in the manufacture of this type of vehicles.

Compared to similar locomotives in their class, the new locomotives will be able to pull one carriage more and their degree of efficiency will be 1.9% higher. This means that operators can save around 170,000 euro over the locomotive's 30-year service life.

In particular, the features of the MS3 and DC3 locomotives are derived from the TRAXX AC3 locomotive, of which more than 280 have been sold to date.

HERMES Railway Maintenance Solutions: Decision support system and aid in end-to-end management of Infrastructure

THE CONSORTIUM COMPOSED BY VIAS, INYCOM AND CEIT-IK4 IS DEVELOPING HERMES RAILWAY MAINTENANCE SOLUTIONS®, AS A SW TOOL TO MANAGE DAY-TO-DAY MAINTENANCE ACTIVITIES AND AID IN STRATEGIC DECISION MAKING.

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figura 5.

The consortium composed by VIAS, INYCOM and CEIT-IK4 is developing HERMES Railway Maintenance Solutions®, as a SW tool to manage day-to-day maintenance activities and aid in strategic decision making. This SW tool will be available during Spring 2018 and is currently under implementation in Ferrocarrils de la Generalitat de Catalunya. The SW incorporates a wide functionality at three levels:

- General management level (maintenance head or the manager of temporary joint ventures for maintenance):
  - · Visualization at high level and zoom in on the infrastructure diagram (see Figure 1) of both the historical and predictive values of the 4 main indicators about the infrastructure status:
    - Potential hazards for the operation with the time (see Figure 2)
    - Operational failures that might imply loss of service (see Figure 3).
    - Maintenance cost, which permits to analyse its origin and to anticipate budget deviations (see Figure 4).
    - Remaining life of components, which permits to establish maintenance or inversion plans for renovations in advance (see Figure 5).
    - Study of alternatives for optimum planning of components maintenance and renovation.
- Construction manager supervising level:
  - · Centralized information of the status of all maintenance actions (planned, performed, pending).
  - · Visualization and management of infrastructure inspection data for its analysis and proposal of new maintenance actions (see Figure 6).
- Maintenance operator level:
  - · Introduction of maintenance action reports (based on infrastructure operator's own format) through an ad-hoc digital application in a portable device.
  - · Scheduling of the maintenance tasks to be performed by the operator and its level of priority.

User experience measurement service based on the electrodermal response

ICON MULTIMEDIA BRINGS A TOOL TO ITS CLIENTS TO KNOW THE USER'S DEGREE OF SATISFACTION IN REAL TIME, WHILE THIS INTERACTS WITH DIGITAL POSTERS PLACED INSIDE OF TRAINS, TRAIN STATIONS AND ON TRAIN PLATFORMS.

Icon Multimedia offers a groundbreaking user experience measurement service based on the study of the electrodermal activity in collaboration with Sociograph; owner of a technology patented at the University of Salamanca and developed and implemented by this expert company in Digital Signage.
Icon Multimedia, therefore, brings a tool to its clients to know the user's degree of satisfaction in real time, while this interacts with digital posters placed inside of trains, train stations and on train platforms. Such posters broadcast information about the journey, services offered on board, or even, the accessibility or space for user's comfort.
The Sociograph technology measures, records and processes user's electrodermal skin response, thus obtaining two signals: attentional levels and emotional reactions. Further, this technology is able to handle both individual and group electrodermal response.
The 'Global Rider 80' case study leaded by Telefónica and Yamaha is one of many examples of such application. In this case, the motorcycle rider Hugo Scagnetti's attentional levels and emotional reactions were monitored in real time during 80 days, while he was travelling 37,000 kilometres by the most connected motorcycle of history.
A business collaboration, ultimately, to exemplify the ongoing bet of Icon Muntimedia in terms of innovation and to offer its clients an exclusive measurement system with the traveller attested with data mining.

Image: Joint venture AVE Alcántara-Garrovillas.

Innovation in high-speed viaducts: global challenge

IDOM HAS BEEN INVOLVED IN THIS UNIQUE STRUCTURE SINCE 2011, PARTICIPATING IN THE DESIGN, CONSTRUCTION PROJECT AND TECHNICAL SUPPORT PROVIDED TO ADIF'S WORKS MANAGER, IN COLLABORATION WITH THE ARENAS COMPANY AND ITS PARTNERS.

The new viaduct over the Almonte River was awarded last June with the Gustav Lindenthalm Medal, a prestigious decoration given by the International Bridge Conference sponsored by the Engineer's Society of Western Pennsylvania. This award is accompanied by the second prize in the III Engineering Awards of ACHE regarding the Bridges category.

High resistance concrete with 80 MPa has been used to carry out the viaduct's arch. A type of cement exclusively supplied for this work, with a low content of tricalcium aluminate, has been used in its dosage in order to avoid the possible occurrence of deferred ettringite phenomena. Another particularity of this cement is its greater grinding fineness, based on which initial high resistances above 40 MPa have been obtained after 12 hours.

