

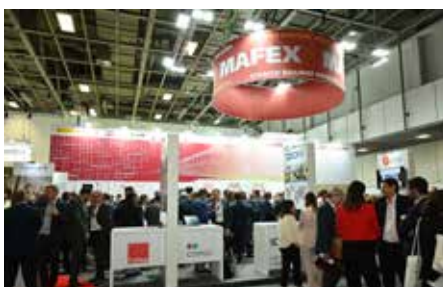
# RAILLIVE!

Digitalisation, sustainability and liberalisation,  
keys to a **carbon-free future**



#### MAFEX INFORMS

Mafex will chair for two years UNIFE's National Associations committee



#### INNOTRANS 2002

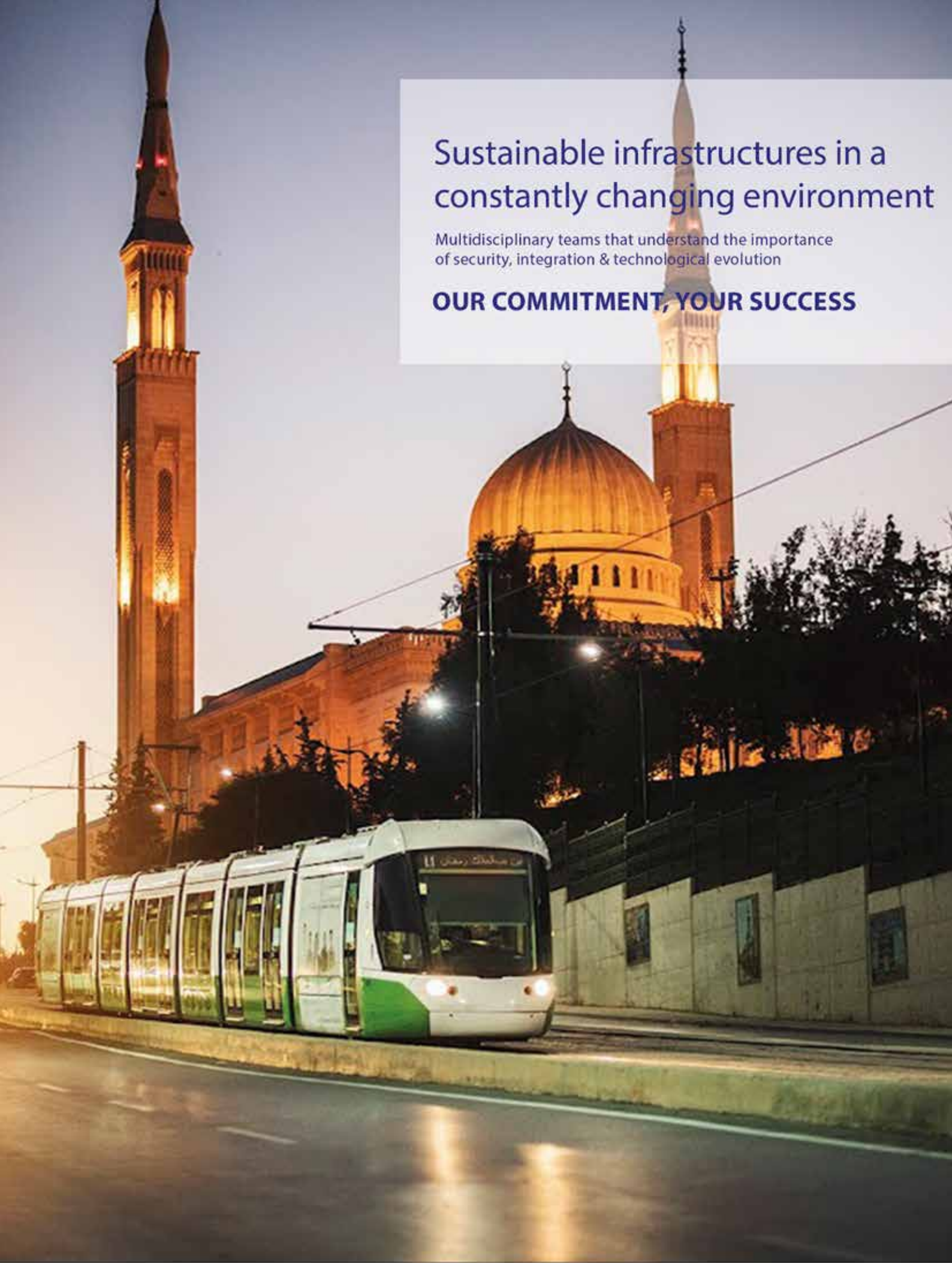
The largest edition of the Spanish railway companies, in terms of participation.



#### RAIL LIVE! 2022

New edition of Rail Live! From 29<sup>th</sup> November to 1<sup>st</sup> December in Málaga.





# Sustainable infrastructures in a constantly changing environment

Multidisciplinary teams that understand the importance of security, integration & technological evolution

**OUR COMMITMENT, YOUR SUCCESS**

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NEW MAFEX MEMBER

**UPCOMING MAFEX OPEN DAYS ON 12<sup>TH</sup> DECEMBER IN LEIOA (BIZKAIA) AND 14<sup>TH</sup> DECEMBER IN MADRID**

This initiative aims to raise awareness about the work of Mafex and the services it offers to the companies.

**MAFEX RENEWS ITS INNOVATION COMMITTEE FOR THE PERIOD 2022 – 2023**

The Innovation Committee is made up of 24 companies and technology centres.

**MAFEX COMPLETES THE ELABORATION OF ITS TECHNOLOGICAL AGENDA**

The participants invited to these meetings have been the members of the Association's Innovation Committee, entities that represent technology centres and industrial companies throughout the value chain of the railway sector.

**ONE YEAR OF THE STARS PROJECT**

The project will provide the participating SMEs with Technical assistance, with the support of the technology centres and Business assistance, under the guidance of the clusters.

**MAFEX PROMOTES EXCEPTIONAL PRICE REVIEW IN RAILWAY MATERIAL CONTRACTS**

Mafex prepared a position paper - distributed among the main Stakeholders in the sector at the highest.

**MAFEX WILL CHAIR FOR TWO YEARS UNIFE'S NATIONAL ASSOCIATIONS COMMITTEE (THE ASSOCIATION OF THE EUROPEAN RAILWAY INDUSTRY)**

Mafex has been a member of UNIFE since 2007 and has always been part of this committee.

**III EDITION OF THE MASTER IN RAILWAY ENGINEERING**

The III edition of the Master in Railway Engineering is organised by the University of Cantabria - Ladicim and Mafex begins.

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INNOTRANS 2022

The innovation of Mafex member companies is one of the aspects that arouses the most interest among global transport professionals, both for their consolidated experience in large-scale international projects, as well as their wide range of products and services and their technological advances

38 / SPECIAL REPORT

Marifrán Carazo, Minister of Development, Infrastructure and Territorial Planning of the Junta de Andalucía.

**NEW EDITION OF RAIL LIVE!**

The main experts of the sector meet at FYCMA, Malaga from 29<sup>th</sup> November to 1<sup>st</sup> December. This professional platform will serve to analyse the present and future of the railway, its challenges and opportunities, as well as to showcase the latest innovations and solutions of the companies.



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MAFEX MEMBERS PRESENT THEIR LATEST ADVANCES

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SIEMENS

## Malaga ready for Rail Live! 2022 with the sustainability and digitalisation of the railway sector as key objectives



Malaga hosts Rail Live 2022. For three days, the main players of the sector - from more than 25 countries - will analyse the present and future of the mode that is called to be the backbone of intermodality, thanks to its numerous environmental, safety, and reliability advantages. Everything is ready for the event and, from Mafex, as co-organisers, we want to welcome the more than 2,000 expected attendees, sponsors and collaborating entities, participating companies and speakers who travel to Spain to share a joint vision on the challenges of the coming years and the great opportunities that rise before the decisive boost that wants to be given to railway infrastructures, of both passengers and goods.

Prior to this important event, we had a successful Spanish participation in InnoTrans last September. Our collective attendance among more than 60 companies to the largest world exhibition in the sector was coordinated by the Association with the support of ICEX Spain Trade and Investment and which has also included the participation of Adif and Renfe. Numerous solutions which contribute to the present and future of the railway were shared, as well as their advances in terms of innovation and R+D.

In addition to this, at Mafex we continue working to achieve a more solid, competitive industry at the forefront of technological and digital developments. In this line of action, we have just completed the technological agenda of the Association. The Technological agenda developed identifies, sustainability, efficiency, user experience, goods, and employment and talent, as some of the

key elements that will guide the future competitiveness in the railway sector. The industry is already working on the development and improvement of advanced technological solutions associated with these areas.

In addition, we participate in new initiatives such as the "STARS" project. Launched one year ago, the project aims to support SMEs in the sector with the implementation of Advanced Technologies, boosting productive performance and increasing their ability to innovate.

Likewise, being aware that industry and knowledge must go together as an engine of innovation and competitiveness, we have launched the III edition of the Master in Railway Engineering that we organise together with the University of Cantabria and that has the support for its development of SUM + LAB - Sustainable Mobility and Railway Engineering and the Laboratory of the Division of Science and Engineering of Materials (Ladicim). The edition is completed with an important cast of 28 companies and collaborating entities, both from a logistic and teaching standpoint, which provide added value to the programme and contents of the training offered.

On the other hand, and as on previous occasions, this edition also includes updated news of 28 members, as well as the innovation projects of 13 companies.

We will therefore continue our path in 2023 defending an industry that is a world reference. It has a high international presence in more than 95 countries and in Spain it generates 30,000 direct jobs with a turnover of more than 15 billion euros (more than 8% of industrial GDP). Without a doubt is a key and driving sector, both for our economy and for our country image. For this reason, it is essential that public administrations place this mode of transport as the axis of their sustainable transport policies and strategies in the medium and long term, and that they acquire a firm commitment to R + D + i programmes, with financing plans to promote their development and competitiveness throughout the value chain and support it in reaching the foreign market.

**See you at Rail Live! 2022**

### MANAGEMENT: MAFEX.

**MAFEX COMMUNICATION COMMITTEE:** Alstom Transporte, ArcelorMittal, Caf, Global Quality Engineering (Grupo Trigo), Icon Multimedia, Idom, Indra Sistemas, Ingeteam, La Farga Yourcoopersolutions, Patentes Talgo, Sice, Siemens Rail Automation, Stadler Rail Valencia, Teltronic, Thales España, TPF Getinsa Euroestudios y Zitron. **ADMINISTRATION:** mafex@mafex.es **ADVERTISING:** mafex@mafex.es **SUBSCRIPTIONS:** mafex@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.



## New Mafex member

The number of companies joining Mafex continues to increase:

MAFEX CONTINUES TO GROW WITH THE RECENT ADDITION OF ONE NEW MEMBER. MAFEX HAS WITH THESE ADDITIONS A TOTAL OF 103 COMPANIES AND ENTITIES REPRESENTING ALL THE SUBSECTORS OF A LEADING INDUSTRY THAT IS MAKING ITS WAY AROUND THE WORLD.

### ELECNOR DEIMOS

Elecnor Deimos is the technological subsidiary of the Elecnor Group that operates in the railway transportation sector, information and telecommunications systems, space, aeronautics and defense. In the railway sector, Elecnor Deimos is responsible for the development and evolution of passenger information platforms and remote station management. In addition, the company is specialised in delivering comprehensive turnkey projects as well as the development, implementation, and maintenance of these systems.



## Next Mafex open days on 11<sup>th</sup> December in Leioa (Bizkaia) and 14<sup>th</sup> December in Madrid

The main objective of Mafex is to serve the railway industry and to protect the general interest of its 103 current members. All this acts as a facilitating agent through the implementation of initiatives in the field of external promotion, strategic intelligence, trade policy, working groups, sectoral forums, R+D projects office, innovation and talent management, institutional relations, communication and marketing, thus strengthening the competitiveness and global presence of its members through cooperation and the use of joint capabilities, and improving the competitiveness of the Spanish railway industry.

In this new edition, it is also worth mentioning the participation of Mafex members such as Caf, Idom, Ceit, ArcelorMittal, Tyspa and Citef who will share their experience as members of the Association and explain how Mafex supports them in different areas and issues.

More information about the open day at [patricia@mafex.es](mailto:patricia@mafex.es) or by phone: 944 706 504.

THIS INITIATIVE AIMS TO RAISE AWARENESS ABOUT THE WORK OF MAFEX, THE SERVICES IT OFFERS AND THE SUPPORT IT PROVIDES TO COMPANIES IN THE SECTOR. TO THIS END, ATTENDEES WILL GET TO KNOW ABOUT ITS SERVICES, AS WELL AS THE PLAN OF ACTIVITIES THAT HAS BEEN DESIGNED FOR THE YEAR 2023.



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# Mafex renews its Innovation Committee for the 2022-2023 period



The Innovation Committee is composed of 24 companies and technology centres. The committee will continue to act as a facilitator of activities that make its members more competitive, innovative and technologically advanced companies.

There is a commitment in this field to technological and non-technological collaboration to advance in key aspects such as sustainability, digitalisation, and industry 4.0, the identification of strategic projects (technological surveillance) as well as new business models that favour the digital transformation of the sector.

## MAFEX RENEWS THE INNOVATION COMMITTEE FOR THE NEXT TWO YEARS.

MEMBERS	
ALSTOM TRANSPORTE	SEGULA TECNOLOGIAS ESPAÑA
ARCELORMITTAL ESPAÑA	SENER INGENIERÍA Y SISTEMAS
CAF - CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES	SIEMENS RAIL AUTOMATION
CEIT - CENTRO TECNOLÓGICO	TALLERES AGUI
CELLNEX TELECOM	TECNIVIAL
FUNDACIÓN GAIKER	TEKNIKER   Research and Technology Centre
GLOBAL QUALITY ENGINEERING	THALES ESPAÑA
INDRA SISTEMAS	TPF GETINSA-EUROESTUDIOS
INECO - INGENIERÍA Y ECONOMÍA DEL TRANSPORTE, S.A.)	TYPSA - TÉCNICA Y PROYECTOS
INGETEA POWER TECHNOLOGY	VICOMTECH - Fundación centro de Tecnologías de Interacción Visual y Comunicaciones)
INTERNACIONAL HISPACOLD	ZELEROS
MAIN RAIL	
PATENTES TALGO	

# MAFEX finalizes the development of its technological agenda

As a continuity to the 2021-2024 Strategic Plan, the innovation area has carried out the elaboration of a Technological Agenda, a unique opportunity to identify the challenges and opportunities of the railway market from a technological point of view.

The activity has been led by the consultancy firm Minsait, which has already prepared the association's plan and has the support of SPRI-Basque Innovation Agency.

During the months of May, June and July 2022 MAFEX organized 3 workshops with the participation of its member companies. The members invited to these meetings were the participants of the MAFEX Innovation Committee, entities repre-

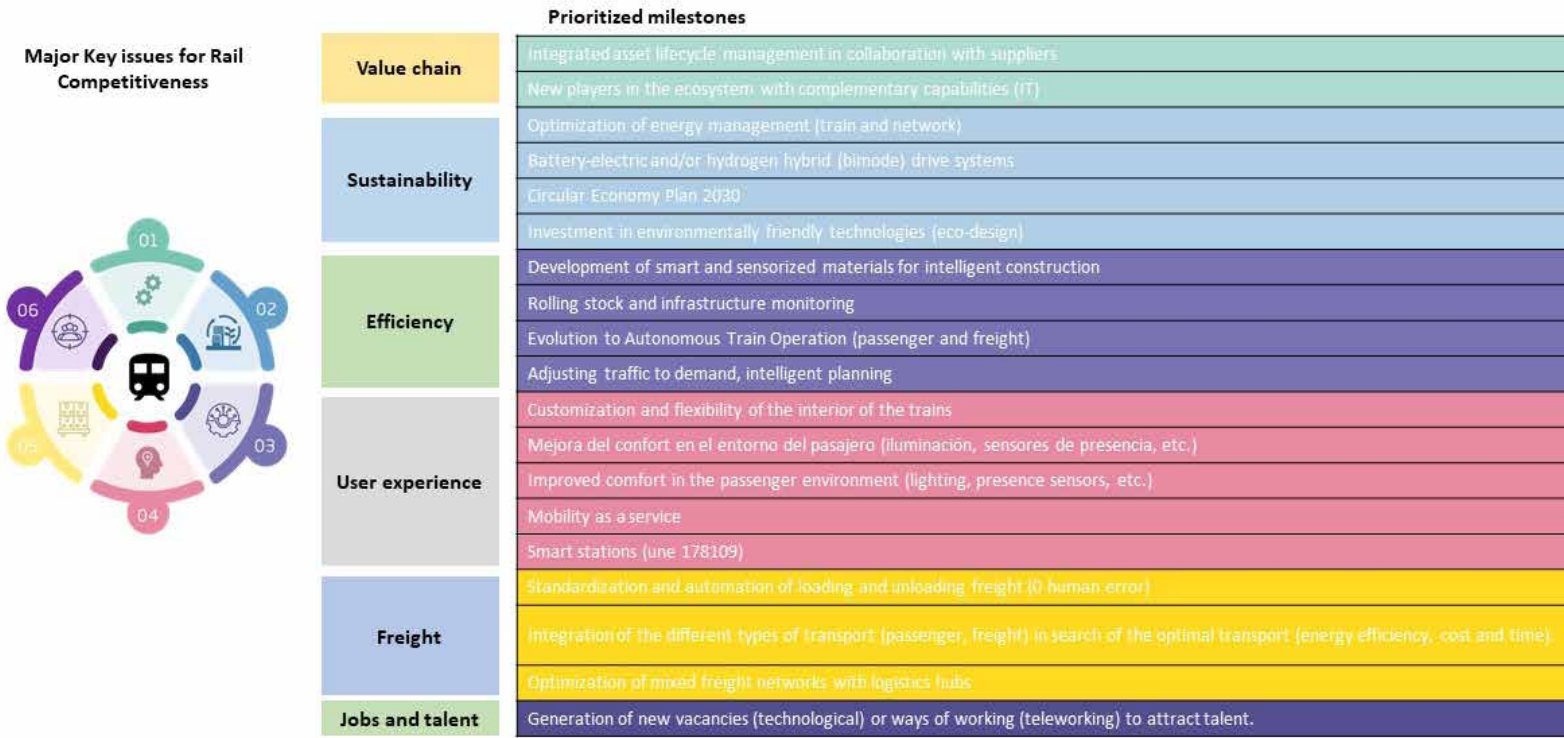
senting technology centers and industrial companies throughout the value chain of the railway sector. In short, attendees with knowledge of the sector whose profile has a high degree of technological component. The workshops had a dynamic of presentation and debate, being open at all times for comments and contributions.

Initially, the key issues of competitiveness in the railway sector were identified by classifying them into levels: General key areas, driving factors and specific milestones. A structure of 6 key areas for the competitiveness of the railway sector was determined and a total of 71 milestones were identified.

Subsequently, the technologies associated with the key areas of

competitiveness were identified. The participants reflected on the functions and applications of technology in the railway market and also on their own contribution to the keys to competitiveness. In this sense, the technologies were structured by areas and by their impact on the previously identified market keys. Six key technological areas were identified to respond to market trends with 57 specific technologies divided into these areas.