In addition, the concrete has been designed to be self-compacting: it has been simply poured down, facilitating the performance and improving safety conditions during construction, carried out at a high altitude above the dam.

IDOM has been involved in this unique structure since 2011, participating in the design, construction project and technical support provided to ADIF's Works Manager, in collaboration with the Arenas Company and its partners.

With a span of 384 m, the arch beats three world records: the world's highest high-speed arch overtaking the Dashegguan Bridge in China (336 m), the largest concrete railway arch, exceeding the bridge over the Froschgrund Lake on the Nürnberg-Erfurt line from Germany by more than 100 m; and this is the third largest concrete arch in all categories.

New technology to improve operation and maintenance of the Rio de Janeiro Metro

THE STATE-OF-THE-ART ELECTRONIC INTERLOCKING TRACKGUARD WESTRACE MK II IS A HIGHLY FLEXIBLE, MODULAR VITAL LOGIC PROCESSING SYSTEM THAT HAS ALREADY BEEN TESTED IN OVER 1,200 APPLICATIONS WORLDWIDE.

Metrô Rio, the concessionaire of the Rio de Janeiro Metro network, has awarded Siemens the contract for the installation of its electronic interlockings Trackguard Westrace Mk II in line 2 of the Rio de Janeiro metro network.

Siemens will install the new technology in Pavuna, station terminus of line 2, replacing the existing relay interlocking, which will allow Metrô Rio to improve the operation and maintenance of line 2, which has a length of 25 kilometers and 16 stations.

The state-of-the-art electronic interlocking Trackguard Westrace Mk II is a highly flexible, modular vital logic processing system that has already been tested in over 1,200 applications worldwide. With straightforward configuration using ladder logic to deliver almost any vital functionality, it offers real benefits to railway authorities in terms of cost of ownership, capability and flexibility.

This new contract means the entry of the Trackguard Westrace interlocking technology in Rio de Janeiro, which becomes the third Brazilian city in which Siemens Spain carries out railway signaling projects, after Sao Paulo and Porto Alegre.

Siemens Spain (ex Dimetronic) entered the Brazilian railway market in 2009 after being awarded with two contracts for the modernization of the signaling of lines 8, 10 and 11 of the São Paulo suburban network.

In 2010 the company obtained the contract to implement the signalling of the north extension of line 1 of the Metro of Porto Alegre.

CyberRail: putting a stop to cyber-attacks

THALES DEVELOPED CYBERRAIL, A MONITORING SOLUTION FOR NETWORK SECURITY. CYBERRAIL CAN DETECT, VISUALISE, ANALYSE AND PROVIDE A TIMELY RESPONSE TO THE THREATS AND ATTACKS THAT RAILWAY SYSTEMS ARE SUBJECT TO. THE SYSTEM'S SENSORS AUTOMATICALLY TRACK HUGE VOLUMES OF DATA TRANSMITTED OVER INTERNAL RAILWAY SYSTEMS, COLLECTING CRITICAL INFORMATION ABOUT ABNORMAL EVENTS.

Danger lurks on the information highway just as it does in real life, with traffic jams, accidents, unauthorised intrusions, criminal attacks and other risks. From power plants to hospitals, air traffic control systems to rail networks, a country's critical infrastructure (or essential operators) has to be prepared to deal with cyber threats. For railways in particular, cyber security is an issue of increasing importance.

The awareness about potential new cyber threats is crucial. Railway networks and operators have a deeply ingrained culture of safety. However they must be ready to face new security risks in order to protect their systems from the external threats, including criminal activities.

Using operational control systems, modern railway systems have electronic interlocking, radio-based signalling systems and the specially developed GSM-R mobile communications standard with highly specific signalling infrastructures that are difficult for cyber criminals to access. But these complex technologies only work because they are integrated into internet-based data communication networks and therefore run on corresponding servers like any other application. This is where experts see a risk of attacks and interventions by unauthorised users and it is not just a hypothetical danger. Nextgov, the governmental-affiliated American technology newsletter, reported that intruders may have manipulated railway signals in the northwest of the United States in December 2011. Although the incident did not have a dramatic impact, it nevertheless revealed the vulnerability of IT-based technology.

Profound vulnerability analysis: Thales CyberRail provides the possibility to depict vulnerability relationships between the systems and to granulate them based on a weighting of the risks.

Search tab: Thales CyberRail offers the possibility to scan all log data, detect abnormalities, set thresholds and individually define how search results are graphically depicted.

In order to address these risks, Thales developed CyberRail, a monitoring solution for network security. CyberRail can detect, visualise, analyse and provide a timely response to the threats and attacks that railway systems are subject to. The system's sensors automatically track huge volumes of data transmitted over internal railway systems, collecting critical information about abnormal events. In the event of an attack, the operator can instantly identify the type and location of the incident on their screen and initiate predefined countermeasures.

Thales CyberRail not only prevents imminent hazards, but constantly analyses operational data in order to provide an overall picture of potential weaknesses in the IT workflows of critical infrastructure organisations. Based on risk analyses conducted jointly with customers, Thales offers comprehensive security solutions to help completely stop the threat of potential cyber-attacks.

PRESENCE OF MAFEX IN INTERNATIONAL EVENTS IN 2017

◗ 23 october- 26 october 2017
FORUM OF INVESTMENT AND BUSINESS COOPERATION
Los Angeles (EE.UU.)

◗ 20 november-24 november 2017
TRADE DELEGATION TO THE PHILIPPINES
Manila (The Philippines)

◗ 16 october-20 october 2017
TRADE DELEGATION TO MEXICO
Ciudad de Mexico, Monterrey and Guadalajara (Mexico)

◗ 27 november-1 december 2017
TRADE DELEGATION TO AUSTRALIA AND CDTI TECHNOLOGICAL JOURNEY (AUSTRALIA)
Melbourne and Sydney (Australia)

MEMBERS DIRECTORY

INFRASTRUCTURE

Engineering and consultancy
- Aquafrisch, S.L.
- Ardanuy Ingeniería, S.A.
- CAF Power & Automation
- CAF Turnkey & Engineering
- Colway Ferroviaria, S.L.
- Gantrex S.A.
- Idom
- Ineco
- MB Sistemas, S.Coop.
- NEM Solutions, S.L.
- Newtek Sólidos
- Segula
- Sener Ingeniería y Sistemas, S.A.
- Tecnivial Infraestructuras
- TPF Getinsa-Euroestudios
- Typsa

Civil engineering construction
- Azvi
- COMSA
- Instalaciones Inabensa, S.A.
- Parrós Obras, S.L.
- PRECON - Prefabricaciones y Contratas, S.A.U.
- Pretensados del Norte

Electrification
- Alstom Transporte, S.A.
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- SEMI, S.A.
- Telice
- TPF Getinsa-Euroestudios
- Typsa

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

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

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

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

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

INFORMATION AND DATA SYSTEMS

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

Communications, Information systems and passenger information equipment
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Cables de comunicaciones Zaragoza, S.L.
- CAF Power & Automation
- Ecocomputer
- Icon Sistemas de Información y Datos
- Idom
- Ikusi
- Indra
- Ineco
- P4Q Electronics, S.L.
- SICE
- Siemens Rail Automation, S.A.U.
- Telice, S.A.
- Thales España GRP, S.A.U.
- TPF Getinsa-Euroestudios
- Typsa

ROLLING STOCK

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

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

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

EQUIPMENT AND COMPONENTS ROLLING STOCK

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

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

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

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

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

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

Quality control, inspection and certification
- Tecnatom

MEMBERS DIRECTORY PER SECTOR

ALBATROS, S.L.

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Albatros Corporation is specialised in the design, manufacture, commercialization, and maintenance of equipment for the railway industry.

Albatros is formed by various units of engineering and manufacture in Spain as other countries.

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

AL-KO

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

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

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

ALSTOM TRANSPORTE, S.A.

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- www.alstom.com

As a promoter of sustainable mobility, Alstom Transport is the only railway manufacturer present in the full spectrum of transport systems, equipment and services. The company offers a complete range of high performance products: rolling stock, signalling, maintenance and modernisation, infrastructure and integrated solutions. In Spain, Alstom Transport employs around 2000 people in 19 working sites, has a manufacturing site in Barcelona and develops R&D programmes both for rolling stock and railway signalling and safety projects.

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

AMURRIO FERROCARRIL Y EQUIPOS, S.A.

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- www.amufer.es

Amurrio Ferrocarril y Equipos, S.A. is one of the international market leaders in the design, production and installation of railway materials. Our rolling stock interchanges and crossings are installed in high-speed rail lines, underground lines, tram lines, and conventional railways throughout Europe, Asia, America and Africa. In the area of metal foundry, we have the experience, the knowledge and the people to produce, process and mechanize machine tool parts and sets of great technical complexity in carbon steel manganese steel and other steel alloys.

AQUAFRISCH, S.L.

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- www.aquafrisch.com

Aquafrisch is a service oriented company. Our task is to provide our customers needs with reliable results.

Aquafrisch provides a wide offer in equipment and services in both working fields for the company:

1. Aquafrisch Rail: solutions for railway equipment in depots and workshops.
2. Aquafrisch Agua: solutions for water treatment both in consumption and waste waters.

ARCELORMITTAL ESPAÑA, S.A.

- Apdo. 570. Edificio Energías, 2ª pl.
  33691 Gijón
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- P: +34 985 18 77 50
- rails.specialsections@
  arcelormittal.com
- www.rails.arcelormittal.com

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

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

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

ARDANUY INGENIERÍA, S.A.