Finally, the technologies and solutions highlighted were characterized and parameters were established to select those critical milestones and associated technologies. The group worked on 19 critical milestones, leaving the remaining 52 milestones as secondary.



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**Mafex**

<http://magazine.mafex.es>







## One year of the Stars Project

The STARS project, which in October completed one year since it began, aims to support SMEs in the sector in the implementation of Advanced Technologies, giving a boost in terms of production performance and increasing the capacity of SMEs to innovate.

The project will provide the participating SMEs Technical Assistance, by the hand of the Technology Centres and Business Assistance, by the hand of the clusters. To this end, 15 groups called "Strategic Alliances" will be created, made up of 10 SMEs each. The alliances will contain SMEs with similar needs and will belong to at least three different COSME countries.

THE PROJECT WILL PROVIDE THE PARTICIPATING SMES TECHNICAL ASSISTANCE, BY THE HAND OF THE TECHNOLOGY CENTRES AND BUSINESS ASSISTANCE, BY THE HAND OF THE CLUSTERS.

So far this year, the consortium, consisting of 10 rail clusters, 1 Digital Innovation Hub, 5 Technology Centres and a Blockchain provider, has worked on different activities.

The project started with an analysis of "traditional" SMEs in the sector. This analysis was carried out through a Europe-wide survey, which aimed to collect key information for the design of the content of the assistance

to be provided to the companies, as well as to classify the SMEs according to their challenges and needs. 60% of the SMEs that answered the survey remarked the need to introduce Advanced Digital Technologies in their companies.

In parallel, a technological analysis of current developments and trends in the sector was carried out, identifying eight innovation trends that will

be key to the development of future project activities.

With the results of the previous steps, the STARS Strategic Plan was created. A strategic plan that defines the needs, technologies and opportunities that will be addressed in each of the Strategic Alliances and the companies participating in each of them, as well as the Technology Centres that will lead each of the alliances and the tutors for each company in the clusters.

Furthermore, the strategic plan also specifies topics of interest for the Hack&Match events. The events will have a Hackathon part and a subsequent Matchmaking part between the participating companies. The aim is to support traditional SMEs in their search for solutions. The challenges of each of the events will be defined

by the needs identified in the Strategic Alliances.


Last October, the first Hackathon focused on challenges related to energy efficiency in railway processes, products and services took place.

Also, the first meetings of the Strategic Alliances with the Technology Centres were held between October and November. The activities to be carried out over the coming year with the companies were presented at these meetings.

Finally, with the aim of better understanding Blockchain technology and everything that revolves around it, in June an event was organised in Marina di Carrara (Italy) in which use cases for the railway and multimodal sector were iden-

tified and the benefits that this technology can bring to companies were shown.

The next steps of the project will be based on Technological and Business Assistance to SMEs through which it will provide:

- Support in organisational/cultural change based on innovative models.
- Support to a better understanding of the investment and return on investment (ROI) aspects related to the adoption of advanced technologies
- Training and assistance on funding opportunities
- Support for upskilling and reskilling support. 





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2022

2021

## Mafex promotes exceptional price review in railway material contracts

MAFEX PREPARED A POSITION PAPER - DISTRIBUTED AMONG THE MAIN STAKEHOLDERS IN THE SECTOR AT THE HIGHEST LEVEL AND NUMEROUS MEETINGS WERE HELD AT POLITICAL AND INSTITUTIONAL LEVEL.

The rise in the prices of energy, gas and fuel has been a barrier for the productivity and recovery of our companies since mid-2021, but since the end of February the situation has become more complicated and aggravated by an inflation that threatens to become structural.

Adding to this context is the weak reaction capacity of the industry

due to the absence or rigidity of compensation mechanisms for these extra costs, something that has become a priority for Mafex as an association that represents and protects the interests of the Spanish railway industry.

In light of this, at Mafex we are committed to reacting fast, and in March we prepared a position paper - distributed among the main

stakeholders in the sector at the highest level (Ministry of Transport, Mobility and Urban Agenda, Ministry of Economy, Renfe, Adif, CEOE, etc.) - which has helped us to hold meetings with these and other organisations.

We have also intensified our efforts at legislative level by meeting with those political parties involved in updating the Rail Sector Act, which is currently in full parliamentary process. Therefore, our companies will have the possibility of getting the rise of raw material reviewed in certain supply contracts, reducing their levels of vulnerability, and recovering competitiveness. 🚂

## Mafex will chair for two years UNIFE's National Associations Committee

(the Association of the European Railway Industry)

Since last October, and for two years, Mafex will hold the presidency of UNIFE's National Associations Committee, where its counterparts from France, Italy, Germany, Romania, the United Kingdom or Sweden, among other European countries, are also represented. The responsibility will fall on Pedro Fortea, General Director of Mafex.

THE RESPONSIBILITY WILL FALL ON PEDRO FORTEA, GENERAL DIRECTOR OF MAFEX.

Mafex has been a member of Unife since 2007 and has always been part of this Committee. Matters of importance to the industry and closely related to competitiveness, access to third markets, European funds, innovation, and talent, are addressed and debated within this Committee. 🚂



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## III Edition of the Master in Railway Engineering UC-Mafex, the gateway to the railway world

The Master in Railway Engineering is organised by the University of Cantabria and the Spanish Railway Industry Association – Mafex, which currently brings together 103 companies that represent the entire value chain. The Master has an important team of collaborators, who provides added value to the programme and contents.

The main objective of the master's degree is to train professionals in different areas of the railway sector. In this sense, a curricular itinerary has been designed under a multidisciplinary approach in order to complete the training of an industrial, telecommunications, electrical, civil engineer, a graduate in science, business administration or economics, covering the different aspects of railway engineering as a whole.

From this perspective, the student receives valuable training, providing knowledge on issues related to rolling stock, facilities and signaling, with the study of the behavior of the railway superstructure, the design and simulation of railway operations, the management of human resources and the regulatory framework, among others.

THIS INITIATIVE IS CONSOLIDATED TO RESPOND TO ONE OF THE STRATEGIC CHALLENGES OF THE ASSOCIATION: THE ATTRACTION OF TALENT TO THE SECTOR, THE INCORPORATION OF KNOWLEDGE OF OTHER NON-RAILWAY BUSINESSES OR THE SPECIALISATION OF WORKERS FROM MAFEX MEMBER COMPANIES.

With the aim of adapting to the needs of the students, the master's degree, of one year's duration, is organised in four modules, which can be taken independently, offering specific contents in each of the four major areas of knowledge of the sector. The completion of the four modules will grant the title of Master in Railway Engineering.

The subjects have been endowed with an eminently practical content, encouraging learning from experimentation related to real-life conditions and situations explained by professionals in the sector with extensive experience. These concepts are reinforced with the completion of paid external internships with a duration of 6 months in the collaborating companies of the master's degree.

All the speakers of the master's degree belong to companies of recognised national and international prestige in the railway sector, making available to our students their high experience and knowledge.

In addition, they will tutor the student in the development of their master's thesis, being able to expand their knowledge under their supervision in a much broader and more extensive way in the area of their interest. The high "know how" of all of them together with the scheduled visits and the aforementioned internship programme will help to acquire the necessary experience to focus their professional future on one of the most productive sectors not only of our country but of the whole world, the railway.



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ArcelorMittal Rails & Special Sections with production facilities in Poland, Luxembourg and Spain, offers a wide portfolio of products, covering rails for subways, trams, trains, light rails, crane rails, crossings and rail accessories. ArcelorMittal is a specialist in rails for high-speed networks, with over one million tonnes produced and is present in infrastructure projects in over 30 countries. Its high technologic quality allows us to participate in the most demanding tenders all over the world.

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- **R&D:** ArcelorMittal operates a dedicated rail research and development unit which includes pilot plants and prototyping facilities. Its Rail Excellence Centre also includes a dedicated welding unit which can provide advice and support for current and future grades for its customers.
- **Digitalisation:** ArcelorMittal Rails & Special Sections is extending its 4.0 transformation with the launch of several digital tools. New Rail Tool version available.
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CAF Signalling, among the experts at the Cybersecurity conference in Poland

CAF SIGNALLING

CAF Signalling, the CAF Group division specialised in Railway Signalling Systems, has participated as an expert company in the panel of the "Vth Scientific and Technical Conference IT & OT in Rail Transport" organised in Warsaw (Poland).

Represented by Daniel Gutiérrez, OT Cybersecurity Engineer, CAF Signalling introduced the challenge of integrating the requirements of cybersecurity procedures (IEC 62443-4-1) in its current product development life cycle procedure, which is based on and complies with the requirements of CENELEC standards for electronic systems with safety functions. Integration means including the practi-



ces defined in IEC 612443-4-1 in the CENELEC standardised "V" lifecycle.

Such integration inevitably involves the emergence of new activities, new

roles and new documentation to be generated, to meet both the new regulations and the new requirements of the railway market.



Inauguration of the second stage of the Mauritius Metro Express

CAF TURNKEY & ENGINEERING

CAF Turnkey & Engineering has completed work on the second stage of the Mauritius Metro Express light metro project. A total of 26km of track and 19 stations have been constructed between the country's capital city, Port Louis and the town of Curepipe. This CAF Group business unit has worked on the design and construction

of the signalling system, automatic location system (AVLS) and traffic light priority system (TSPS), and has also performed the comprehensive management of the project including the integration of the aforementioned subsystems.

This is the first railway line construction to have been constructed on the island since the old railway infrastructure was completely dismantled in 1964. Construction work began in 2018 with the first

stage spanning 12.4km inaugurated in 2019. New sections of the second stage have been gradually opened since then until October 2022 to provide services to more than 1.2 million inhabitants in the country. The customer's (Larsen & Toubro) satisfaction with the work carried out has prompted them to enter into a new contract to develop the third stage which consists of 3.5 km of track and 3 stations and this is expected to be commissioned by the end of this year.



Renfe awards CAF the supply of 28 electric battery-equipped trains

CAF

RENFE has awarded CAF the contract to supply 28 electric trains that will operate on the Spanish operator's medium distance services. The contract also includes the supply of any

corresponding spare parts, as well as comprehensive maintenance services for 17 of these units for a term of 15 years. The total volume of this operation for CAF amounts to close to 300 million euros.

The train will reach a maximum speed of 200 km/h and this will be

equipped with batteries in order to run on sections of the network where there is no catenary. The incorporation of this technology on a number of its latest projects is testament to CAF's firm commitment to developing zero emission solutions to address passenger rail transport decarbonisation.

18 Amurrio's RE-railers at the Central Railway of Uruguay

AMURRIO

Amurrio Ferrocarril y Equipos is completing on schedule the supply of 18 RE-railers and five dilatation devices to be installed in the Central Railway of Uruguay.

The size of the re-railers is 18 x 3 m. and 15 Tn, and they are supplied assembled in a single piece, an aspect that has required an effort in transport, which has been done by road to the port of Bilbao, and by sea to the port of Montevideo. One of the re-railers has the particularity of being in a clotoid, which means that all the parts that make it up are curved.

The order, which was formalised in May, is an extension of the contract under which Amurrio has already



supplied more than a hundred turnouts for the Central Railway of Uruguay, a 273 km route that will

allow freight trains to run at 80 km/h between Paso de Los Toros and the port of Montevideo.





**Alstom Spain to supply and maintain 10 Coradia Stream regional trains to FGC for connection to Barcelona airport**

**ALSTOM**  
Ferrocarrils de la Generalitat de Catalunya (FGC) has awarded Alstom a contract valued at 177 million euros for the supply and maintenance of 10 new trains of

the Coradia family to serve the new line connecting Barcelona city centre with El Prat Airport.

The trains will be designed and manufactured at Alstom's industrial centre in Santa Perpètua, Barcelona, where the company will also build a new workshop to carry out preventive and corrective maintenance on the fleet for 15 years.

The ten new trains will be made up of five single-decker cars with a capacity for 600 passengers and a maximum service speed of 120 km/h. They will also include the most advanced signalling, safety and passenger information systems, ensuring the highest levels of security and the best on-board experience.

**Engineering services for depots**

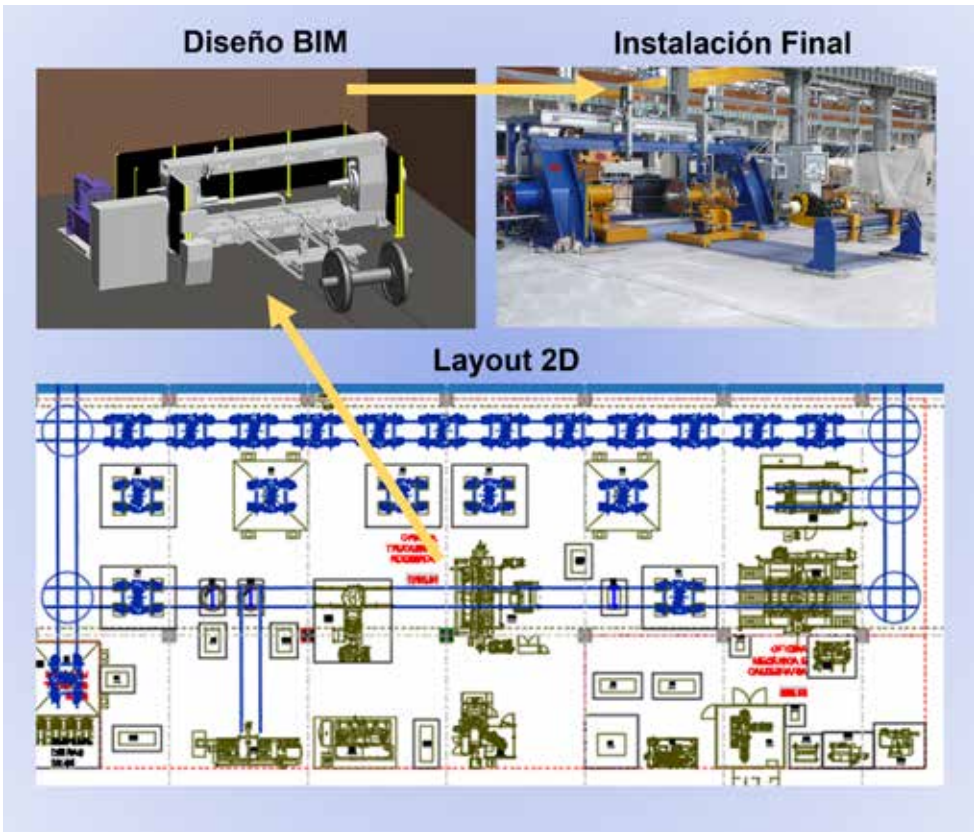
**ACYGS**  
ACYGS Sales Management S.L. it is growing a lot in the development of railway workshop engineering projects; both nationally and outside of Spain.

Feasibility studies, definition of workshop equipment, layout of the "BIM modeling" workshop, optimization of workflows, definition of purchase requirements, technical evaluation of offers and project management, are the services that they provide to their clients.

As the last country with ACYGS presence, Latvia stands out. Preliminary design works on the new depot in Latvia for AS Pasažieru vilciens, which is the leading railway company for carrying passengers in Latvia.

AS Pasažieru vilciens will, among other, service the new Skoda tra-

ins that commute from Riga to Aizkraukle, Tukums, Skulti and Jelgava.



**CETEST reference laboratory in Spain**

**CETEST**  
CETEST is consolidated as the reference railway laboratory in Spain due to its wide portfolio of accredited tests and its ability to support the client in the management, execution and analysis of accredited railway tests.

During the last years, CETEST has collaborated in projects with different national administrations (FGC, Metro de Madrid, Metro Sevilla,...). In 2022, CETEST has led the Alstom Zefiro homologation tests for Ilsa, the dynamic validation of the Bilbao and Vitoria tramway for Euskotren, the homologation of a new Plasser & Theurer tamping machine and another 4 Matisa maintenance machines in metric and Iberian gauge... In addition, it is going to pro-



vide a dynamic on-track weighing system (wayside) to Metro Bilbao, among other projects. Thanks to its

knowledge of the railway system in Spain, CETEST is the best ally for homologation campaigns.



**COMSA Corporación takes part in 4 European railway innovation projects**

**COMSA**  
COMSA Corporación collaborates in 4 projects funded by the first call published by Europe's Rail Joint Undertaking, an EU initiative that succeeds Shift2Rail

and where it is a founding partner.

The projects in which it participates, together with other partners, are R2DATO, to improve the capacity of railway networks through automation, digitisation and autonomous train operation;

IAM4RAIL, focused on the use of the Digital Twin for intelligent railway asset management; Rai-I4EARTH, for the development of sustainable and environmentally friendly railway systems; and FutuRe, aimed at offering railway services to revitalise passenger traffic on regional lines.





**Thales technology on the journey between Seville - Malaga - Granada, at high speed**

**THALES**  
Thales has been awarded a new contract to carry out the drafting of the construction project and execution of the works for the link that will connect the Madrid-Seville high-speed railway line with

Cordoba-Malaga. Thales will be responsible for the traffic control, signalling, train protection and communications installations on the 1,738-metre-long branch line that runs between Almodóvar del Río and La Marota, in the province of Córdoba.

The project includes the adaptation of the traffic control systems: Thales

technology interlockings and train detection systems (track circuits) of the section; the LZB train protection system (which will be extended along the new bypass track) and the ERTMS system; as well as the adaptation of the fixed and mobile telecommunications systems to adapt them to the new operating conditions.

**TPF GETINSA EUROESTUDIOS has been awarded with a metro design project in the heart of Turkish Capital, Ankara**

**TPF GENTISA EUROESTUDIOS**  
The M5 line will connect the city center Kızılay and the residential areas in Dikmen, with 10 underground stations within 13 kilometers.

The project scope also includes a funicular line that will connect Kuğulu Park to Atakule, two of the most prominent landmarks and symbols of the capital. The funicular line will be 3 kilometers in length and will have 3 stations.

The contract for this prestigious project has been signed with a ceremony held on 06/10/2022, hosted by the Mayor of Ankara, Mansur Yavaş. The mayor, in his speech,

emphasized the importance of public transportation for urbanization and wished success for the awarded companies. We are honored

and thrilled to continue to contribute to the rail transport infrastructure of Turkey, and help to build a sustainable future together.



The mobility  
**OF THE FUTURE**  
travels by *train*





Railway tunnels

**DSAF**  
The POWER 007 and POWER 700 signage, developed and patented by in accordance with the new Adif tunnel regulations and Adif AV, E.T. 03.399.006-July 0, 2020, together with the lighting application with the new development of the INHELIUM TUNNEL luminaire, make Dinámicas de Seguridad (DSAF) one of the companies at the forefront in the fields of railway tunnel signaling and lighting.



Indra obtains the Silver IRIS certificate for its rail solutions

**INDRA**  
Indra has increased to Silver the level of its performance in the IRIS (International Railway Industry Standard) certificate, by AENOR to the ISO/TS 22163:2017 standard,

for high-quality systems and management applied to the rail sector, accrediting the highest quality and safety of its railway solutions. Indra joins a select few of Spanish and global companies that have achieved this category. Fewer than 12% of the certified companies in the international rail equipment

sector have an IRIS silver rating. One of the most highly-rated factors during the certificate renewal process was the customer satisfaction section, thanks to the high score that Indra's customers award to the quality of the execution of its work and its rigorous compliance with delivery deadlines.