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

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

In Spain, Ardanuy carries out work from offices in Madrid, Barcelona, Valencia, Seville and Tenerife. It also has offices in Lithuania, Poland, India, Colombia, Algeria and USA. Ardanuy has always had a marked international vocation. Currently over 90% of new contracts are won on the international market, in Western Europe: United Kingdom, Ireland and France; Central and Eastern Europe: Poland, Bulgaria, Latvia, Lithuania; America: Bolivia, Chile, Colombia, Mexico, Peru, USA; Africa: Morocco, Mozambique, Algeria, Egypt, South Africa; and Asia: India, Vietnam, Kazakhstan.

ARTECHE (ELECTROTÉCNICA ARTECHE SMARTGRID, S.L.)

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- F: +34 94 615 56 28
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- www.arteche.com

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

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

AZVI

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- ww.azvi.es

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.com
- www.bombardier.com

Bombardier Transportation, a global leader in rail technology, offers the broadest portfolio in the rail industry.

Bombardier Transportation Spain is one of the leading exporters of the Spanish railway industry, employing more than 750 people in its plants and offices in Trápaga (Biscay), San Sebastian de los Reyes and Alcobendas (Madrid), Madrid and Barcelona, and taking part in some of the major railway projects in the country.

Its Propulsion Systems plant located in Trápaga (Biscay) and its Centre of Excellence in Rail Signalling Engineering located in San Sebastian de los Reyes (Madrid) are world top technological centres, leading the requests for Bombardier's propulsion and signalling systems for Spain and for the rest of the world. Exports represent already more than 85% of its activity.

CABLES DE COMUNICACIONES ZARAGOZA

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

Founded in 1971, Cables de Comunicaciones has been steadily building its reputation as a respected business in the field of communications cables. Cables de Comunicaciones has cemented its position and its products are now used in over 50 countries around the world.

The company has a wide range of products that are certified according to the standards of the leading telecomm and railway operators in the majority of countries in Europe. It is dedicated to designing and developing excellent telecommunications, signalling, instrumentation, data and fibre optic cables.

CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES, S.A.

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- **F: +34 91 436 60 11**
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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 (Bagnères de Bigorre), Mexico (Mexico Df) and Brazil (Sao Paulo) and Rail Technological Centres in Beasain and Zaragoza. CAF's projects are distributed in over 25 countries around the world in the five continents.

CAF POWER & AUTOMATION

- **Parque Tecnológico de San Sebastián. Pso. de Mikeletegi, 58 -2º.**
  20009 San Sebastián (GIPUZKOA)
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- **www.cafpower.com**

CAF P&A is a global manufacturer of electric power solutions as well as information and communications systems for the rail industry. CAF P&A have equipped more than 5,000 vehicles world wide including, metros, light rail, locomotives and high-speed trains.

One of the main strategic lines is the development of its own technology. To do so, as a major asset, CAF P&A has a team of experienced, competent and dynamic specialists. CAF P&A develops, manufactures and deliver high reliability solutions adapted to each and every client's specific needs in compliance with railway standards.

CAF SIGNALLING

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- **F: +34 91 661 37 51**
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- **www.cafsignalling.com**

CAF Signalling, the technological subsidiary of the CAF Group, provides rail traffic signalling, both in Spain and abroad.

As such, it offers railway signalling solutions and remote control for Railway infrastructures.

CAF Signalling, boats the Company's own in-house engineering and expertise to take on "turn-key" railway signalling projects with recognition from several Railway Administrations in Spain and other countries in Europe, America, Africa, Middle East and Asia.

CAF TURNKEY & ENGINEERING

- **Parque Científico y Tecnológico de Bizkaia, Laida Bidea, Edificio 205.**
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  (BIZKAIA)
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- **F: +34 94 623 29 29**
- **comercial@cafte.com**
- **www.cafte.com**

CAF Turnkey & Engineering was created in 2007 with its head office is in the Technological and Scientific Park of Biscay (Zamudio). It began its business in Integrated Engineering of Transport Services and in 2015, after merging with the company CMFS (Mexico), it increased its portfolio of services with the inclusion of EPC projects for both civil works and subsystems.

Following solid and constant growth, the company currently has a workforce of 200 with offices in Zamudio, Madrid and Mexico, providing service to both companies within the CAF Group and national and international private and public customers.

CALMELL GROUP

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- **F: +34 93 564 58 22**
- **calmell@calmell.net**
- **www.calmell.com**

The first company of the group, Calmell, S.A. was founded in 1970, focusing its activity on the manufacture or graphic products. Currently, the Calmell Group is the leader in access control and identification, through its companies Calmell S.A., Affix S.L., Idoneum S.A., which are respectively engaged in producing the supports (tickets, cards,…), developing specific software and hardware, personalization and security.

In the public transport sector it works for integrators and operators supplying any kind of support for ticketing and reader/writer systems. With a strong international presence through its network of representatives and distributors, the Calmell Group is able to satisfy your needs on a global level.

CETEST

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

Test and analysis services for:

- Design verification and validation.
- Full homologation of new products and vehicles.
- Failure analysis and optimization.

Fully accredited test lab with more than 40 years of experience in railway testing.

Test services cover the following areas:

- Structural components.
- Running gear.
- Suspension systems.
- Vehicle dynamics.
- Noise and vibrations.
- Aerodynamics.
- EMC and energy consumption.
- Mechatronics.
- Special instrumentation (Instrumented wheelsets, instrumented pantograph).

COLWAY FERROVIARIA, S.L.

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  08908 L'Hospitalet (BARCELONA)
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- **F: +34 936 39 8 610**
- **acolomerf@colway-08.com**
- **www.colway-08.com**

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

COMSA CORPORACIÓN

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- **www.comsa.com**

COMSA is the company of COMSA Corporación specialised in the construction of railway infrastructures. Founded in 1891, the company provides a comprehensive service in the field of railway construction and maintenance, electrification, and control and communication systems of high speed rails, conventional rails, metros and tramways.

In this business activity, it is leader in Spain, where has been involved in the construction of all high speed lines, and has permanent operations in Argentina, Brazil, Lithuania, Mexico, Poland, Portugal and Turkey. It has also taken part in a large number of projects in other markets such as Italy, the Philippines, Taiwan, Malaysia, India, etc. This extensive experience has been the key for its consolidation in the railway sector and has enabled it to become the leader in the railway construction industry.

DANOBAT

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

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

DSAF – DINÁMICAS DE SEGURIDAD, S.L.

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

DSAF is a company structure devoted to People's Movement Safety. It is committed to providing new technologies applied to design and project implementation, as well as initiatives that guarantee an approved evacuation safety level in this generalized risk society.

Emergency signalling is DSAF's main application area; it develops photoluminescent, electroluminescent and LED signalling systems for people evacuation in risk situations and environments: tunnel evacuation safety, vessel evacuation safety, building evacuation safety…

DSAF safety applications are developed in three big areas: tunnel safety (road / railway), safety in vessels, and buildings.

DURO FELGUERA RAIL, S.A.U.

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

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

ECOCOMPUTER S.L.

- **C/ María Zambrano 5 - Bajo ·**

33401 Avilés (ASTURIAS)
- P: +34 985 52 50 46
- F: 34 985 56 83 17
- sales@ecocomputer.com
- www.ecocomputer.com

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

ELEKTRA-GRUPO ELEKTRA, S.A.

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

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

FAIVELEY TRANSPORT IBERICA, S.A

- Pol. Ind La Drecera – C/ Mecánica, 23 – 43470 La Selva del Camp (TARRAGONA)
  C/Antonio Cabezón s/n (complejo Renfe) – 28034
  Madrid (MADRID)
- P: +34 917282159
- F: +34 917282157
- patricia.gil@wabtec.com
- sergio.munoz@faiveleytransport.com
- www.faiveleytransport.com

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

FUNDICIONES GARBI, S.A.

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

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

FUNOR, S.A.

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

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

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

GAMARRA, S.A.

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

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

GANTREX, S.A.

- Pol. Ind. Izarza 4N –
  48115 Sondika – Vizcaya
- P: +34 944 53 50 84
- info.bilbao@gantrex.com
- www.gantrex.com

Gantrex Spain, S.A. is the global market leader in specialty rail tracks fixation including design, production, supply of goods and installation of turnkey contracts.
Rail fixation at train workshops, embedded rails accesses for Ports or logistic terminals and private rail installations together with other Subway´s and Tram´s required installations are some of Gantrex Spain´s main activities.
Products:
- All sections of rails
- Metallic railway sleepers
- Rail fixing Clips
- Rubber pads for rails
- Steel columns for trains maintenance
- Embedded rail fixation systems (recycled rubber)
- Embedded rail fixation systems (polyurethane)
- Hydraulic buffers

GMV SISTEMAS, S.A.U.

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

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

GORATU

- PLerun Kalea, 1, 20870 Elgoibar,
  Gipuzkoa
- P: +34 943 74 80 60
- sales@goratu.com
- http://www.goratu.com

Under the trademark of the prestigious market leader GEMINIS, Goratu develops horizontal and multiprocess lathes of the highest technology.
We offer customized solutions for high specialization technologies.
60 years of experience and specialized knowledge in the Railway Sector have let us to the design and manufacture of lathes for manufacture and maintenance of axles, wheels and wheelsets.

HICASA - HIERROS Y CARBONES, S.A.

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

HICASA specialises in the storage, transformation, distribution and commercialisation of railway materials, rails and railway accessories of all types in accordance with both European (UNE EN), as well as American (ASTM) Standards, not to mention others such as AREMA, etc. HICASA belongs to a private group of companies, GEVIR, which is made up of four enterprises in Spain, and is special in the sense that it combines its role of distributor with that of manufacturer, given that it possesses its own specialist light rail factory, a fact which endows it with a unique market profile.
We can boast of a roofed surface area at our installations of over 13,000 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.