Ingeteam to manufacture converters for 62 trains operating in Germany and Serbia

**INGETEAM**  
Over the next year, Ingeteam will manufacture INGETRAC traction converters for Stadler to equip regional vehicles. The company will

design and deliver the converters for 44 2-car BEMU FLIRT3 trains that will operate in Germany (140 km/h) and 18 EMU FLIRT for Serbia (160 km/h). These Ingeteam traction converters will achieve high efficiency, the necessary redundancy and easy maintenance to help provide safe operation. Josu Elorriaga, Director

of Railway & Mobility at Ingeteam, adds that "with these new orders we have once again demonstrated our commitment to the development of power electronics technologies and gone one step further in the sustainability of rail transport" which is focused on the supply of efficient traction units.



Successful participation of GMV in Innотrans 2022

**GMV**  
GMV has participated in yet another edition of the 2022 Innотrans fair, the main international railway fair, which took place from September 18 to 21 at Messe Berlin, Germany. GMV has participated as an exhibitor in the pavilion dedicated to

intelligent transport technologies, where it has presented various technological innovations, including the application of EMV (Europay, Mastercard and VISA), in the various on-board ticketing HW equipment; that allows direct payment through bank cards, either with a physical or virtualized bank card on said equipment.

The GMV stand was visited by rolling stock manufacturers, the main buyers of GMV's on-board solutions, as well as transport operators and authorities from various countries, interested in GMV's railway management and planning solutions, SAE-R® and GMV Planner.



The traction converters enable electrical power from the AC catenary at 25 kV, 50 HZ (Serbian version) and 15 KV, 16 2/3 Hz and battery (German version) to be converted into the voltage and frequency required to drive train motors and other power requirements.

The converters will be designed at Ingeteam's headquarters and validated at Ingeteam's power electronics laboratory. The manufacturing process will be led by the Ortuella plant. These new orders join a relevant backlog list of railway sector orders, placed over the past year.



Lantania to renovate part of the tram line in the Polish city of Lodz

LANTANIA

Lantania, together with its subsidiary Balzola Polska, has been awarded a contract for the renovation of a tram line in the Polish city of Lodz. The city's municipal investment agency has awarded the infrastructure, water and energy Group the contract for the renovation of the tram line between Legionow and Cmentrna streets in the centre of the city. Located in the centre of the country.

The project is divided into three lots, which Lantania has won in full for the total value of 24.3 million euros. The company will carry out the restoration of a 4.2 km long tram line the stone paving of unpaved pavements, build the catenary and all underground



networks, plus traffic lights and landscaping works. Work will be-

gin before the end of the year and is scheduled to last 10 months.

Ricardo Certification Iberia acting as NoBo and DeBo for the Infrastructure and Energy subsystems on La Sagrera station project

RICARDO CERTIFICACIÓN

Ricardo, a global transport engineering and environmental business, was appointed to La Sagrera station project by ADIF in 2019 to serve as the Notified Body (NoBo) and Designated Body (DeBo).

La Sagrera is one of largest rail infrastructure projects currently in progress on the Spanish network and forecast to safely handle more than 90 million passenger journeys a year, creating a major new transport hub for the city's northern and eastern districts.

As well as serving as a key station on the high-speed, national and international networks for the north-eastern Spain region, it also provides interchanges with the Barcelona Metro. Initial works com-

menced in 2010, but numerous challenges meant that works have paused for long periods before restarting. However, trains have been

passing through the station non-stop since 2020, although it is expected that trains will begin to be able to stop at the end of 2023.



Railway Orders Application for DART + WEST RAILWAY and MetroLink in Dublin

IDOM

The 3rd quarter of 2022 has been frantic in Ireland and two key milestones in some of the IDOM's current relevant infrastructure projects has been hit.

On one side, The Railway Order application is a key milestone for

DART + West Railway and Metro-Link Projects, as, if granted, it will authorize the Transport Infrastructure Ireland (TII) to undertake railway works and all necessary works to enable the construction, operation and maintenance of both.

Last July 29th, Iarnród Éireann submitted the application for the commencement of the Railway

Order for the DART+ West Railway to An Bord Pleanála. And just after this happened, on September 30th TII made its application to An Bord Pleanála for the Railway Order MetroLink, based in the design produced by Jacobs IDOM in the past 4 years.

In both projects IDOM has had a key role as lead designer to ensure the succeed of the process.

SGS INSPECCIONES REGLAMENTARIAS collaborates with Stadler Valencia

SGS

SGS INSPECCIONES REGLAMEN-

TARIAS, participates in the first direct collaboration contract with Stadler Valencia, in its activity in the railway sector as Notified Body (NoBo), Designated Body (DeBo) and Assessment Body (AsBo) for

FLIRT s312 train. It is the first contract that SGS has been awarded for interoperability certification and safety inspection of an entire train. The proven experience of the technical team has allowed to guarantee its suitability for this work performance, which is an important milestone for its consolidation in the market.

SGS INSPECCIONES REGLAMENTARIAS is recognized as NoBo/DeBo for Rolling Stock and CCS subsystems and as ISA/AsBo Type A for Rolling Stock, CCS, Maintenance and Safe Integration subsystems.







### Ardanuy Ingeniería celebrates the Common Safety Methods Summit

ARDANUY

Ardanuy Ingeniería recently hosted a Summit for the technical assistance contract that the Company has been working on for the Spanish Railway Authority (ADIF). The purpose of the contract is to aide in the development, implementation and application of common safety methods (CSM's). The Summit was held in the main lecture hall of ADIF's Traffic Training Center.

Ardanuy has put together a highly competent team of engineers who are currently carrying out the con-

tract and working on ensuring and improving compliance with the requirements of European Regulations which define and outline Common Safety Methods in terms of all activities being performed by ADIF's Maintenance Directorate and Technical Directorate which are both part of the General Directorate of Maintenance and Repair. The team is also in charge of adapting all of ADIF's safety procedures so that they are in line with the new European regulatory framework for railway safety.

The implementation of these activities, based on the assessment of railway risks, helps to improve the

management of all traffic risks and, in turn, guarantees that the control, monitoring and supervision of these kinds of risks are continuously improved on over time.

The Summit provided a great opportunity for those working on the contract to meet and discuss Common Safety Methods and how they are being developed.

Various specialists gave talks in which they not only presented the technical nature of their work, but also detailed specific cases they had worked on to demonstrate the skills and knowledge acquired and learned over the duration of the contract.

### Supporting Tanzania's rail freight transport

TYPSA

TYPSA is developing the detailed design for the Tabora-Isaka section of railway in Tanzania, to adapt it to UIC gauge (SGR in East Africa). The project, promoted by the Tanzanian Railway Corporation (TRC), will facilitate the transport of goods from the port of Dar es Salaam to Rwanda, Burundi and the Democratic Republic of the Congo, as well as connecting with Uganda through the port of Mwanza.

The contract includes civil works, buildings, stations, electrification, signalling systems and telecommunications. The section is for mixed traffic and is 130 km long, with 16 bridges, 8 overpasses, 8 under-

passes and 30 wildlife crossings. In addition, along the section there are 3 stations, a workshop, a shun-

ting yard and the Institute of Railway Technology in Tabora.



### ABB helps electrify rail in Lithuania

ABB

ABB has been awarded with a new contract for a 25 kV power solution to electrify a 100 percent carbon neutral rail line for Lithuanian Railways. The electric trains are powered by electricity generated from renewable energy sources. The project represents the first deploy-

ment of ABB's traction switchgear technology in Lithuania and ABB's largest ever 25 kV rail electrification order in the European Union to date.

ABB will design and supply 25kV equipment packages for six 110/25 kilovolt (kV) traction substations, eight autotransformer stations and three sectioning posts.

ABB will also install its railway medium voltage gas insulated switchgear which has been designed for railway applications.

ABB will also custom-build six variations of its Structure Mounted Outdoor Switchgear (SMOS) which integrates all the elements needed to safely protect and operate the supply sections of overhead line.



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**Stadler Valencia delivers to RENFE Mercancías the high-performance EURO6000 locomotives**

**STADLER**  
Stadler Valencia delivers to Renfe Mercancías the EURO6000 electric locomotives to provide freight transport services on the electrified Iberian gauge (1,668 mm) railway network, mainly through the new Pajares tunnel. The powerful EURO6000s are characterised by their

efficiency and high performance, enabling the transport of longer and heavier trains with a single locomotive, thus increasing the competitiveness of transport operations. They are capable of hauling 1,800 tonnes on 18 ‰ ramps. The commissioning of these locomotives means also an important contribution to the decarbonisation of the transport sector. They do not generate CO2 emissions.

They also stand out for their low noise and vibration levels, as well as for their low track wear, and for the excellent comfort, safety and visibility offered to train drivers. With these locomotives, Renfe Mercancías will reinforce its operations with greater load capacity, safety and reliability. This will result in an increase in its activity and in the share of rail freight transport and, therefore, in significant cost savings due to externalities.



**ICF: first company to validate its AC-900 axle counter system for ADIF**

**ICF**  
ICF, taking advantage of technology in their strategy of permanent innovation, received the validation of their AC-900 Axle counter system in September 20th, being the first company to validate this product according to the demanding technical specification ET.03.365.310.6 ADIF.

The AC-900 system is the first in the world that allows the axle sensors to be connected by bus which translates into a saving of up to 80% in cable, civil works and engineering with the consequent deadlines reduction. This system installed on conventional and high-speed lines allows centralized maintenance through IP connection.

**First digital interlocking in the cloud in southwestern Europe in Spain**

**SIEMENS MOBILITY**  
Siemens Mobility Spain and Ferrocarrils de la Generalitat de Catalunya (FGC) have put into operation the first digital interlocking in the cloud in southwestern Europe at Sant Boi de Llobregat station, Barcelona.

This technology, WESTRACE@DS3, has been developed at the Siemens Mobility R&D Competence Center in Madrid. It will allow rail transport operators to host existing signaling systems in the cloud, which will allow an increase in the capacity of the infrastructure, complying with the highest security standards and reducing costs. WESTRACE@DS3 guarantees an operational and functional service of signaling systems in a standardized manner and is compatible with a wide variety of existing systems.

All these characteristics represent a key milestone in the mobility of the future.



**Teltronic broadband solutions for Delhi-Meerut line for Alstom**

**TELTRONIC**  
Teltronis has been selected by Alstom to supply and integrate the on-board equipment, radio terminals and control centre solution that will provide Mission Critical Services MCX (MCPTT & MCData) for the Delhi to

Meerut Regional Rapid Transit System, a 82 km commuter rail.

This project demonstrates the validity of Teltronic's communication solutions over MCX defined by the 3GPP standard; a technology that will allow the line operator a smooth transition to FRMCS (Future Rail Mobile Communication

System) in the future. Teltronic will provide its Control Centre solution, CeCoCo, equip the trains with its on-board solution RTP-800 and also supply more than 600 LTE terminals. The solution will be integrated with the public address and intercom systems on the train, and with the TCMS (Train Control & Management System).







### Segula expands again its offices of the railway centre of excellence in Zaragoza

#### SEGULA

Last September, the French engineering company, Segula Technologies, completed a new process of expansion of its offices located in Zaragoza, headquarters of the Railway Division in Spain, reaching 2.000 m2 one year after having carried out the previous one, due to the high demand of its clients.

This increase, as a result of the confidence and satisfaction of its clients, has exceeded Segula's ex-

pectations and has led to this new investment that involves the incorporation of 40 new engineers and technicians to the team of this office, as well as new incorporations in the rest of the delegations with rail activity in Spain, with main presence in Madrid, Barcelona and Basque Country

In the words of its Executive Director, Jose Angel Martín, "the success of this growth is due not only to the current situation in the sector, but also to the excellent human team behind each project and to the trust of our clients, where we have

evolved from a client-supplier relationship to a client-strategic partner relationship".

The Railway Division of Segula Technologies in Spain continues with its stable and outstanding growth within the sector, where the Zaragoza office, international Centre of Excellence in Rolling Stock development, has become the largest engineering company of its kind at national level and a reference at European level, covering all the V-model phases of engineering in this type of developments.

### ADIF will collaborate with MainRail in its hybrid predictive algorithms validation on conventional track

#### MAINRAIL

MainRail and ADIF have signed an agreement to carry out simulation tests of predictive maintenance algorithms based on digital twins, on conventional lines of ADIF network.

This collaboration agreement enables MainRail to access to real data from ADIF infrastructure, in order to adjust its simulation platform based on multibody models to produce synthetic data to train AI algorithms.

These real data will allow, not only the fine tuning of the simulation platform, but will also serve as a basis for the validation of the developed algorithms, substantiating their

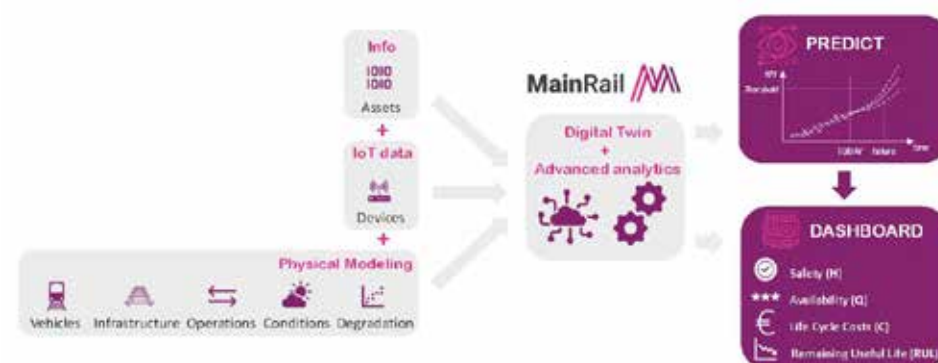
predictions with the real evolution of the infrastructure.

The generation of synthetic data to train Artificial Intelligence algorithms is very useful technique when there is not enough volume of historical data, or it is not representative for the scenarios to be analyzed (What if? scenarios)

This first pilot project will be focu-

sed on the analysis of track quality and rail wear evolution, continuing with previous work carried out by the company, which will be validated with real data from the Railway Infrastructure Administrator.

In the framework of this agreement, ADIF will have access to the results obtained, as well as the chance of using these algorithms already trained for internal use.



### Pretenorte launched its new facilities in Vitoria and continues its investment and specialisation plan in the railway sector

#### PRETENORTE

The Basque company, which has over thirty years' experience in the prestressed steel sector, opened its new plant in the Betoño industrial estate, Vitoria, on 9th November. The event was attended by the Minister of Economic Development, Sustainability and Environment, Arantxa Tapia, and the Chief of Staff of the Deputy General's Office and Regional Minister of Economic Development, Innovation and Demographic Challenge, Pilar García de Salazar.

The new plant has more than 5,000 square metres, which will be dedicated exclusively to the manufacture of railroad ties and sleepers. It will also be located in the company's research area. The goal is to increase its pro-



duction capacity from 9,000 to more than 26,000 tons per year and almost double its workforce, reaching 60 employees.

This investment plan aims to continue with a second phase for the years 2023-2024, in which they

plan to add an additional new plant close to the newly built one, where they will continue to increase their production capacity and with which they will be able to roll out new products to their catalogue and increase their production to 40,000 tons per year.

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## InnoTrans 2022: The largest edition of the Spanish railway industry in terms of attendance

**B**erlin hosted InnoTrans 2022, the most prominent international exhibition for railway transport technology, from 20th to 23rd September. And, once again, the Spanish Rail Industry Association (Mafex) coordinated, with the support of ICEX, the participation of Spanish railway companies in the Official Spanish Pavilion. In this edition, more than 60 companies attended as a group the largest global exhibition in the sector. There was also participation from Adif and Renfe, that were also present at the Mafex stand, which nowadays has more than 103 member companies, and groups together more than 83% of total Spanish exports in the

sector, generating direct employment in our country of more than 30,000 people.

The delegation of companies that were part of this thirteenth edition was a clear example of the Spanish presence in each of the sectors that make up the value chain: engineering, consulting, certification, rolling stock manufacturing, traffic control systems, and signalling or maintenance.

The extensive Spanish presence was made up of companies such as: Amurrio, Aquafirsch, Arcelormittal, Ardanuy Ingeniería, Electrotécnica Artech Smartgrid, Azvi, Cables de

Comunicaciones, Ceit, Cetest, Colway Ferroviaria, Comsa, Danobat, Electrans, Forging Steel Products, Fundiciones del Estanda, Funorsa, Gamarra, GMV, Goal Systems, Geminis Lathes, Grupo CAF, Gurtzpe, Ibertest, Icon Multimedia, Ikusi, Ingeteam Power Technology, Indra, Industrial de Transformados, Ineco, Internacional Hispacold, ITSS, MainRail, Merefsa, La Farga Your-CooperSolutions, Limmat, Lander Simulation and Training Solutions, Metalocauchó, Metrotenerife, Mieres Rail, Newtek Solidos, Patentes Talgo, Revenga, SGS Tecnos, Smart Solutions, Sice, Talleres Alegría, Talleres Corral Mecanizados, Tecnival, Telice, Teltronic, Thales España, Typ-

sa, Uromac Systems, or Xubi Engranajes among others.

Likewise, other multinational companies with facilities in Spain and also members of Mafex such as ABB,

Acygs, Alstom, Certifer, Flexix, Segula, Siemens, Stadler, Thales, Uretex or voestalpine Railway Systems JEZ, were present at the fair through the corporate stands of their parent companies.

For Mafex, the presence at the main transport fair is also a unique oppor-

tunity to analyse the priority factors in which the Association is working for the global future of the railway. Among them, aspects such as sustainability, R+D, the digital ecosystem, as well as interoperability.

During the event, Spanish companies showed the numerous solutions

The thirteenth edition of the fair and world conference had a wide Spanish representation, with more than 60 companies



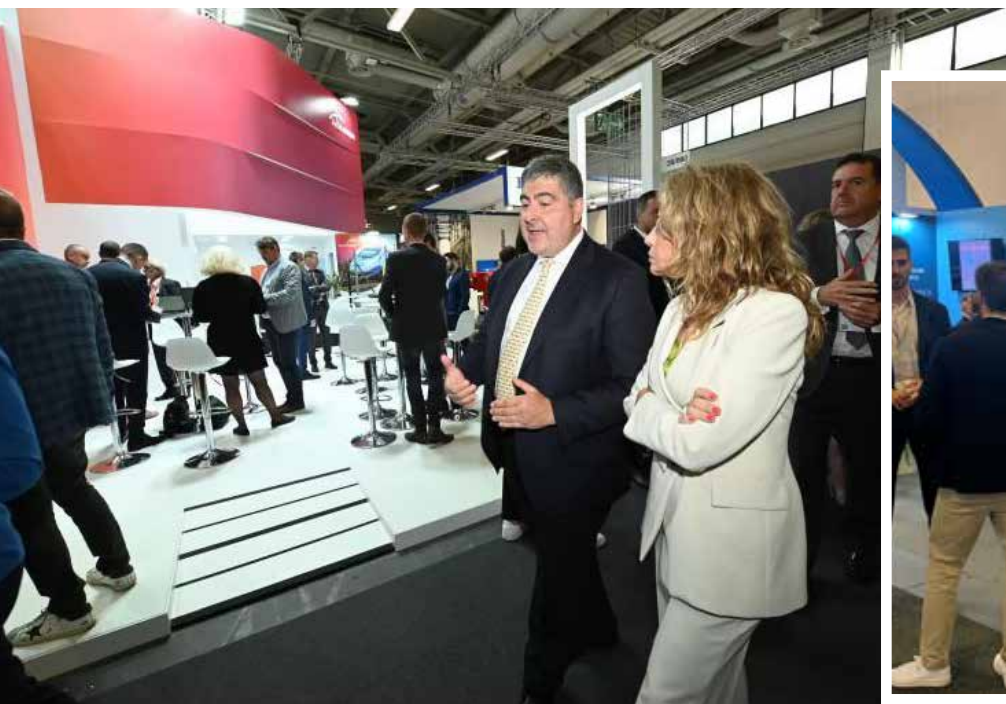
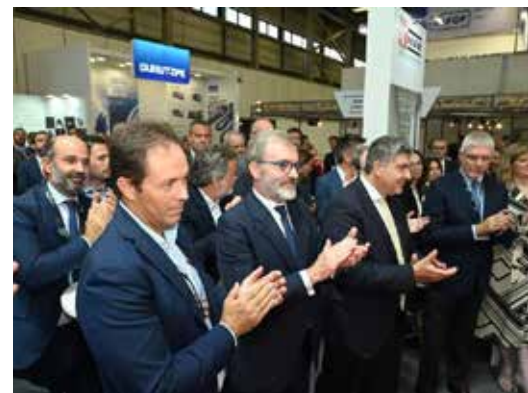




they contribute to the present and future of the railway, as well as their developments in terms of innovation and R+D. Precisely, the innovation of Mafex member companies is one of the aspects that arouses the most

interest among global transport professionals, both for their consolidated experience in large-scale international projects, as well as their wide range of products and services and their technological advances.

At InnoTrans 2022, Mafex coordinated the largest edition of the Spanish railway industry in terms of participation



Thus, the members of Mafex and the group of Spanish companies presented, among other solutions and products, new intelligent transportation systems, developments in railway safety, products and material that improve the traveller user experience, real-time monitoring solutions for stations and terminals or unique systems for connecting track sensors.

All this added to the latest developments and improvement when

it comes to rolling stock, such as monitoring systems and automatic speed control. In addition, the latest developments in cybersecurity, accessibility, railway digitalisation, automation and sustainable mobility will also be present.

#### A record exhibition

The Berlin exhibition venue, totally occupied, presented record figures: 137,394 gross square metres of exhibition divided into 42 pavilions;

145 railway vehicles exhibited in the track area; 250 global launches; 3,062 exhibiting companies, 62% of them from 56 different countries.

And, of course, 137,394 international visitors from 131 countries travelled to the German capital to find out about the exclusive offer of the sector.

#### Institutional support

Raquel Sánchez Jiménez - the Minister of Transport, Mobility and Urban



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"We are facing a sector with great potential, which also represents the most sustainable transport system"  
Raquel Sánchez Jiménez, Minister of Transporte, Mobility and Urban Agenda



**Pedro Fortea, General Director of Mafex**

"As always, the exhibition is a great success for Spanish railway industry. The high quality of visitors makes the InnoTrans an ideal environment for business."

Agenda - defended at the exhibition the condition of "pioneer" on an international scale that she assured Spain currently has in the railway sector, with growth expectations of 3% in six years.

"We are facing a sector with great potential, which also represents the most sustainable transport system," highlighted the minister in an aside with the Spanish media, after her tour of the fair.

"The railway is our benchmark for safe and sustainable mobility, that we are betting on, as never before, to improve our daily and long-distance transport," stated the minister during a meeting with Spanish businesspeople at the stand of the Spanish Railway Industry Association (Mafex).



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# The new generation of railways in Andalusia

MARIFRÁN CARAZO, REGIONAL MINISTER FOR PUBLIC WORKS, LAND-USE PLANNING AND HOUSING JUNTA DE ANDALUCÍA



**P**ublic transport, and the railway, in particular, plays a central role in this decade as the most efficient and sustainable form of transportation for the movement of people in Andalusia, whether within metropolitan areas or for medium distances.

The new generation of Andalusian railways, promoted by the Regional Ministry of Public Works, Land-use

Planning and Housing with new extensions of the Metro network and commissioning of tram systems, faces an exciting challenge: the progressive yet focused shift from private vehicles to public transport to boost territorial cohesion and further the fight against climate change.

Andalusia is taking quantitative and qualitative steps in this regard. The

Government of the Junta de Andalucía focuses on expanding the public transport system, improving the quality of service and efficiency of commutes, digitising management tools, and improving environmental safety and efficiency. Only then can we guarantee universal access to public transport.

As regards the increase in public transport provision, the Regional

## The Regional Ministry of Public Works is working towards expanding the metro networks in Seville, Malaga and Granada

Regional Minister for Development, Territorial Planning and Housing of the Regional Government of Andalusia, a position she has held since 2019. During this time, she has promoted infrastructures and urban planning in this autonomous community, with the approval of the Law for the Promotion of Territorial Sustainability (LISTA) and the approval of the Vive En Andalucía Plan, which has reactivated the construction of affordable housing with 4,000 new rental homes in three years. In addition, she has reactivated the extensions and commissioning of metro and tramways and the promotion of the Andalusian Logistics Network and policies related to transport and the conservation and improvement of the road network.

With a degree in Optics and Optometry and a degree in Political Science and Sociology from the University of Granada, her political activity has been divided between the City Council of Granada, where she has been a councillor of the Government, and the Parliament of Andalusia.

Ministry of Public Works, Land-use Planning and Housing is working towards expanding the metro networks in Seville, Malaga and Granada with new extensions and lines. As is known, Andalusia is the most densely populated region in Spain, with 8.42 million inhabitants, and the second largest in the country. Its nine metropolitan areas account for almost two-thirds of the population and nearly 70% of the regional GDP.

Given that metropolitan areas concentrate these mobility flows, it is here that further efforts need to be made in the interest of environmental sustainability. The Regional Ministry of Public Works earmarked 11 million euros for extension studies and construction projects in the three metropolitan networks during the last term. This will enable the construction of the southern extension of the Granada metro and Line 3 of Seville's metro, and the extension of the Malaga metro service to Hospital Civil/Nuevo Hospital during the current legislative term.

Furthermore, the Cadiz Bay Train was put into commercial service on October 26, after 16 years of work that weakened people's trust in its government and the project. No sooner had the "government for change" taken office of the Junta de Andalucía in January 2019, it committed to completing the works, and implementing the numerous procedures, tests, approvals, agreements, technical arrangements and contracts that have now delivered the Bay of Cadiz metropolitan railway.

Trambahía is a collective transport system of which we can be proud. It is the first train in Spain that runs

on the state-owned railway network (RFIG). Conventional and high-performance rail services share the same section of the railway as the Trambahía, which runs primarily within an urban area. It is a prime example of a technical innovation that not only enabled two transport systems that, in principle, are vastly different to coexist but also merge to provide a unified quality service to citizens.

Trambahía brings together the best of the regionally-owned urban metro and tram networks and the advantages of the state-owned conventional railway. It can run through urban areas, close to the citizens it serves, linking medium-sized cities via intercity routes in the Bay of Cádiz metropolitan area.

However, the Government of the Junta de Andalucía does not want to stop there. We have requested the nation's government to participate in the management of conventional rail services to improve and complete the current provisions, in terms of frequency and travel time, putting the intercity routes between the Andalusian capitals into service. We are currently defining the study on demand and operations plan.

We believe that supranational bodies, conditioned by the international context, envisaged this way forward. Reduction in energy consumption and pollution can occur in tandem with improved quality of life for citizens and Andalusia's metropolitan areas.

## Trambahía is the first metropolitan transport system in Spain that runs on the state-owned railway network (RFIG)



# Digitalisation, sustainability and liberalisation, keys to a carbon-free future

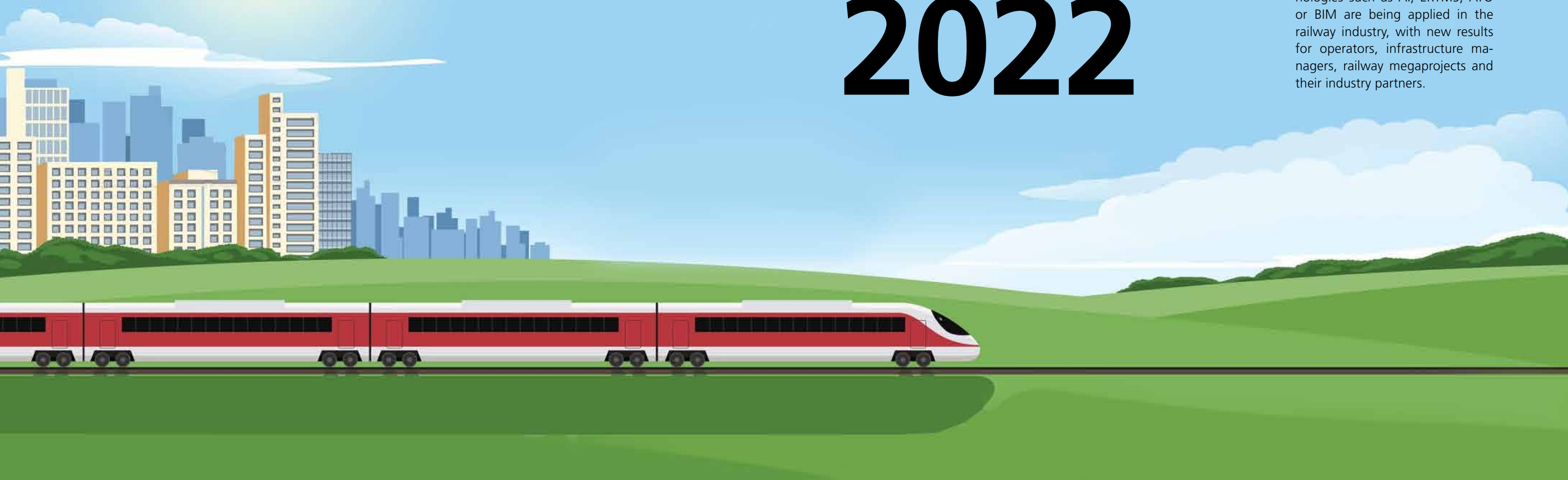
THE MAIN REPRESENTATIVES OF THE INTERNATIONAL RAILWAY SECTOR MEET IN MALAGA FROM 29TH NOVEMBER TO 1ST DECEMBER IN A NEW EDITION OF RAIL LIVE!

This year, Malaga will be in charge of hosting the main representatives of the railway sector from 29th November to 1st December in the railway event of the year.

Just like every year, Rail Live! is organised by Terrapinn in collaboration with the Spanish Rail Industry Association (Mafex). On this occasion, attendees will be able to enjoy 250 speakers and 100 exhibitors who will show their railway services and innovations helping them to find solutions to streamline their operations.

Both the exhibition and the conference will showcase all the innovation in civil engineering, construction, machinery, rolling stock... At the same time, the event will bear in mind how revolutionary technologies such as AI, ERTMS, ATO or BIM are being applied in the railway industry, with new results for operators, infrastructure managers, railway megaprojects and their industry partners.

# RAIL LIVE! 2022







**Extensive institutional support**  
As in previous editions, it has the support of numerous collaborating entities such as the Railway Infrastructure Administrator - Adif, Renfe Operadora, ICEX Spain Trade and Investment, the Spanish Railway Foundation (FFE), the Spanish Railways Technological Platform

(PTFE), The Regional Government of Andalusia, Málaga City Council and Málaga Metro.

**Conference**  
From digital transformation to freight transport, Rail Live! will explore all aspects of the railway industry. The highest positions of administra-

tions, institutions and representatives of the international sector will debate in Málaga on the present and future of the railway in nine different sum-its over three days.

The conference will focus on how technology and additive manu-facturing are being applied in the

railway industry, with revolution-ary new results for operators, infrastructure managers, railway megaprojects and their industry partners.

Some of the confirmed speakers already confirmed, to date, Mau-ro Alabuenas, President of Subte-rraneos de Buenos Aires, Herbert Hui, Finance Director of MTR Cor-poration, Dyan Crowther, Chief Executive Officer of HS1, Lucie Anderton, Head of Sustainability of UIC and Carlo Borghini, Executi-ve Director of Europe's Rail among others.

Organized by

TERRAPINN

In partnership with

MAFEX  
INDUSTRIA FERROVIARIA ESPAÑOLA  
SPANISH RAIL INDUSTRY

Collaborating entities



Supporting entities



Three days  
to debate  
the digital  
transformation  
of the railway  
industry



Rail live! 2022  
seeks a future  
with zero-carbon  
emissions thanks  
to digitalisation,  
sustainability and  
liberalisation







# BE MOTION.

The energy transition is an unstoppable process.

To face this challenge, **The Real Dream Team** is born, a movement based on Heroes and Heroines that just like you do, share the same dream: a world where the energy production is clean.

Will you join?



## An exhibition full of innovation and with the most cutting-edge solutions from Industry

The Rail Live! 2022 exhibition area comes loaded with new features.

It is an area that brings together the leading solution providers of the global railway industry. A meeting point for attendees to learn first-hand about the latest technological advances from the leading companies, as well as the wide and specialised range of solutions

THIS YEAR MORE THAN 100 EXHIBITORS FROM ALL SUBSECTORS OF THE RAILWAY CHAIN WILL BE PRESENT.

and products that will respond to the demands required by new transport systems, rolling stock manufacturers and auxiliary industry, and companies from the world

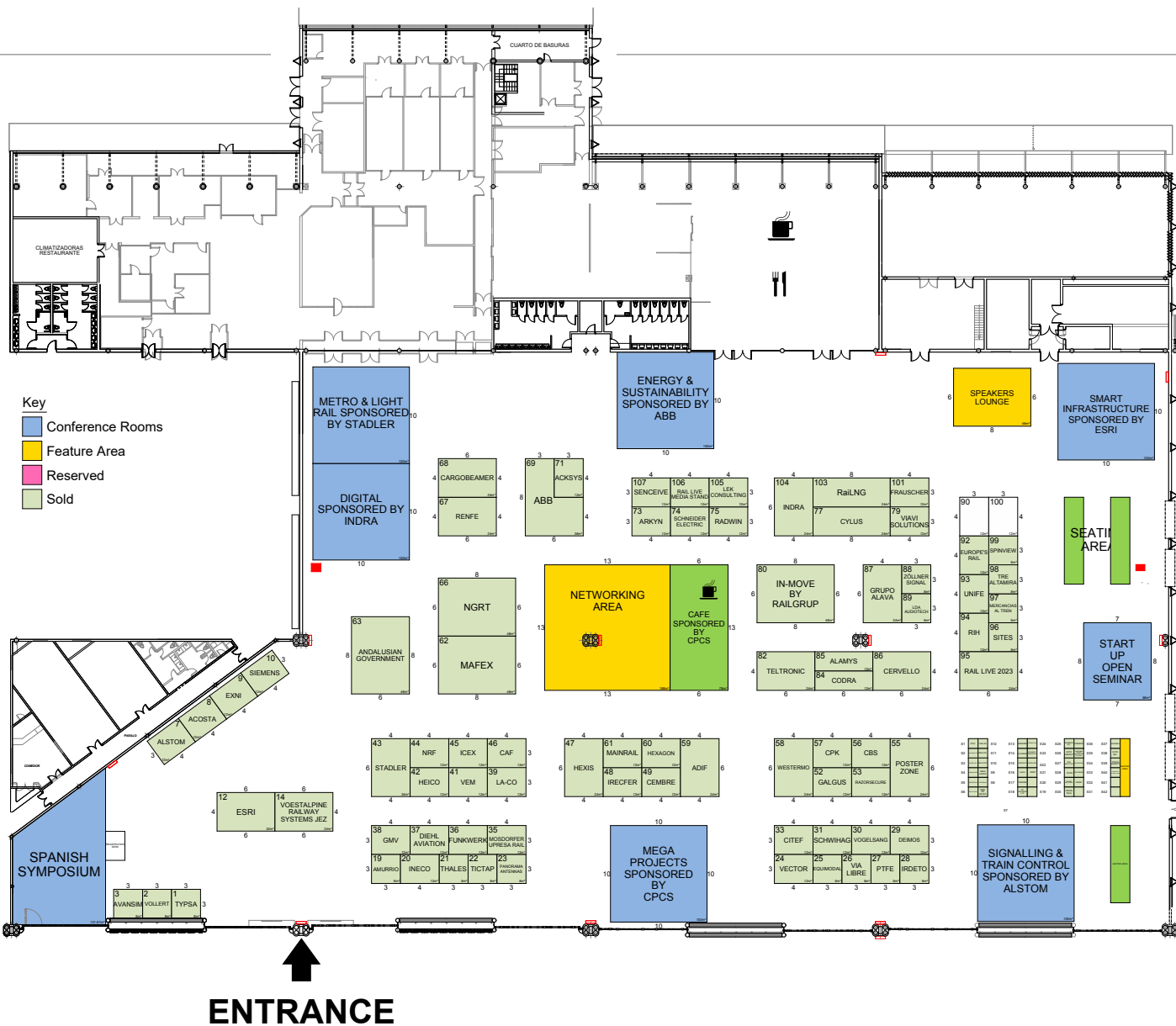
of telecommunications, signalling and safety. This extensive exhibition highlights the industry's great commitment to R+D. This year more than 100 exhibitors from

THE  
REAL  
DREAM  
team

BE PART OF  
THE ENERGY  
TRANSITION.  
BE A  
HERO.

**Ingeteam** 50 YEARS  
ELECTRIFYING  
A SUSTAINABLE  
FUTURE





Mafex will also have a stand in the exhibition area where it will reveal the activity of the association In terms of representation, support and promotion of the spanish railway industry

all subsectors of the railway chain will be present, from civil engineering companies, construction, track innovation, new tools and rolling stock.

Among the exhibitors represented is also the Spanish Rail Association

(Mafex), which has its own stand, number 62.

In this space Mafex will reveal the extensive activity it carries out in terms of representation, support and promotion of a world benchmark leading industry.