ICON SISTEMAS DE INFORMACIÓN Y DATOS

- Avd. Santiago Amón, 3-52-
  34005 (Palencia)
- P: +34 979 70 29 06
- F: +34 979 70 20 21
- ehornos@iconmm.com
- www.iconmm.com
- www.denevads.com

Software development company specialized in passenger information systems, digital signage and advertising schedules, covering all areas of transport, either rail/metro, airports, bus or port. ICON Multimedia also has a significant presence in the world of commerce/retail, menuboards, and the banking sector, with worlwide reference clients with more than 40.000 points deployed around the world.
It stands out for the wide degree of customization of your product to suit the needs or requirements of any client or that may be contained in a statement of technical conditions.

IDOM

- Zarandoa 23
  48015 Bilbao (VIZCAYA)
- P: +34 944 79 76 00
- F: +34 944 75 93 64
- cortega@idom.com
- oscar.rico@idom.com
- www.idom.es

IDOM is one of the european leading companies in the field of professional services in engineering, architecture and consultancy. It is an independent company established in 1957 and it has participated in over 30.000 projects in five continents.

In 20 countries with 39 offices throughout regions (America: Argentina, Brazil, Canada, Chile, Colombia, USA, Mexico, Perú), Asia (India), Africa (Argelia,Lybia, Morocco), Middle East (Saudi Arabia, UAE), Europe (Belgium, Slovenian, Spain, Poland, Portugal, United Kingdom). More than 3.000 staff posseses the expertise and experience to cover all the phases of a railway project (high speed, conventional, freight, metro, light rail, tramway, stations, 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 socioeconomical analysis,basic and detailed design, operational and maintenance plans,works supervision, testing and commissioning.

IKUSI

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

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

IK4 RESEARCH ALLIANCE

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

IK4 Research Alliance is a private and independent alliance of R&D centres, a benchmark in the European R&D context. It comprises 9 organisations in the Basque Country: AZTERLAN, CEIT, CIDETEC, GAIKER, IDEKO, IKERLAN, LORTEK, TEKNIKER and VICOMTECH.
The IK4 Research Alliance sets out to generate, capture and transfer scientific and technological knowledge mainly to the business framework. This way it contributes towards improving the competitiveness of companies and the progress of society. Nowadays it gathers a staff of 1275 and an income of 102M€ in 2014.

IMPLASER 99, S.L.L.

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

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

INDRA

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

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

INECO

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

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

INGETEAM POWER TECHNOLOGY, S.A.

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

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

INTERNACIONAL HISPACOLD, S.A

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

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

JEZ SISTEMAS FERROVIARIOS, S.L.

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

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

KELOX, S.A.

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

Kelox launched its railway activity in 1977, manufacturing catering 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 93 850 41 00**
- **F: +34 93 859 55 30**
- **gustau.castellana@lafarga.es**
  jordi.valaro@lafarga.es
- **www.lafarga.es**

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

LUZNOR

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

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

MANUSA DOOR SYSTEMS

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

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

MB SISTEMAS, S. COOP.

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

MB SISTEMAS is part of MONDRAGON CORPORATION. We develop turnkey "World Class" engineering projects, implementing automation solutions into the Assembly and welding phases of manufacture process for car body structures of railroad passenger cars.

We give "ad hoc" solutions for the customer's needs; having implanted successfully our facilities around the world. As engineering we develop both, robotic installations and special machines for any assembly process.

METALOCAUCHO, S.L.

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

MTC specialises in the design and manufacture of anti-vibration and suspension solutions for Rolling stock.

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

MGN TRANSFORMACIONES DEL CAUCHO, S.A.

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

MGN was established in 1957 and since then it has been developing its activity both designing and manufacturing rubber-metal components, mainly for the railway industry.

MGN invests in research and innovation as a basis for the development of elements to be adapted in the new understanding of passenger and fright trains, taking the lastest technological advances of the rubber world, vibration control and damping systems.

NEWTEK SOLIDOS S.L

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

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

NEM. NUEVAS ESTRATEGIAS DE MANTENIMIENTO, S.L.

- **Paseo Mikeletegi, nº 54 - 1ª planta 20009 Donostia (GIPUZKOA)**
- **P: +34 943 30 93 28**
- **F: +34 943 30 93 26**
- **info@nemsolutions.com**
- **www.nemsolutions.com**

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

P4Q ELECTRONICS, S.L.

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

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

PARRÓS OBRAS, S.L.

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

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

PRETENSADOS DEL NORTE S.L.

- **Miravalles, 4 (Zona Industrial de Betoño) 01013 Vitoria (ALAVA)**
- **P: +34 945 258 431**
- **F: +34 945 261 400**
- **pretenorte@pretenorte.com**
- **www.pretenorte.com**

PRETENSADOS DEL NORTE produces the best prestressed wire for railway sleepers in the world. More than 30 years' experience, PRETENORTE only uses the best raw materials and we can supply any need required by the client.

We have supplied prestressed steel for several projects around the world and our material is considered the one with the best quality in prestressed WIRE world. We have the best and most modern machinery and a highly qualified team of experts and engineers. We also produce prestressed steel used in precast concrete parts and structures.