COMPANY	STAND
ABB	69
ACKSYS	71
ACOSTA INGENIEROS SL	8
ADIF	59
AGENCIA DE OBRA PUBLICA DE LA JUNTA DE ANDALUCIA	63
ALAMYS	85
ALAVA INGENIEROS	87
ALLREAD MACHINE LEARNING TECHNOLOGIES	S14
AMURRIO FERROCARRIL Y EQUIPOS SA	19
ARKYN STUDIOS APS	73
ASISTOBE AS	S16
ASOCIACIÓN ESPAÑOLA DEL TRANSPORTE	106
AVANSIM LTD	3
BARBARA LOT	S25
CAD & BIM SERVICES	56
CAF	46
CARGOBEAMER AG	68
CEMBRE	49
CERVELLO	57
CITEF - UPM	33
CODRA	84
CONROO	S36
CROSS TECH	S30
CROWDSKAN	S34
CYLUS CYBERSECURITY	77
DEIMOS SPACE, S.L.U	29
DIEHL AVIATION	37
DRONECLOUD	S24
EARTHID	S20
EMU ANALYTICS	S27

COMPANY	STAND
QUIMODAL	25
SRI	12
EUROPE'S RAIL	92
EXNI, S.L.	9
FRAUSCHER SENSORTECHNIK	101
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GALGUS	52
GEYSER BATTERIES	S29
GOROLLOE	53
GREEMKO	S37
HEICO FASTENERS, S.A.U.	42
HEXAGON SAFETY, INFRASTRUCTURE & GEOSPATIAL	55
HEXIS GRAPHICS ESPAÑA S L	47
ICEX	45
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IN-MOVE BY RAILGRUP	80
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IRDETO	28
IRECFER	48
LA-CO INDUSTRIES EUROPE	39
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LEK CONSULTING	105
LIVE-EO	S12
MAFEX	62
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MERCANCIAS EL TREN	97
MEREDOT	S15

COMPANY	STAND
MORSORDORFER UPRESA RAIL	35
NANOKSI	S13
NGRT	66
NRF	44
NXRT	S21
OCTO INC	S38
OPTIMUS	80
OTHER WAY	S8
OTIV	S1
OXTO ENERGY	S26
PANASONIC TOUGHBOOK	80
PANORAMA ANTENNAS	23
PANTOHEALTH	S2
PHONONIC VIBES	S31
PLATFORM ONLINE MANAGEMENT SYSTEMS	S35
PTV GROUP	80
RADWIN	75
RAIL LIVE 2023	95
RAIL-FLOW GMBH	S6
RAILVIS	S11
RAILWATCH	S19
RAILWAY INNOVATION HUB	94
RAZORSECURE	53
RECARBON	S33
RELESOFT	S10
RENFE	67
RF TRACKING LTD	S18
SCHNEIDER ELECTRIC SPAIN SAU	74
SCHWIHAG	31
SENCEIVE	107

COMPANY	STAND
SIEMENS	10
SITES	96
SPINSWITCH TECHNOLOGIES	S40
SPINVIEW	99
STADLER RAIL	43
STOFL	S28
TEKHNE	S17
TELTRONIC	82
THALES	21
TICTAP	22
TYPSA	1
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VANGUARD STS	S22
VECTOR INFORMATIK GMBH	24
VEM SACHSENWERK GMBH	41
VIA LIBRE	26
VIAVI SOLUTIONS	79
VIEZO	S32
VOESTALPINE RAILWAY SYSTEMS JEZ	14
VOGELSANG GMBH & CO KG	30
VOLLERT ANLAGENBAU GMBH	2
WESTERMO	S8
XCAVATE ROBOTICS	S23
XENA VISION	S9
ZITRON	60
ZÖLLNER SIGNAL	88



# A complete conference agenda to discuss the future of the sector



RAILLIVE! 2022

Just like every year, the main stakeholders in the railway sector will be present at Rail Live! 2022. From senior officials of public administrations, railway operators or infrastructure managers to members of the industry.

Over three days, 250 experts from around the world will discuss current railway issues such as Cybersecurity, Global Megaprojects, Digital Transformation, Smart Mobility,

Smart Infrastructures, Sustainability, and Energy among other topics.

**29<sup>th</sup> November**  
 The conference will begin on 29<sup>th</sup> November at 10:00h, focussing on different workshops related to sustainability and talents in addition to the technical visits by Adif, Renfe and Málaga Metro.

**30<sup>th</sup> November**  
 The official opening will take place

on 30<sup>th</sup> November at 10:00h with the welcome from Sean Willis, director of Terrapinn, and the president of the Spanish Rail Industry Association (Mafex) Víctor Ruiz. The opening ceremony will be led by Francisco de la Torre Prados Mayor of Málaga, Marifrán Carazo Villalonga Minister of Development, Urban Planning and Housing of The Regional Government of Andalusia, and Raquel Sánchez Jiménez, Minister of Transport, Movility and Urban Agenda.

**Topics and trends**  
 Numerous topics will be addressed by the speakers during the various conferences. The topics of Rail Live! 2022 will be focused on 5G, accessibility, architecture and design, Artificial Intelligence, autonomy of the vehicles, blockchain, connectivity, stations of the future, IoT, and drones, among others. Those responsible for unravelling these topics will be the highest

SPEAKERS		
NAME	POSITION	COMPANY
Francisco-José Fortuny Carod	Senior Investment Operations Specialist	Asian Infrastructure Investment Bank
Chau Fat Chan	Assistant Director of Railways	Electrical and Mechanical Services Department, Hong Kong Special Administration Region Government
		ABB
		ABB
Javier Lozano	bim Implementation Manager	Adif
Francisco Cabrera Jerónimo	Process and digitization expert, Technical Directorate	ADIF
Montserrat Rallo del Olmo	Directora General de Planificación, Estrategia y Proyectos	Adif
Luis López Ruiz	Director de Estrategia Empresarial	Adif
Jose Conrado Martínez Acevedo	Subdirector de Innovación Estratégica	Adif
María Luisa Domínguez	President	Adif
José María Rivera Zafra	Director de Infraestructuras	Agencia de obra Publica de la Junta de Andalucía
Sebastian Court	Secretario	Alamys
Andrés García Moreno	Intermodal Transport Manager	Algeciras Port
Elena Laburu	Investment Director	Australian Trade and Investment Commission
Pablo de Otaola Ubieta	Coordinador General de Infraestructuras y Proyectos	Ayuntamiento de Málaga
Kristine Tveit	ICT Team Lead Maintenance	Bane NOR
Florian Kappler	Digital Transformation and Automation Lead	BLS
Javier de la Cruz García Dihinx	managing director	CAF
Itziar Villaro	SW Design Manager	CAF
Tim Krasowska	MD	Cargo Beamer
Carl Fredrik Karlsen	Commercial Director	CargoNet
Jorge Iglesias	Director of the CEDEX Railway Interoperability Laboratory	CEDEX
Serge Bertoliel	Secretary	CENELEC
Israel Baron	VP Customer Relations	Cervello
Marc Valette	Haed of Innovation	CFL Multimodal
Ian Hyde	Engineering & Safety Director	Chiltern Railways, Arriva Group
Dirk Beckers	Director	CINEA
Miguel Nuñez Fernández	General Director of Collective Transport Infrastructures	Comunidad de Madrid
Adrian Lightstone	Managing Director, Major Projects at CPCS	CPCS
Amir Levintal	CEO	Cylus
Tobias Fischer	Head of Technology at Teclab	DB
Baseliyos Jacob	Technical Project Lead ATO Betuweroute	DB Cargo
Stefan Leistner	Head of Analytics & Asset Management	DB Netz
Daniel Forsmann	Head of Fundamentals for Large Project Management	DB Netz
Christoph Goncalves-Alpoim	Head of Digital S-Bahn Hamburg	Deutsche Bahn
Keir Fitch	Head of Unit, Rail Safety and Interoperability	EC
Julio Gomez Pomar	President	Ecorail
Pablo Fernández-Aller	CEO	ENÉRGYA-VM
Jayne Yeo	project officer	ERA
Thomas Chatalet	ERTMS and Telematics Unit Project Officer	ERA
Nikolaos Toptsidis	Satellite Telecommunication Engineer	ESA
Enrico Spinelli	Business Applications Engineer	ESA
Donald Mishaxiu	Associate Director, Senior Banker	European Bank for Reconstruction and Development
Henk Swarttouw	President	European Cyclists' Federation
Pablo Sánchez Riquelme	Senior Loan Officer Public Sector - Spain	European Investment Bank
Manuel Alarcon	Programme Manager	Europes Rail
Carlo Borghini	Executive Director	Europe's Rail
Javier Ibáñez de Yrigoyen	Seconded National Expert	Europe's Rail
Daniel Lopour	Market Development Officer	EUSPA
Fabian Kirschbauer	Head of ETCS Lab	Federal Railway Authority
Pablo Pastega	MD Spain	Flixbus
Francesco Romano	Freelance Consultant	Freelance Consultant
Jose Luis Borau Jordán	Jefe Departamento Accesibilidad al Medio Físico	Fundación ONCE
Siegfried Steggemann	MD	Funkwerk
Mimmi Mickelsen	Tram Security Expert, Trafikkontoret	Göteborgs Stad
Uwe Jasnoch	Director EMEA Government Transportation	Hexagon
Edmund Butcher	Head of Business Development	HS1
Dyan Crowther	CEO	HS1
Parveen Bhavra	Strategic Insight Lead	HS1
Jay Newton	Head of Stations Engineering and Operations	HS1
Ignacio Imaz	Jefe de Sector Infraestructuras de Transporte	ICEX
Rafael Fuentes	Director Provincial en Málaga	ICEX
Lluís Sanvicens	Independent	Independent
Nalinaksh Vyas	Head of Technical Mission	Indian Railways
Ayush Srivastava	Researcher	Indian Railways
Javier Pozo	Product Executive Expert	Indra
Leyre Merle	Project Leader	Indra
Jorge Torrico	Subdirector BIM	INECO
Sergio Vázquez Torró	President	INECO
Alberto Comas	Architect – Building Projects team	INECO
Antonio Sancho	Architect and Building Projects Manager	INECO
Pieter Verlinden	Team Leader Data Science & Predictive Analysis	Infrabel



representatives of both public administrations and railway network operators, and of specialist companies in each of the subsectors that will present their latest developments.

### Spanish Symposium

Spain is one of the main international benchmarks in railway transport, which has one of the most modern and extensive high-speed networks and numerous metro systems in the different regions. As the host country of this important professional platform, the Rail Live! 2022 Conference has wished to include a special section to know more details of the present and future plans, as well as the role of its industry in the world and the roadmap for its international expansion.

Therefore, a Spanish symposium will be held, within the general programme, featuring the main collaborating entities of the event where different topics of interest will be presented. Among them, Adif and Adif AV innovation for the Spanish Railway Network. On the other hand, Renfe will benchmark "The future of Renfe through its Strategic Plan". In addition, Renfe in collaboration with other operators

Around 2,000 people from 25 countries will attend this international event where more than 100 companies will announce their latest innovation and technological developments

### SPEAKERS

NAME	POSITION	COMPANY
Sandra Milena Del Pilar Rueda Ochoa	Jefe de Oficina de Planeacion	Instituto de Desarrollo Urbano
Scott Congdon	Market Development & Partnership Management	Intelsat
Carla Trevino	Solution Architect-Connected Transport	Irdeto
Emanuele Bianco	Head of Hydrogen Technology	IRENA
Marifrán Carazo Villalonga	Consejera de Fomento, Articulación del Territorio y Vivienda	Junta de Andalucía
Carsten Wiebers	Global Head Aviation, Mobility & Transport	KfW IPEX-Bank
Ernst Kammerer	Head of Western European Transports	Kombiverkehr
Jörn Schwarze	President	KVB Cologne
Karolis Sankovski	CEO	LTG Infra
Víctor Ruiz	President	Mafex
Pedro Fortea	Director	Mafex
Jorge Rodríguez Julián	Chief Commercial Officer	Mainrail
Manuel Fernández	Director de Explotación y Planificación de la Agencia de Obras Públicas de la Junta de Andalucía	Metro de Granada
Monica Mariscal	Responsable de RC	Metro de Madrid
Silva Roldan	CEO	Metro de Madrid
José Miguel de Frutos	Chief Maintenance & Engineering Officer	Metro de Málaga
Ramón Madero	Chief Operating Officer	Metro de Málaga
Fernando Lozano Ruiz	Chief Executive Officer	Metro de Málaga
Juan Manuel Patiño Marín	Jefe de Gestión Urbana	Metro de Medellín
Jorge Maroto Gómez	Managing Director	Metro de Sevilla
Das Mootanah	CEO	Metro Mauritius
Darren Kettle	CEO	Metrolink
Teresa Benet	International Business Development	METROPOLITANO DE TENERIFE
Andy Harrison	Independent	MimConsult
David Pang	Treasurer	MTR
Neil Robertson	CEO	National Skills Academy for Rail
Vinay Kumar Singh	Managing Director	NCRTC
James Nattrass	Director of Incident Management and Operational Security Systems	Network Rail
David Choda	Principal Engineer, Telecoms	Network Rail
Andrew McNaughton	President	Network Rail High Speed
Richard Aaroe	CEO & Chairman	NGRT
		NGRT
		NGRT
Linda Marie Venbakken	CFO	Norse tog
Esme Kahlshoven	Program Manager, ERTMS	NS
Dimitri van Zantvliet	CISO	NS
Sven Schirmer	Corporate Procurement Coordinator,	ÖBB
Gerald Schinagl	Head of Digital Innovation	ÖBB
Gregor Fleishmann	Head of BIM Office	ÖBB
Martin Taranetz	Team Lead Mobile Radio Networks	ÖBB
Kaoutar El Haji	Corporate & Project Finance Manager	Office National des Chemins de Fer
Kaoutar El Haji	Corporate & Project Finance Manager	ONCF
Margus Oun	Head of Innovation	Operail
Sergio Bárcena	Director of Operations Planning and Maintenance,	Ouigo
Arjen Zoeteman	Senior Programme Manager, Research	Prorail
Karel Van Gils	Director Innovation & Technology	Prorail
Justus Hartkamp	ProRail International Affairs	Prorail
Carlos Martínez	Director Gerente	PTEC
Ignas Degutis	CFO	Rail Baltica
Jonathan Chatfield	Head of Policy (Freight & Stations)	Rail Delivery Group
Iván Blanco	Comercial Especialista en Sensores para el Ferrocarril	Railgrup
Ignacio Galindo	Director Servicios Profesionales	Railgrup
Ferran Gironès	I+D & Large-Scale Director	Railgrup
Juan Carlos Cortés Rengel	Vicepresidente	Railway Innovation Hub
Fernando Valero	Co-lider iniciativa RIH LE "BIM Ferroviario"	Railway Innovation Hub
Jorge Caturla	Co-lider iniciativa RIH-PTEC "Estación del Futuro"	Railway Innovation Hub
Francisco Baeza	Co-lider iniciativa RIH-PTEC "Estación del Futuro"	Railway Innovation Hub
Roberto Rojas	Co-lider iniciativa RIH-PTEC "Estación del Futuro"	Railway Innovation Hub
Laura Tordera	President	Railway Innovation Hub
Pilar Gorriz	Head of Innovation	Renfe
Ruben Leonor Bravo	Strategy Director	Renfe
Inmaculada Gutierrez	International Director	Renfe
Sonia Segade Blanco	Head of Technological Transformation	Renfe
Sergio Acereda,	Head of Accessibility, Sustainability and Commercial Communication	Renfe
Manel Villalante	Chief Strategy And Development Officer	Renfe Operadora
Isaias Taboas	President	Renfe Operadora
Marco Gallini	Head of the Mobile Diagnostics and Maintenance Vehicles Department	RFI
Leanne Redden	Executive Director	RTA Chicago
Daniel Eckenstein	Lead Systems Engineer	SBB
Thomas Gugler	Technology Programme Manager	SBB
Jack Schneider	Head of International Standardisation ATO & CCS Onboard	SBB



**MAFEX**  
INDUSTRIA FERROVIARIA ESPAÑOLA  
SPANISH RAIL INDUSTRY



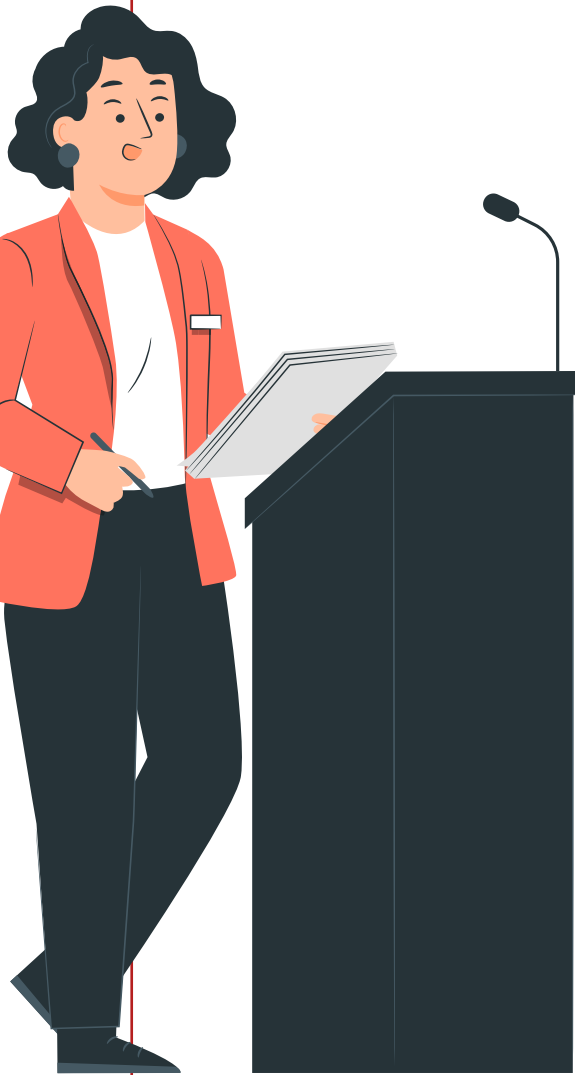


will present innovation projects and the challenges faced by them. Junta de Andalucía moderates a panel about "A new generation of Metro: a journey towards digitalisation and sustainability". Mafex and the Spanish Railways Foundation will offer a joint dialogue on "Innovation in rail: solving needs and boosting competitiveness".

Finally, ICEX Spain Trade and Investment will close the forum by presenting their support for the internationalisation of companies in the railway sector.

1<sup>st</sup> December

The 1<sup>st</sup> of December conference begins with an interesting round table at 10:00h to face the challenge of decarbonising the railway sector and doing our bit in the fight



SPEAKERS		
NAME	POSITION	COMPANY
Anja-Maria Sonntag	Head of Development & Asset Management	SBB Cargo
Jesús Jiménez	Railway, Oil&Gas & EPC Sales Manager	Schneider Electric
Martina Tomé	VP Power Systems Iberia	Schneider Electric
Peter Verlic	Chairman	SEESARI
Karolina Korth	Chief Digital Officer & Head of Strategy for South-West Europe	Siemens
Enrique Torres	Sales Director	Siemens
Valentin Barreau	Tech4rail Localisation Projects Manager	SNCF
Cyril Verdun	Head Manager of Railway Rolling Stock Maintenance Engineering Department	SNCF
Etienne Kuntzel	OCORA project Manager	SNCF
Fabrice Morenon	Managing Director	SNCF Hubs&Connexions
Virginie Taillender	project manager	SNCF Group
Lea Loucas	BIM Manager and Head of a BIM and 2D Synthesis Unit	SNCF Reseau
Hugo Meunier	PhD for NEXTEO Project	SNCF Reseau
Mikolaj Wild	CEO	Solidarity Transport Hub
Radoslaw Kantak	Board Member	Solidarity Transport Hub
Bogdan Davydov	Director of Customer Success	Spinview
Mar Rivas	Marketing Manager	Stadler
Gustavo Gamonoso	Area Sales Manager	Stadler
Frédéric Jans-Cooremans	Project Manager & Radio Spectrum Management	STB-MIVB
Mauro Alabuenas	President	Subterranos de Buenos Aires
Radek Cech	director of the international affairs department	SZ
Martin Svehlik	director of the High Speed Railway preparation department	SZ
Evelyn de Wachter	researcher	T&M Leuven
Sonia Miguel	Product Manager- Transport Sector Specialist	Teltronic
Raquel Frisa	Head of Product Management	Teltronic
Sean Willis	Managing Director	Terrapinn UK
Ana Millán	Innovation & technology manager	Thales
Martin Fenner	Independent	Tilt Consulting
Carlos Jimenez	Director del area de Organizacion y Personas	TMB
Jonathan Medina	Planning and Strategic Operations Manager	TMB
Anders Karlsson	Strategic Planner	Trafikverket
David Barnett	General Manager, Engineering	Translink
Ana Moreno	Managing Director	Tranvias de Zaragoza
Stefano Cespa	General Director	TRE ALTAMIRA, SLU
Jurjen Hendriks	Researcher	TU Delft
Jose Cordovilla	Director for Infrastructure Strategic Consulting	TYPSA
Lucie Anderton	Head of Sustainability	UIC
Pierre Tane	Head of Digital Architecture	UIC
Catherine Houbion	Cybersecurity officer	UIC
Revantha Rodriguez	Deputy Director Train Strategy and Operations, Passenger Services	UK Department for Transport
Achila Mazini	Research Fellow	UKRRIN
Philippe Citroen	General Director	Unife
Marta Garcia	Technical Affairs Manager	UNIFE
Michael Mikulandra	Chair of UNITEL Committee	UNIFE
Ana Manuelito	Public Affairs Manager	UNIFE
Juan de Dios Sanz Bobi	Dept of Mechanical Engineering	Universidad Politecnica de Madrid
Alex Burrows		University of Birmingham
Richard James Thomas	UKRRIN Industrial Fellow in Data Integration and Cyber Security	University of Birmingham
Nicole Metje	Professor of Infrastructure Monitoring and Head of Enterprise, Engagement and Impact	University of Birmingham
Michael Holynski	Professor of Atom Interferometry	University of Birmingham
Alfredo Peinado Gonzalo	Post Graduate Researcher	University of Birmingham
Angela di Febraro	Professor of Transportation Engineering	University of Genoa
Piero Arana Felices	Gerente de Mantenimiento - Línea 1 Metro de Lima	UNNA Infraestructuras
Dania Abdulwahab	Business Development Manager	Vector Informatik
Michael Ruffer	CTO	VGF
Juan Carlos Sánchez	CTO – COO – CSO	Voestalpine Railway Systems Jez
Thomas Kritzer	Division Tramway operation   Head	Wiener Linien
Javier Torre	Area Manager	Zitron
Christian Schlehuber	Convenor TC 9X/WG 26	

against the climate crisis. Pedro Fortea, General Director of Mafex – Spanish Rail Industry – will moderate this round table where the following companies participate: UNIFE (The Rail Supply Industry Association), the International Union for Road-Rail Combined Transport (UIRR), the International Union of

Railways, LTG Infra and Shift2Rail.

Some of the other topics that will be discussed in this day are: applications for satellite data on railway infrastructure, innovation to improve the user experience, moving from prototypes to maintenance systems based on real-world conditions and

focussing on predictive maintenance by applying A.I., investment in the expansion and digitalisation of the railway infrastructure of South-eastern Europe, or the future of asset management using quantum technology.

Innovation zone

The exhibition has its own Start-up Village where it is possible to meet the railway leaders of the future. In this edition, Rail Live! 2022 will support the development of innovation and the SMEs in the railway sector by encouraging the event to show its solutions to young companies that are revolutionising the industry. The start-up launch area will allow to showcase these companies and what their solutions, technologies and ideas can do for the different organisations that are part of the event.







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# A conference with all current topics

FROM DIGITAL TRANSFORMATION TO FREIGHT TRANSPORT, RAIL LIVE! WILL ANALYSE IN DETAIL THE MOST CURRENT TOPICS IN THE RAILWAY SECTOR IN NINE SUMMITS

## DIGITAL TRANSFORMATION

Digital Transformation will encompass digital products and key innovations that continue to push the boundaries of the railway industry for a better, more efficient, and cost-effective performance.

From the latest uses of GIS and digital twins that revolutionise the railway infrastructure projects to the

new predictive maintenance capabilities that give us better insights than ever before, the Rail Live Digital Transformation Summit will inspire the fast and revolutionary digitalisation of the railway.

The key themes of this summit will be the Digital Twins and the creation of large-scale models, current and future use cases of GIS, emerging infrastructure and construction technologies, development of predictive maintenance capabilities, accessing and making the most of Big Data, promotion of digital innovations in the railway, drone and satellite technology, and railway track digital monitoring.

## SIGNALLING

Train controls and innovative signalling systems are at a critical inflection point in their development. The deployment of CBTC, ETCS and ATO, with the aim of revolutionising track capabilities, continues to accelerate, while, simultaneously, the industry

debates how best to facilitate the deployment of FRMCS technology and 5G. The Signalling and Train Control Summit will present key case studies and a long-term vision to help us understand what the future of signalling and train controls looks like.

## MEGA PROJECTS AND FINANCING

The advance of the railway around the world continues to grow. Proof of this are the large investments that are made to expand passenger and freight transport. Rail Live! will dedicate a series of specific sessions to the mega projects that are currently being carried out on several continents.

New and innovative financing models that are being implemented by institutional investors will be explored to ensure that the necessary funds are accessible to the railway, while we learn from some of the largest projects about their turnaround times and best practices.

## METRO AND LIGHT RAIL

The passenger experience, accessibility, sustainability, digitalisation, urban regeneration... Metro and light rail systems are the backbone of mobility within cities.

As these grow and expand their importance to ensure sustainable travel, they become increasingly relevant. However, these systems have experienced a drop in passenger numbers as a result of the pandemic, so ensuring that passengers feel safe is a priority for all operators.

## SMART MOBILITY

Smart cities are starting to become a reality. The use of information technologies (IT) and communications (ICT) allow to interconnect all services and processes and also to ensure their energy, environmental, economic and social sustainability. Discovering the future of mobility, active travel, MaaS and multimodal travel will be situations that the attendees will be able to enjoy at this summit.

## INFRASTRUCTURES

The railway infrastructure is under extraordinary pressure to optimise capacity and reliability and, at the same time, reduce costs. The major developments, projects and innovations that take place in the railway infrastructure networks will be discussed.

Topics such as asset management and smart maintenance, data analysis and AI applications, blockchain-based innovation, infrastructure investment and infrastructure inspection will be addressed.

## FREIGHT

How can the freight railway transport market compete more effectively with other modes, including road transport? This summit will examine the commercial and technical challenges, which are essential for increasing competitiveness.

Connected transport, automation and digitalisation, ATC development, cross-border standardisation and commercial strategy will be the key points at the freight conferences.

## CYBERSECURITY

Safety has always been a priority of the railway industry. Nowadays, this priority has expanded far beyond the physical and towards the digital realm.

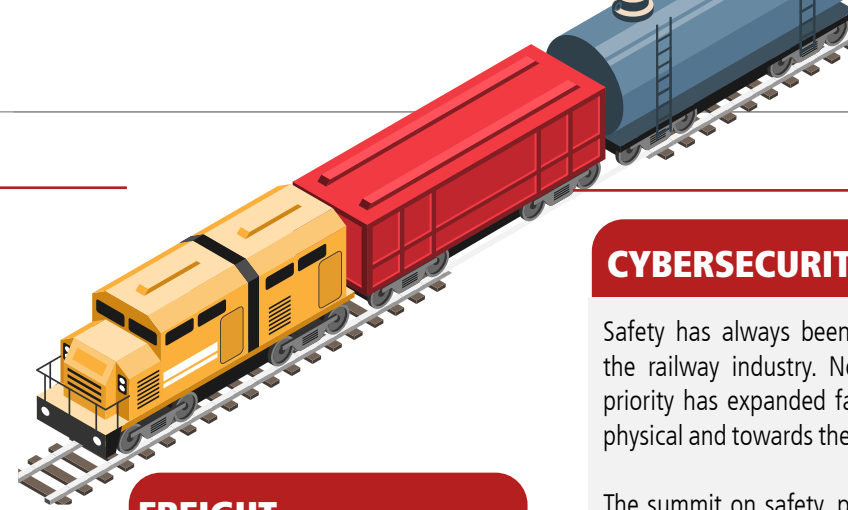
The summit on safety, protection and cybersecurity will explore a holistic view of safety to discuss how the railway can be guaranteed as the safest

method of travel thanks to the safety on tracks and level crossings, the staff training and management, and the new cybersecurity policies, among others.

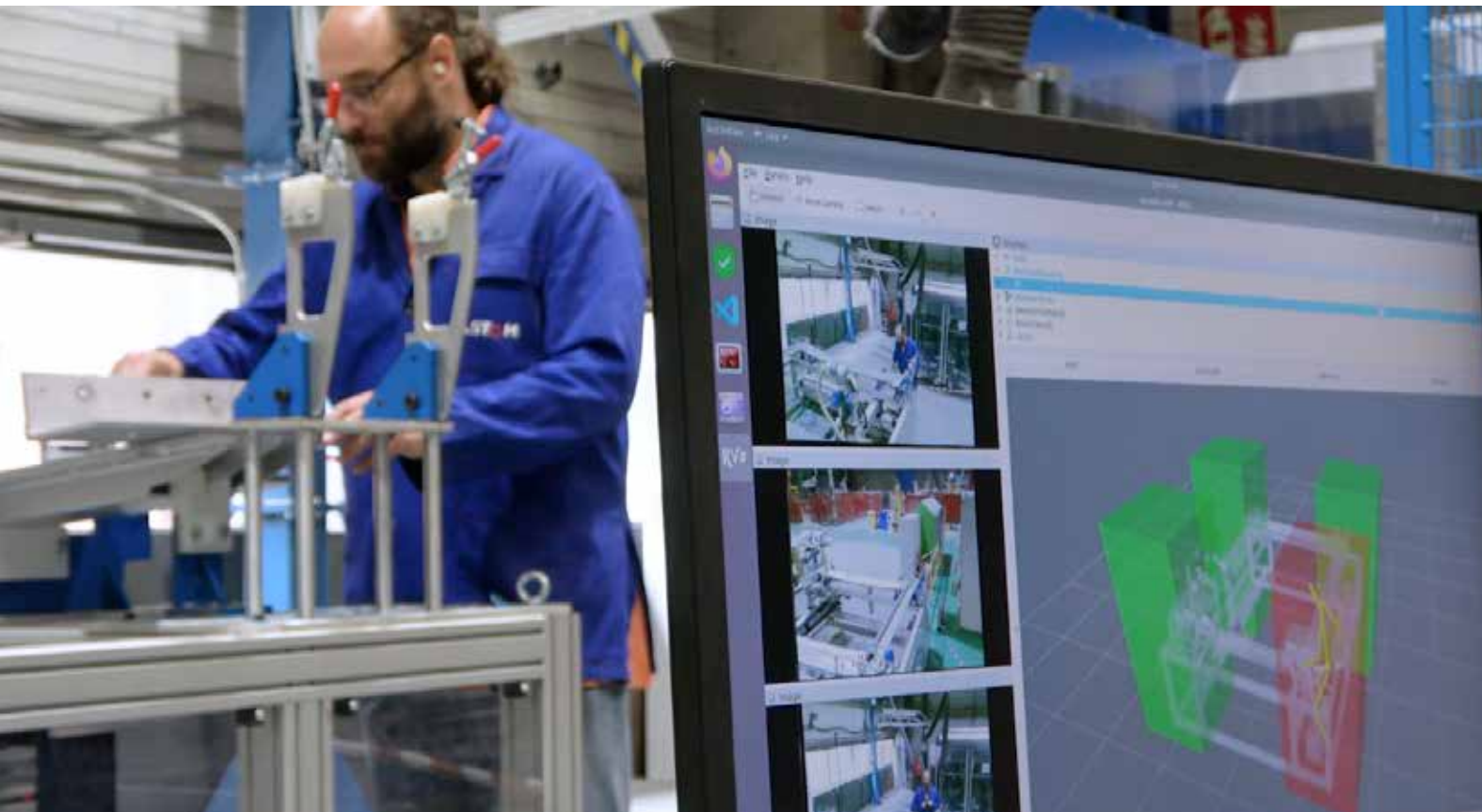
## ENERGY AND SUSTAINABILITY

The railway industry needs to further reduce carbon emissions and adapt to the new sustainability standards. It will cover key issues around decarbonisation,

climate adaptation and environmental problems. Hydrogen, alternative fuels, solar energy, or battery development will be some of the keys.







## Boosting collaboration between workers and robots in the industry

COLLABORATIVE WORK ENVIRONMENT WITH A ROBOT AND AN OPERATOR AT ALSTOM'S INDUSTRIAL CENTRE IN SANTA PERPÈTUA DE MOGODA.

The conclusions of the European Sharework project, which has developed a new intelligent system for safe and ergonomic collaboration between robots and workers in industrial manufacturing processes through artificial intelligence and process data analysis, were presented in October.

The project, in which Alstom Spain has represented the railway industry, has developed software to provide robots and their control systems with the necessary intelligence to cooperate with

operators without the need for physical protection barriers.

The devised system can understand the environment and human actions through a knowledge base and sensors and make predictions of the future state so that the robot can act accordingly. The aim is to promote collaborative work between operators and robots, improving operator ergonomics and increasing productivity.

As part of the project, all the tasks involved in each use case have been analysed, identifying which

are the most repetitive and have the least added value to place them in the robot's area of responsibility.

The system has been implemented and tested in four types of real industrial scenarios in the automotive (Seat), railway (Alstom Spain), metal (Cembre) and capital goods manufacturing (Goizper) sectors.

In the railway sector, Alstom Spain and the Eurecat technology centre have introduced a collaborative robot in the assembly line for tramway door and window frames to provide useful assistance to employees, helping to improve the ergonomics of the workplace while reducing assembly time and guaranteeing the order and quality of the process.

## LeadMind: providing insights with advanced analytics when data is energy and/or images.

The digital platform applications are the basis for providing service improvement solutions and competitiveness to operators and maintainers; through quality data management as images and/or advanced analytics.

LeadMind's latest innovations include a focus on both energy efficiency and automatic inspection.

Through a detailed analysis of the rail routes, the optimal driving model is created for a more efficient operation. In this way, the driver receives real-time directions to complete the route in the most energy-optimized way using the most advanced and least intrusive equipment. Thanks to advanced energy analytics, it is possible to discover savings and to quantify with great

LEADMIND BEYOND TRAIN DATA. IMAGE ANALYSIS TO AUTOMATE INSPECTIONS, ADVANCED ANALYTICS TO SAVE ENERGY

precision the improvement actions carried out.

Having information in real time and applying advanced analytics allow to improve the reliability of the service and the management and availability of the fleet. Way-Side equipment solutions with automatic measurements also contribute significantly to these improvements.

With more than 50 LeadMind Way-Side projects in 15 countries, CAF has instant measurement solutions for wheels, brakes, bogies, cars, and pantograph, showing the sta-

tus and trend of asset wear and thus, easing automatic inspection to maintainers. Thanks to the evolution of technology and the know-how obtained during these years, CAF paves the way for artificial vision, which will provide considerable improvements for intelligent maintenance plans in the near future.

These innovations, among others, will be shown at the next Rail Live congress in Malaga on November 29th, 30th and December 1st, where CAF will be displaying the evolution of its digital and railway solutions. Visit us at stand 46.





# AoE GoA2 solution since 2015. It is based on the specifications that will be included in the TSI CCS 2022 as a new interoperable subsystem

CAF Signalling has been developing its AoE GoA2 solution since 2015. It is based on the specifications that will be included in the TSI CCS 2022 as a new interoperable subsystem. In the latest tests carried out on a metropolitan line in which typical manual driving was compared with ATO driving, CAF Signalling engineers have found that the driver does not adapt precisely to the required journey time depending on whether he is ahead, behind schedule or on time.

On the other hand, time adherence with ATO is total. In addition, the driver tends to drive as fast as possible, wasting the time margin that ATO uses to minimise energy consumption by implementing efficient driving based on speed control

CAF SIGNALLING REDUCES ENERGY CONSUMPTION BY 65% WITH ITS ATO SOLUTION COMPARED TO MANUAL DRIVES.

without braking and shunting. These drives lead to an average reduction in energy consumption of 65% compared to manual drives. Even comparing drives with the same travel time, ATO achieves average savings of 25%.

With this solution, the company is responding to the major operational challenges facing railway lines around the world: optimising capacity, punctuality and energy consumption, thereby eliminating the dispersion associated with manual driving.

The ATO-TS is responsible for sending each train the timetable to be met, which the ATO-OB uses to calculate the optimum speed profile to meet it, applying comfortable driving, minimum energy consumption and guaranteeing the required stopping accuracy.

The output of this step could well be used for a DAS manual driving assistance system. In this case, it is used by the ATO-OB itself to determine the tractive effort required at each instant, which it sends to the Traction System.



# INHELIUM family of luminaires

Focused on the field of emergency signaling and lighting in railway tunnels, road tunnels and wind towers, the business activity of Dinámicas de Seguridad SL (Dsaf) prioritizes its commitment to new technologies in the execution of its projects and initiatives in pursuing compliance with the highest safety standards regarding the evacuation of people in risky situations.

Starting from innovation, research, development and application, Dsaf develops products that can be effectively adapted to the problems and conditions of the projects to be implemented, either from the point of view of

INHELIUM IS A FAMILY OF EMERGENCY LED LIGHTING PRODUCTS DEVELOPED BY DSAF BASED ON THE SPECIFIC NEEDS OF THE COMPANY'S THREE AREAS OF APPLICATION: WIND TOWERS, ROAD TUNNELS AND RAILWAY TUNNELS.

the fields of application, or from the current regulations and the corresponding security guarantees.

The latest example in these products is the INHELIUM luminaires family.

INHELIUM is a family of LED emergency lighting products, developed based on the specific needs

shown by our 3 areas of application: Wind towers, Road and railway tunnels.

As a result of these needs, 5 different models of LED luminaires have been developed, each one with its specific characteristics, which allow optimal performance by perfectly adapting to the conditions offered by each area.





## ITS to improve passenger safety

GMV OFFERS ITS DV-REC PRODUCT TO OPERATORS AND MANUFACTURERS OF ROLLING STOCK, SPECIALLY DESIGNED FOR ON-BOARD VIDEO SURVEILLANCE.

Passenger safety has always been a concern of public transport operators and authorities. CCTV systems have a long history as security elements for buildings and facilities, however their installation in railway vehicles

entails a series of peculiarities that make their deployment require a high level of specialization.

The installation of the equipment in vehicles requires special certifications in terms of resistance

to vibrations, electromagnetic compatibility, temperature range, anti-vandalism, etc. being especially rigorous in the case of rail transport.

GMV offers its DV-Rec product to operators and manufacturers of rolling stock, specially designed for on-board video surveillance, in which operators and manufacturers such as Metro de Barcelona, FGV (Ferrocarrils de la Generalitat Valenciana), Talgo or Stadler have relied.



## New test site to develop advanced 5G solutions and services for transportation

The ecosystem, created at Indra's facilities in Madrid, will be equipped with state-of-the-art 5G technology and the necessary hardware and software to deploy and validate new smart mobility solutions and services that can later be transferred to a real environment.

In the rail sector, Indra's work will focus on wireless communication services to promote digitization and new railway signaling services, cargo inspection and rolling stock monitoring. As for the urban and interurban environment, it will apply 5G technology to improve video surveillance services in stations.