PATENTES TALGO, S.L.

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

Talgo, leading High Speed rolling stock manufacturer in Spain, has over 70 years of experience manufacturing very high speed, high speed, intercity and regional trains, tilting passenger coaches and locomotives.

The company is also a pioneer in providing complete maintenance solutions to railway operators worldwide, and is specialized in the design and manufacture of maintenance equipment for any type of rail vehicles.

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

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

PRECON is the Spanish leader in design and supply of precast concrete products for railway tracks, either ballasted and ballastless tracks.

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

REDALSA, S.A.

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

■ Rail electrical welding LBS are arranged to form 288 meters for high-speed train strecht and convencional rail network.

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

■ Regeneration of used rails to make LBS.

■ Providing fastening complet systems. Manufacture of metalic elements for diferents fastening systems. Iron sheets J2.L1 or P50 for J2 and Elastic fastening clips SKL-1, SKL14, SKL12 and new variant to "Fast-Clip".

■ Rail ultrasonic inspection, using hand-held equipment and self-propelled movil equipment until 90 Km/h.

■ Maintenance and repair work of train coaches in our factory. Our facilities are equipped with 3 Km of railway and 3 railway access to RFIG. We have all the necessary traction resources of 1668 track width.

■ Thermal aluminium welding kits distribution.

SEMI, S.A. (GRUPO ACS)

- **Avda. de Manoteras, 6 2ª Planta 28050 Madrid (MADRID)**
- **P: +34 91 308 93 35**
- **F: +34 915 218 597**
- **ferrocar@semi.es**
- **www.semi.es**
- **www.grupoacs.com**

A society in international expansion. With the adaptability of a small business, the infrastructure of a big company and the financial backing of a large group. SEMI is encompassed in the major companies of Industrial Services sector of the ACS group.

Focused in the industrial field, SEMI build infrastructures for energy, transport, communication, environment and non-residential building. Activity in the railway area: Electrification and Traction Substations for AC and DC, Auxiliary Electrical Equipment, Engineering and Consulting, Maintenance of Catenary and Substations, Infrastructure for Railway Signaling and Communications.

SEGULA

- **Oquendo 23, 1ª planta 28006 Madrid**
- **T: +34 917 991 112**
- **F:+34 917 991 113**
- **www.segula.es**

SEGULA Technologies is an international engineering consultancy group specialised in cutting-edge innovation.

Since 2002, SEGULA Technologies is present in Spain. We are an engineering services company with more than 1.000 professionals working in Staffing, Consultancy, PLM and Fixed Price Projects.

It is based in 12 locations in Spain: Madrid, Barcelona, Vitoria, Zaragoza, Bilbao, Pamplona, Vigo, Valladolid, Vigo, Valencia, Sevilla and Cartagena close to the main customers.

In 2016, SEGULA Technologies turnover in Spain was more than 54 million Euros. More than 60% of our collaborators are university graduates. Our customers include leading companies in leading sectors: aeronautical, automotive, energy, industry, IT, rail, etc…

SENER INGENIERÍA Y SISTEMAS, S.A.

- **Severo Ochoa, 4 (PTM) 28760 Tres Cantos (MADRID)**
- **P: +34 91 807 70 68 / 71 74**
- **F:+34 91 807 87 32**
- **dep.infra@sener.es**
- **www.sener.es**

Sener is one of the leading engineering and technology groups in Europe with over one billion euros of annual turnover, more than 5,000 professionals and a continuously growing international presence with offices in more than 15 countries.

In the field of railway engineering, Sener count on an extensive experience in metros, light rail trains systems and tramways, conventional railway line, freight transport and High Speed Lines. Sener's activities range from preliminary, conceptual and feasibility studies, basic and detailed engineering to project management services, supervision of works, value engineering or ICE services.

SICE TECNOLOGÍA Y SISTEMAS

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

SICE Tecnología y Sistemas, (SICE TyS) is a multinational group of Companies, technology and systems integrators operating in the fields of traffic and transport, environment and energy, telecommunications and all types of industrial processes.

SICE TyS's transport activities are focused on meeting the needs of users, operators and transport operation concessionaires in the transport sector. As a systems integrators and systems suppliers, they offer unique technological solutions tailored to all kind of installations.

Design of the Centralized management of all services that complement any form of public or private transport and integrates different solutions and systems:

- Security&Safety Systems for Metros and Railways
- Telecommunications Systems for Metros and Railways
- Signaling: (Interlocking, Level Crossing, CTC)
- Electric BRTs
- Ticketing
- Public transport prioritization
- Consulting Engineering (OFITECO): Railways lines, Tunnels, Load test (railways bridges).

SIEMENS RAIL AUTOMATION S.A.U.

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

Siemens Rail Automation is the resulting Company after the acquisition of the Invensys Rail Dimetronic group by Siemens. The new division offers integrated mobility solutions through the most advanced technologies for railway signalling and train control.