Developments aimed at optimizing asset management and massive

INDRA AND MASMOVIL HAVE SIGNED A COLLABORATION AGREEMENT TO DEPLOY A NEW TEST SPACE TO DEVELOP AND VALIDATE INNOVATIVE SOLUTIONS BASED ON THE NEW 5G COMMUNICATIONS STANDARD, WHICH WILL ENCOURAGE SMARTER, MORE CONNECTED AND SUSTAINABLE MOBILITY.

data downloads for intelligent infrastructure maintenance will be promoted. For example, it is planned to create a digital twin in which data are updated in real time to plan and undertake maintenance tasks more efficiently according to the specific conditions of the infrastructure at any given time.

In addition, the advantages of digitalization and 5G will be exploited to improve the user experience, to offer total support to travelers at all stages of their journey, to provide entertainment services and Wi-Fi connectivity, online purchases of transport tickets and real-time validation with biometric technology.



# World leading technology in railway buffer stops

The protection of track ends with safety elements in the event of an impact is increasingly an essential element. Something that undoubtedly demonstrates this fact is the exemplary involvement that ADIF is taking in this type of system, being a pioneering institution worldwide and publishing the first Buffer Stop Regulations in Spain NAG5200\_ED1 at the beginning of 2022, to regulate the installation of devices for impact attenuation in track ends with passenger trains.

Recently, Llalco has developed a new innovative design, consisting of a high-performance sliding gas-hydraulic buffer stop for tracks with passenger trains with reduced sliding distance. On 2022 has been installed at the Arenys de Mar, Ma-

LLALCO HAS DEVELOPED A NEW INNOVATIVE DESIGN, CONSISTING OF A HIGH-PERFORMANCE SLIDING GAS-HYDRAULIC BUFFER STOP FOR TRACKS WITH PASSENGER TRAINS WITH REDUCED SLIDING DISTANCE.

taró, Vilanova i la Geltrú and San Vicente de Calders stations for ADIF in Catalonia.

The key points that stand out with this type of buffer stop are:

- Fast installation in 1 hour:
- Does not require civil works:
- Removable:
- Minimum track occupancy with cumulative system of friction shoes:
- Deceleration control with gas-hydraulic technology:

More and more railway infrastructures worldwide are becoming aware of the importance of protecting track ends with safety systems for shock absorption. Innovation is a key element to develop solutions adaptable to each project that allow improvement in safety with the least possible impact on existing infrastructures.

Do not hesitate to contact us for more details about this or any other Llalco model by calling +34 91 742 30 57 or writing to us at [llalco@llalco.com](mailto:llalco@llalco.com)



# New predictive algorithms for risk of rail buckling in ballasted tracks



Buckling in ballasted tracks is caused by the accumulation of energy due to the thermal variation experienced by the rail, being the origin of potential track deformation than can create severe incidences. Climate change effect is increasing the buckling episodes and this trend is suppose to continue in next years.

MainRail has deployed a pilot to predict buckling on Mallorca Railway Network (SFM) with the support of Azvi and Yeltech. This deployment lies in buckling prediction algorithms and IoT devices for temperature measurement. The algorithms allow to predict the risk of buckling while the IoT devices send real-time alerts of track tem-

perature collecting data to optimize the algorithms.

perature collecting data to optimize the algorithms.

This deployment allowed to validate an accuracy on maximum rail temperature prediction between 90% and 95% pending of different variables. Once the rail temperature is predicted and validated, to forecast the buckling risk MainRail's algorithms analyze different variables of infrastruc-

ture typology and condition as neutralization temperature, curvature, sleeper-balast system resistance, maintenance history etc.

MainRail keeps developing predictive algorithms for track quality and rail wear. This development is carried out through Hybrid Models thanks to the use of digital twins, track data and AI algorithms.



# Pantograph monitoring system increases the reliability and availability of the railway by avoiding possible overhead wire breaks in advance

Over time, damage to the Overhead Line Equipment (OLE) is, of course, inevitable. There are many causes, with weather, such as high winds or extreme heat, the most obvious, but another significant cause of damage is defective pantographs.

PanMon is a remote condition monitoring system from Ricardo providing fully automatic, real-time condition assessment of in-service pantographs.

Used in the UK, Europe, Australia, and Africa, PanMon scanners are positioned above the overhead wires to capture 3D laser scans and images of each pantograph on every passing train. The scans are digitally stored in the cloud by our

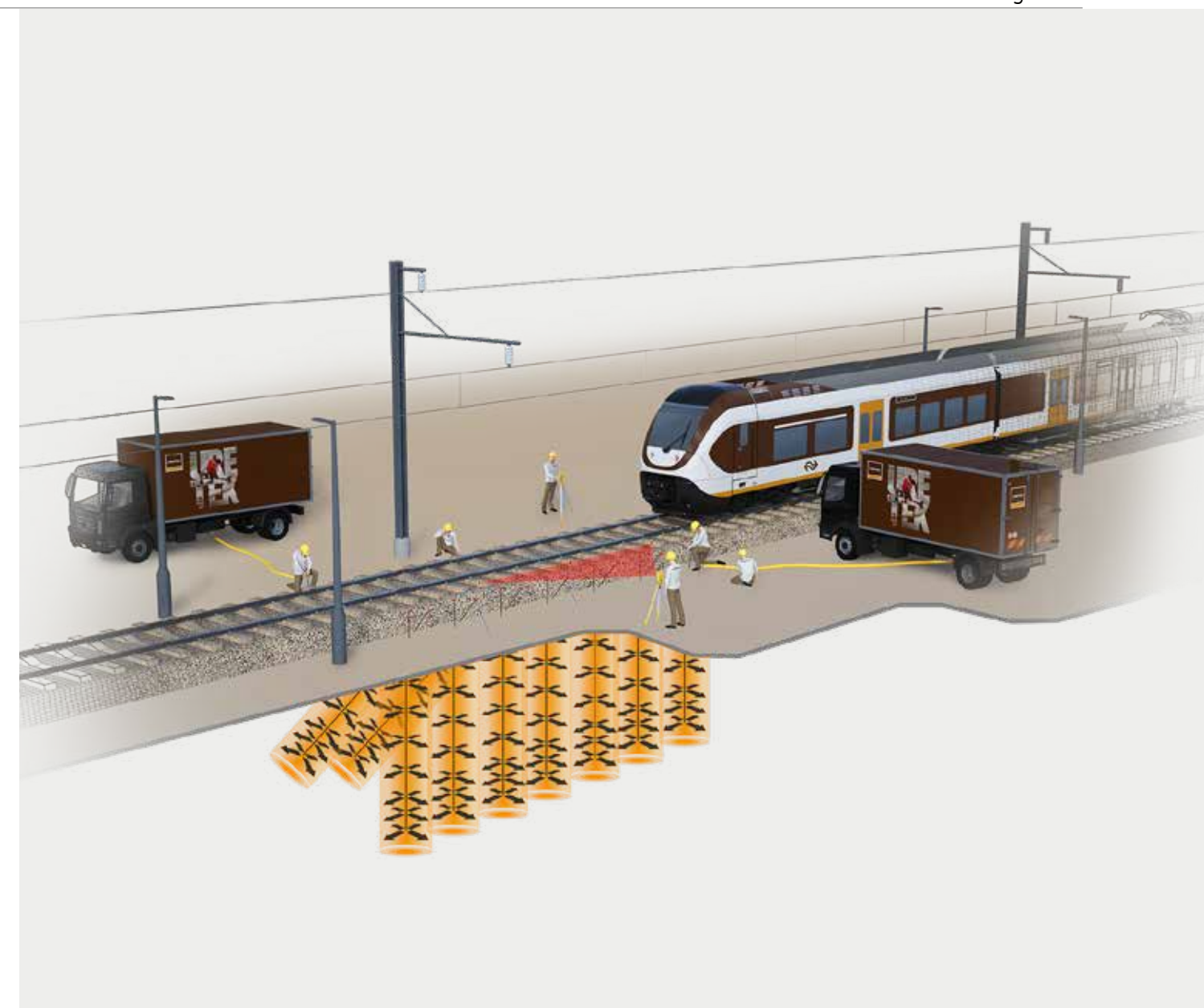
PANMON IS A REMOTE CONDITION MONITORING SYSTEM FROM RICARDO PROVIDING FULLY AUTOMATIC, REAL-TIME CONDITION ASSESSMENT OF IN-SERVICE PANTOGRAPHS.

Danish technology partner, Panto-Inspect and the images and scans are analysed for chips and defects, damage to the end-horns, and wear of the contact strip.

A customised dashboard relays analysis to maintenance teams, with any issues highlighted. Should specified thresholds be breached, an alarm is raised. Accessible data for each pantograph includes high-resolution images, a 3D model, and imagery of the entire train roof. Any defective units identified can then be prioritised for maintenance

(minor fault) or withdrawn from service (major fault). These timely interventions avoid damage to both vehicle and infrastructure, delivering a more reliable railway.

In 2019, Network Rail Scotland commissioned Ricardo to install fourteen PanMon scanners to increase railway system reliability and route availability and within a few months, average accuracy exceeded 99.5%, with 50,000 pantographs being scanned and analysed each month.



## Consolidation of a railway embankment with resin injections

Resin injection is one of the best ways to consolidate a railway embankment. Thanks to our expansive resins we were able to consolidate an embankment that had been built 150 years ago in the Rijeka region (Croatia).

The embankment was formed by a fill of stones, in a pit previously excavated at a depth of 13 m below the railway. When going to build a gas pipeline under the embankment, the presence of a sub-

THANKS TO URETEK'S EXPANSIVE RESINS, AN EMBANKMENT THAT HAD BEEN BUILT 150 YEARS AGO IN THE RIJEKA REGION (CROATIA) WAS CONSOLIDATED.

sidence was discovered that made our intervention necessary.

Thanks to our land consolidation solution for the railway sector, we were able to solve the problem in

15 days, without having to interrupt rail traffic.

More information: <https://hubs.li/Q01pG7RR0>



# Cellnex and the challenge of achieving a truly connected railway

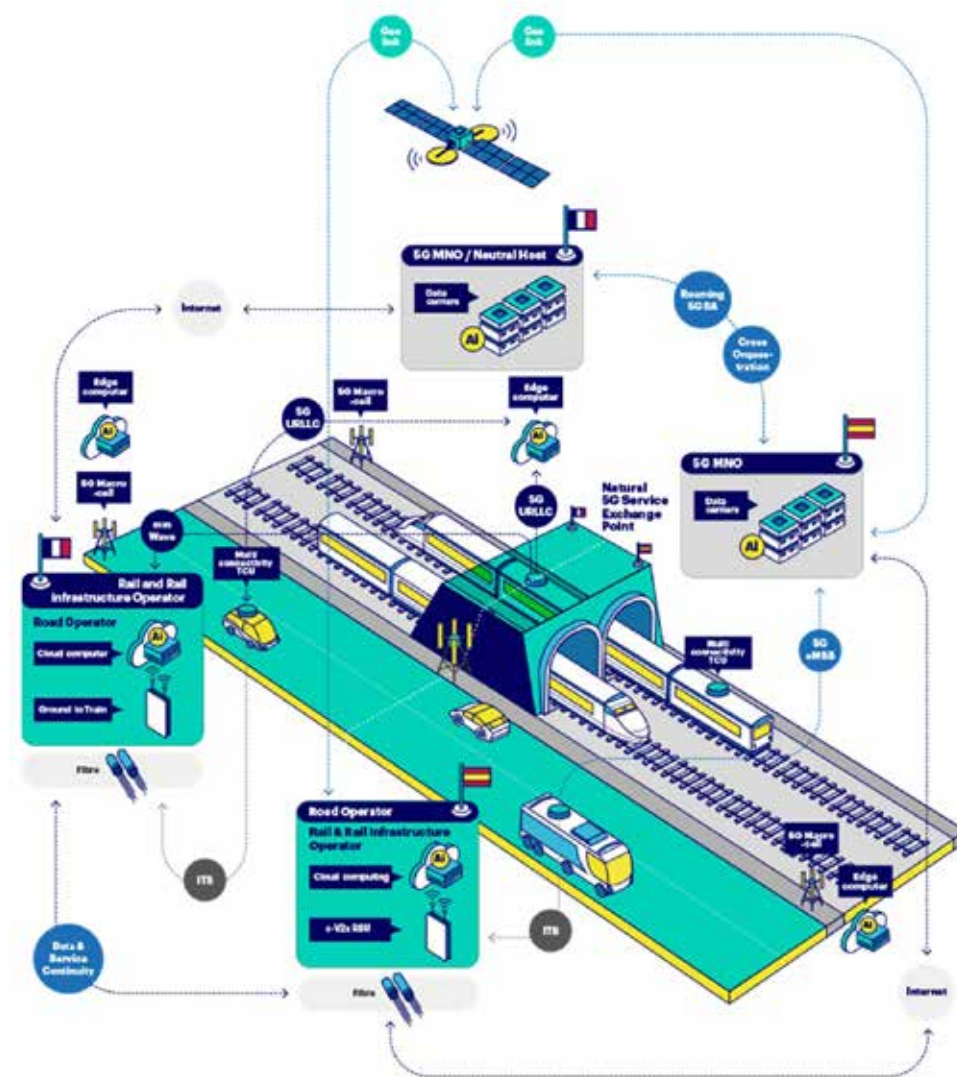
THE FUTURE OF RAIL'S COMPETITIVENESS IS DIGITAL, BUT IT FACES SIGNIFICANT CHALLENGES. TO HELP THE SECTOR ATTRACT PASSENGER AND FREIGHT TRAFFIC, WHILE MEETING PRESSING ENVIRONMENTAL IMPACT TARGETS, WE MUST ACCELERATE THE DEPLOYMENT OF COMMUNICATIONS INFRASTRUCTURE.

Cellnex, Europe's leading operator of wireless telecommunications infrastructures, believes it is necessary to design communication networks and solutions capable of achieving maximum synergies between rail, mobile operators and roads, as well as serving the new connected and collaborative mobility (improving

operations and competitiveness). Cellnex, in its Mobility Lab in Castellolí and with its role as coordinator of the H2020 5GMED project, is working on the development of multi-technology infrastructures, with distributed computing capacity, aimed at improving the user experience, in-cabin operations and the capacity for distributed analy-

sis of operations. Infrastructures, more sustainable in terms of energy, capable of providing continuous connectivity (Ground to train), that guarantee the future needs of passengers, safety and operational efficiency.

This is a first step reinforced by cross-border deployments on the France-Spain-Portugal corridors (Atlantic and Mediterranean corridor). A first step to accelerate rail digitalisation and its evolution to FRMCS, where Cellnex can play a key role as it is present in 12 European countries, allowing it to take on cross-border deployment projects in the main TEN-T corridors.



# Expansion of technology solutions for railway rolling stock and infrastructure

As far as rolling stock is concerned, ABB is betting heavily on energy storage systems (ESS) with the battery factory opened less than three years ago in Baden, and with the expansion of its range of traction converters through the acquisition a few weeks ago of PowerTech Converter based in Berlin.

In rail infrastructure, ABB is also developing technologies to offer a full range of DC traction power solutions, including traction rectifiers, DC switchgear, and protection systems designed to enable operators to build and operate high-performance, safe and reliable modern rail systems with ease. This includes technologies such as high-speed circuit breakers, specifically designed to guarantee maximum performance with thermal currents, or struc-

ture-mounted outdoor switchgear (SMOS) that integrates all the necessary elements to protect and safely operate the power sections of the line. aerial.

Beyond the railway sector, ABB is currently developing technological packages for the electrification of heavy vehicles such as buses, trolleybuses, mechanical shovels or mining trucks, and to be able to offer its customers complete solutions from a single technological provider.

These packages integrate technologies ranging from electric motors to controllers.

Above all these technologies is the portfolio of digital solutions from the company ABB Ability TM, which allow remote monitoring of assets, both in rolling stock and in railway infrastructures to optimize their performance, lengthen the life cycle, reduce the consumption of energy, and maximize the availability of those assets.





# Innovation – efficiency in maintenance processes

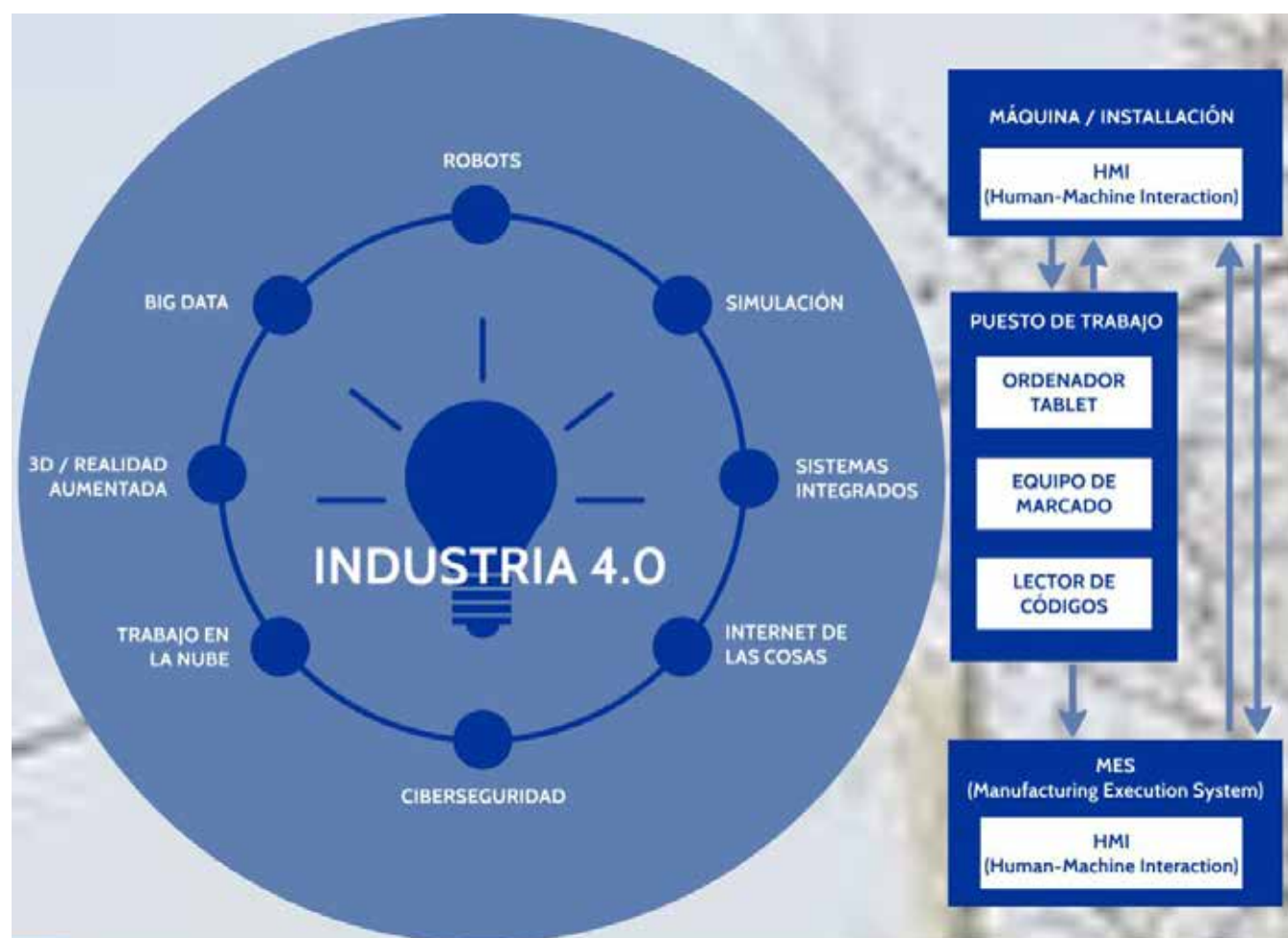
**A**CYGS Sales Management S.L. as a reference in process improvement, workflow optimization and layout and time studies, introduces as a current trend different process automation solutions through the use of robotics and automation technologies such as AGVs or transport, storage or cargo loading systems. Human intervention is reduced; eliminating risks and improving logistics times and depot productivity.