Our main purpose is the supply of "turn-key" projects, including all the phases of design, development, supply, manufacturing, installing, testing, commissioning and maintenance of railway signalling systems and automatic train control systems for either mass transit applications as main line and high speed lines.

The solutions and systems of Siemens Rail Automation allow railways and metropolitan networks to improve the safety of their railway application; increase the capacity of the lines; reduce operating costs; optimize maintenance works; obtain a better usage of its rolling stock, having at the same time lower energy consumptions rates and to decrease energy consumption.

STADLER RAIL VALENCIA S.A.U.

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

The new Spanish División of Stadler has a long history as rail vehicles provider. Stadler Rail Group completed the purchase from the Vossloh Group of its Spanish business unit of manufacture of locomotives and light rail vehicles at the end of 2015. This acquisition falls within the long term growth strategy of the Stadler and reinforces its position as one of the leading manufacturers of railway vehicles with new products and the access to new markets.

Technology and quality are the key points of the entire range of products developed and produced in the Valencia plant. Closely linked with the industrial heritage of railways and with the benefit of more than a century of experience, Stadler Rail Valencia designs and manufactures state-of-the-art locomotives as well as passenger trains and provides a comprehensive range of services such as the maintenance of the vehicles, spare parts logistics, technical support or training.

TALLERES ALEGRÍA, S.A.

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

Talleres Alegría with more than 100 years at the service of railway´s networks, offers to its customers a wide range of fixed track equipment with the best quality and service conditions. Following its own technical design or its customer's, Talleres Alegría manufactures among other turnouts for High Speed Lines, conventional Lines, subway and Tramway lines, as well as End Forged Switch Points and Track Vehicles.

Being aware of the relevance of comfort within the railway sector, Talleres Alegría has collaborated with leading companies developing and applying technical solutions for mitigating noise and vibrations during the crossing over the turnouts.

TECTATOM

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

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

TECNIVIAL

- **C/ Livorno nº59 CP 19004 Marchamalo (GUADALAJARA)**
- **P: +34 949 32 50 00**
- **F:+34 949 25 20 80**
- **export@tecnivial.es**
- **www.tecnivial.es**

Created in 1973, Tecnivial is the Spanish reference in traffic safety. It contributes giving solutions regarding Airport, Railways, and Road Signaling and marking. The challenge for a permanent evolution, technological innovation, and customer´s satisfaction are our identity signs. In Tecnivial we specialize in all types of fixed signalling for roads, both conventional and high speed lines; in this last section are one of the companies approved by the Railway Infrastructure Administrator (ADIF).

We have extensive experience in railway stations signalling, carefully following the specifications of the corporate identity manuals. We develop comprehensive and customised signage projects, from project design to final installation and maintenance service. Tecnivial has always been committed to the I+D+i, which has allowed it to be a reference in the fixed railway signaling, high-speed and conventional network, while being present in the most relevant projects at the national level; this is the case of the Madrid-Figueras or Olmedo-Orense sections, and internationally, Ave Medina-La Meca.

TEKNORAIL SYSTEMS, S.A.

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

Teknorail Systems, S.A. is a company

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

TELICE

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- **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 Edificio**
  Álamo 4º, Planta Sur.
  28033 Madrid
  (MADRID)
- **P: +34 91 273 72 00**
- **F: +34 91 273 78 67**
- **jose.villalpando@thalesgroup.com**
- **www.thalesgroup.com**

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

TPF GETINSA-EUROESTUDIOS

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

With more than 50 years of experience, TPF GETINSA EUROESTUDIOS has grown into a leading business group in Spain and an international benchmark in the engineering sector of transportation infrastructures and the environment. The projects and studies required to develop public works and linear infrastructures are achieved thanks to our human and material resources.
We are experts on the comprehensive management of infrastructure in all its phases, starting from the preliminary design up to the operation and maintenance, including all the intermediary steps as profitability analysis, studies, projects, works control and supervision, as well as financial management.
These activities are developed both in Spain and abroad. Our international delegations have been established in different countries and our experience extends over 40 countries in Europe, Asia, America, Middle East and Africa. We are currently working international projects in 30 countries.
At present, the TPF Getinsa-Euroestudios employs more than 1200 professionals, two thirds of whom are university graduates.

TYPSA

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- **F: +34 91 651 75 88**
- **madrid@typsa.es**
- **www.typsa.com**

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

VALDEPINTO, S.L.

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- **F: +34 91 691 57 03**
- **lauraparra@valdepinto.net**
- **www.valdepinto.com**

Valdepinto, S.L. was established in 1986 and focuses its activities in the Railway sector.
We have four main product lines:

- All types of machining (specialists in electrical insulation).
- Screen printing, Signs and Engraving low-relief.
- Metal transformation and welding.
- Design and fabrication of transformers and coils of high/low voltage. Our philosophy is to always offer all our clients an unbeatable value for Money, combined with an excellent service.