Additionally, through industry 4.0, a "paperless" workshop is achieved; connected to each other, allowing to know at all times the real situation of the operation, of the main-

tenance of the depot equipment, with remote access and with absolute control over the components to be maintained, ensuring its traceability from its entry to its exit to the workshop.

Process automation and production improvement can be carried out in a rolling stock manufacturing and/

or maintenance depot (freight wagons, trains, locomotives, etc.), as well as its components (bogies, wheelset, wheels, etc.). ACYGS, due to its experience in different international projects or its focus on meeting customer needs, has the ability to develop automation projects and process improvements in the railway sector.



Find out more about all the activities and services we have prepared for 2022 to promote Internationalization, Competitiveness and Innovation.

mafex@mafex.es | 00 34 944 706 504



MEMBERS DIRECTORY

ENGINEERING, CONSULTANCY  
AND CERTIFICATION

Projects and infrastructure technical  
assistances, superstructure, signalling,  
communications and ticketing

- ▶ ACYGS Sales Management, S.L.
- ▶ Aimen Centro Tecnológico
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Signalling, S.L.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Calmell, S.A.
- ▶ CEIT
- ▶ Citef (Fundación para el fomento de la innovación industrial)
- ▶ Dsaf-Dinámicas De Seguridad, S.L.
- ▶ Mieres Rail, S.A.
- ▶ Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- ▶ Elecnor Deimos
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ Ibérica Tecnología en Sistemas de Seguridad Ferroviarios, S.L. (ITSS)
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Ikusi, S.L.U.
- ▶ Indra Sistemas, S.A.
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.
- ▶ Inse Rail, S.L.
- ▶ Luznor Desarrollos Electrónicos, S.L.
- ▶ Segula Technologies España, S.A.U.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ SGS Group Spain
- ▶ Simulaciones y Proyectos, S.L.
- ▶ Tecnivial, S.A.
- ▶ Teldat, S.A.
- ▶ Teltronic
- ▶ Tekniker
- ▶ Thales España Grp, S.A.U.
- ▶ TPF Getinsa Euroestudios, S.L.
- ▶ Trigo Group
- ▶ Typsa - Técnica Y Proyectos, S.A.
- ▶ Vicomtech
- ▶ WSP Spain-Apia, S.A.

Systems, environmental, financial  
management and IT consulting

- ▶ Aimen Centro Tecnológico
- ▶ Aquafriech, S.L.
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Asea Brown Boveri, S.A.
- ▶ Citef (Fundación para el fomento de la innovación industrial)
- ▶ Elecnor Deimos
- ▶ Fundación Gaiker
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.
- ▶ Intertek Ibérica Spain, S.L.U.
- ▶ Mainrail, S.L.
- ▶ Nertatec, S.L.
- ▶ Segula Technologies España, S.A.U.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ SGS Group Spain
- ▶ SQS (Software Quality Systems, S.A.)
- ▶ Simulaciones y Proyectos, S.L.
- ▶ TPF Getinsa Euroestudios, S.L

- ▶ Vicomtech
- ▶ WSP Spain-Apia, S.A.

Technical Specifications Drafting  
and supervision of rolling stock  
manufacturing

- ▶ Aimen Centro Tecnológico
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Hispacold, S.A.
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.
- ▶ Segula Technologies España, S.A.U.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ SGS Group Spain
- ▶ Trigo Group
- ▶ WSP Spain-Apia, S.A.

Work supervision

- ▶ Aimen Centro Tecnológico
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Indra Sistemas, S.A.
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.
- ▶ Inse Rail, S.L.
- ▶ Intertek Ibérica Spain, S.L.U.
- ▶ Segula Technologies España, S.A.U.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ SGS Group Spain
- ▶ Sice Tecnología y Sistemas
- ▶ Tpf Getinsa Euroestudios, S.L
- ▶ Typsa - Técnica y Proyectos, S.A.
- ▶ WSP Spain-Apia, S.A.

Product and process certifications

- ▶ ACYGS Sales Management, S.L.
- ▶ Aimen Centro Tecnológico
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Certifer Belgorail, S.A. Sucursal en España
- ▶ Cetest, S.L.
- ▶ Citef (Fundación para el fomento de la innovación industrial)
- ▶ Dsaf-Dinamicas De Seguridad, S.L.
- ▶ Fundación Gaiker
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.
- ▶ Intertek Ibérica Spain, S.L.U.
- ▶ Ricardo Ceretification Iberia , S.L.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ SQS (Software Quality Systems, S.A.)
- ▶ Simulaciones y Proyectos, S.L.
- ▶ Trigo Group
- ▶ WSP Spain-Apia, S.A.

Drafting of operation and  
maintenance (O&M) plans and  
transport and demand studies

- ▶ ACYGS Sales Management, S.L.
- ▶ Aimen Centro Tecnológico
- ▶ Ardanuy Ingeniería, S.A.
- ▶ Caf Turnkey & Engineering, S.L

- ▶ Citef (Fundación para el fomento de la innovación industrial)
- ▶ Mieres Rail, S.A.
- ▶ Gantrex Spain
- ▶ Idom-Engineering, Consulting, Architecture
- ▶ Ineco-Ingeniería y Economía del Transporte, S.A.

- ▶ Segula Technologies España, S.A.U.
- ▶ SGS Group Spain
- ▶ Tekniker
- ▶ Tpf Getinsa Euroestudios, S.L.
- ▶ Typsa - Técnica y Proyectos, S.A.

Training and simulations tools

- ▶ Aimen Centro Tecnológico
- ▶ Asea Brown Boveri, S.A.
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ Lander
- ▶ Segula Technologies España, S.A.U.
- ▶ Simulaciones y Proyectos, S.L.
- ▶ Tekniker
- ▶ WSP Spain-Apia, S.A.

INFRASTRUCTURE AND  
SUPERSTRUCTURE

Civil works (platforms,stations, depots)

- ▶ Aimen Centro Tecnológico
- ▶ Azvi, S.A
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Comsa Corporación
- ▶ Funor, S.A.
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Inse Rail, S.L.
- ▶ Lantania
- ▶ Luznor Desarrollos Electrónicos, S.L.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ Uretek Soluciones Innovadoras, S.L.U.

Electrification

- ▶ Alstom Transporte, S.A.
- ▶ Azvi, S.A.
- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Comsa Corporación
- ▶ Cunext
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Ingeteam Power Technology, S.A.
- ▶ Inse Rail, S.L.
- ▶ La Farga Yourcoppersolutions, S.A.
- ▶ Lantania
- ▶ Telice, S.A.
- ▶ Uriarte Safybox
- ▶ Valdepinto, S.L.

Infrastructure and superstructure  
equipment and components

- ▶ Aimen Centro Tecnológico
- ▶ Alstom Transporte, S.A.
- ▶ Amurrio Ferrocarril y Equipos, S.A.
- ▶ Arcelormittal España, S.A.
- ▶ Artech (Electrotécnica Artech Smart Grid, S.L.)
- ▶ Asea Brown Boveri, S.A.
- ▶ Azvi, S.A.

- ▶ Cables de Comunicaciones Zaragoza, S.L.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ CEIT
- ▶ Comsa Corporación
- ▶ Cunext
- ▶ Dsaf-Dinámicas De Seguridad, S.L.
- ▶ Elecnor Deimos
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Mieres Rail, S.A.
- ▶ Flexix, S.A.
- ▶ Funor, S.A.
- ▶ Ikusi, S.L.U.
- ▶ Inse Rail, S.L.
- ▶ Ladicim
- ▶ Lantania
- ▶ Llalco
- ▶ Precon - Prefabricaciones y Contratas, S.A.U.
- ▶ Pretensados del Norte, S.L.
- ▶ Talleres Alegría, S.A.
- ▶ Talleres Zittrón
- ▶ Tecnivial, S.A.
- ▶ Telice, S.A.

Track assembly

- ▶ Alstom Transporte, S.A.
- ▶ Amurrio Ferrocarril y Equipos, S.A.
- ▶ Azvi, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Comsa Corporación
- ▶ Gantrex Spain, S.A.
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Inse Rail, S.L..
- ▶ Lantania
- ▶ Pretensados del Norte, S.L.
- ▶ Talleres Alegría, S.A.
- ▶ voestalpine Railway Systems JEZ, S.L.

TRAFFIC CONTROL AND SIGNALLING  
SYSTEMS, COMMUNICATION,  
PASSENGER INFORMATION  
AND TICKETING

Traffic control and signalling (safety)

- ▶ Alstom Transporte, S.A.
- ▶ Cables de Comunicaciones Zaragoza, S.L.
- ▶ Caf Signalling, S.L.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ CEIT
- ▶ Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- ▶ Electrans, S.A.
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Ikusi, S.L.U.
- ▶ Indra Sistemas, S.A.
- ▶ Inse Rail, S.L..
- ▶ Luznor Desarrollos Electrónicos, S.L.
- ▶ Revenga Ingenieros, S.A.
- ▶ Segula Technologies España, S.A.U.
- ▶ Sice Tecnología y Sistemas
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Tecnivial S.A
- ▶ Teltronic, S.A.
- ▶ Telice, S.A.
- ▶ Thales España Grp, S.A.U.
- ▶ Uriarte Safybox

- ▶ voestalpine Railway Systems JEZ SL

Protection (security) and infrastructure  
monitoring

- ▶ Alstom Transporte, S.A.
- ▶ Azvi S.A
- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Comsa Corporacion
- ▶ Dsaf-Dinamicas De Seguridad, S.L.
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Indra Sistemas, S.A.
- ▶ Inse Rail, S.L..
- ▶ Mainrail, S.L.
- ▶ Segula Technologies España, S.A.U.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Telice, S.A.
- ▶ Thales España Grp, S.A.U.
- ▶ Vicomtech

Systems and equipment for collection,  
ticketing and access control

- ▶ Asea Brown Boveri, S.A.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Calmell, S.A.
- ▶ Comsa Corporacion
- ▶ Gmv Sistemas, S.A.U.
- ▶ Ikusi, S.L.U
- ▶ Indra Sistemas, S.A.
- ▶ Inse Rail, S.L.
- ▶ Revenga Ingenieros S.A:
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ Sice Tecnología y Sistemas
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Telice, S.A.
- ▶ Vicomtech

Communications

- ▶ Azvi, S.A.
- ▶ Cables de Comunicaciones Zaragoza, S.L.
- ▶ Caf Turnkey & Engineering, S.L.
- ▶ CEIT
- ▶ Cellnex Telecom, S.A.
- ▶ Comsa Corporación
- ▶ Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- ▶ Gmv Sistemas, S.A.U.
- ▶ HaslerRail (Secheron Hasler Group)
- ▶ ICF - Ingeniería y Control Ferroviario
- ▶ Ikusi, S.L.U
- ▶ Indra Sistemas, S.A.
- ▶ Inse Rail, S.L.
- ▶ Revenga Ingenieros S.A.
- ▶ Sener Ingeniería y Sistemas, S.A.
- ▶ Sice Tecnología y Sistemas
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Teldat, S.A.
- ▶ Teltronic, S.A.U.
- ▶ Telice, S.A.
- ▶ Thales España Grp, S.A.U.
- ▶ Vicomtech

Passenger information and on-board  
entertainment systems

- ▶ Alstom Transporte, S.A.

- ▶ Caf Turnkey & Engineering, S.L.
- ▶ Elecnor Deimos
- ▶ Gmv Sistemas, S.A.U.
- ▶ Icon Multimedia, S.L.
- ▶ Indra Sistemas, S.A.
- ▶ Inse Rail, S.L.
- ▶ Ikusi, S.L.U
- ▶ Revenga Ingenieros, S.A.
- ▶ Sice Tecnología y Sistemas, S.A.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Tecnivial, S.A.
- ▶ Teldat, S.A.
- ▶ Telice, S.A.
- ▶ Vicomtech

ROLLING STOCK MANUFACTURERS

High Speed trains (over than 250km/H)  
M.R para tráfico de pasajeros alta  
velocidad (más de 250km/H)

- ▶ Alstom Transporte, S.A.
- ▶ Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Zeleros

Long distance and regional passengers  
trains (up to 250km/H)

- ▶ Alstom Transporte, S.A.
- ▶ Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Stadler Rail Valencia, S.A.U.

Urban and suburban trains

- ▶ Alstom Transporte, S.A.
- ▶ Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Stadler Rail Valencia, S.A.U.

Freight wagons and Locomotives

- ▶ Alstom Transporte, S.A.
- ▶ Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Stadler Rail Valencia, S.A.U.
- ▶ Talleres Alegría, S.A.
- ▶ Zeleros

Vehicles for infrastructure maintenance

- ▶ Alstom Transporte, S.A.
- ▶ Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Siemens Rail Automation, S.A.U.
- ▶ Talleres Alegría, S.A.

MANUFACTURERS OF VEHICLE  
COMPONENTS, AUXILIARY  
EQUIPMENT AND SYSTEMS

Traction and propulsion components

- ▶ Aimen Centro Tecnológico
- ▶ Alstom Transporte, S.A.
- ▶ Ariño Douglass, S.A..
- ▶ Artech (Electrotécnica Artech Smart Grid, S.L.)
- ▶ Asea Brown Boveri, S.A.



## MEMBERS DIRECTORY

- Caf Equipos y Componentes
- Caf Power & Automation, S.L.U.
- Flexix, S.A.
- Forging Steel Products, S.L.
- HaslerRail (Secheron Hasler Group)
- Ingeniería Viesca, S.L.
- Ingeteam Power Technology, S.A.
- Mgn Transformaciones del Caucho, S.A.
- Siemens Rail Automation, S.A.U.
- Zeleros

**Control, auxiliary and diagnostic systems**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Asea Brown Boveri, S.A.
- Caf Power & Automation, S.L.U.
- CEIT
- Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- Gmv Sistemas, S.A.U.
- HaslerRail (Secheron Hasler Group)
- Hispacold S.A.
- Ibérica Tecnología en Sistemas de Seguridad Ferroviarios, S.L. (ITSS)
- Indra Sistemas, S.A.
- Ingeniería Viesca, S.L.
- Ingeteam Power Technology, S.A.
- Kimua Group
- Nertatec, S.L.
- NGRT, S.L.
- NRF España, S.A.
- Stadler Rail Valencia, S.A.U.
- Teldat, S.A.
- Zeleros

**Assembly equipment**

- Agui, S.A.
- Aimen Centro Tecnológico
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Asea Brown Boveri, S.A.
- Danobat, S. COOP.
- Forging Steel Products, S.L.
- Fundiciones del Estanda, S.A.
- Funor, S.A.

**Mechanical components**

- Agui, S.A.
- Alstom Transporte, S.A.
- Caf Equipos y Componentes
- Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- Flexix, S.A.
- Forging Steel Products, S.L.
- Funor, S.A.
- Fundiciones del Estanda, S.A.
- Hispacold, S.A.
- Metalocauchos, S.L.
- Mgn Transformaciones del Caucho, S.A.
- Nertatec, S.L.
- Stadler Rail Valencia, S.A.U.
- Talleres Alegría, S.A.
- Zeleros

**Interiors**

- Agui, S.A.
- Ariño Duglass, S.A.

- Colway Ferroviaria, S.L. (Nexus Management)
- Flexix, S.A.
- Fundación Gaiker
- Satys Interiors Railway Spain, S.A.

**Safety**

- Agui, S.A.
- Alstom Transporte, S.A.
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Dsaf - Dinámicas de Seguridad, S.L.
- Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- Fundación Gaiker
- HaslerRail (Secheron Hasler Group)
- Indra Sistemas, S.A.
- Luznor Desarrollos Electrónicos, S.L.

**MAINTENANCE: EQUIPMENT, MAINTENANCE SERVICES AND REFURBISHMENT****Infrastructure and superstructure maintenance**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Amurrio Ferrocarril y Equipos, S.A.
- Azvi, S.A.
- Caf Turnkey & Engineering, S.L.
- CEIT
- Comsa Corporación
- ICF - Ingeniería y Control Ferroviario
- Mainrail, S.L.
- Mieres Rail, S.A.
- Gantrex Spain
- Inse Rail, S.L.
- Ladicim
- Smart Motors
- Uretek Soluciones Innovadoras, S.L.U.

**Rolling Stock maintenance**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Azvi, S.A.
- Caf Equipos y Componentes
- Caf - Construcciones y Auxiliar de Ferrocarriles, S.A.
- Caf Turnkey & Engineering, S.L.
- Comsa Corporación
- Grupo Trigo
- Hispacold, S.A.
- Patentes Talgo, S.L.
- Siemens Rail Automation, S.A.U.
- Stadler Rail Valencia, S.A.U.
- Talleres Alegría, S.A.
- Talleres Zitrón

**Maintenance of traffic control and signalling, communications, passenger information and ticketing systems**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Azvi, S.A.
- Caf Signalling, S.L.
- Caf Turnkey & Engineering, S.L.
- Dsaf-Dinámicas de Seguridad, S.L.

- Electrains, S.A.
- Elecnor Deimos
- Gmv Sistemas, S.A.U.
- ICF - Ingeniería y Control Ferroviario
- Ibérica Tecnología en Sistemas de Seguridad Ferroviarios, S.L. (ITSS)
- Ikusi, S.L.U.
- Indra Sistemas, S.A.
- Inse Rail, S.L.
- Luznor Desarrollos Electrónicos, S.L.
- Patentes Talgo, S.L.
- Sice Tecnología y Sistemas, S.A.
- Siemens Rail Automation, S.A.U.
- Smart Motors
- Telice, S.A.
- voestalpine Railway Systems JEZ, S.L.

**Maintenance of traffic control and signalling, communications, passenger information and ticketing systems**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Artech (Electrotécnica Artech Smart Grid, S.L.)
- Caf Equipos y Componentes
- Caf-Construcciones y Auxiliar de Ferrocarriles, S.A.
- Caf Power & Automation, S.L.U.
- Caf Turnkey & Engineering, S.L.
- Enclavamientos y Señalización Ferroviaria ENYSE, S.A.U.
- Gmv Sistemas, S.A.U.
- Géminis Lathes
- Grupo Trigo
- HaslerRail (Secheron Hasler Group)
- Hispacold, S.A.
- ICF - Ingeniería y Control Ferroviario
- Indra Sistemas, S.A.
- Ingeteam Power Technology, S.A.
- Kimua Group
- Mgn Transformaciones del Caucho, S.A.
- NGRT, S.L.
- NRF España, S.A.
- Patentes Talgo, S.L.
- Satys Interiors Railway Spain, S.A.
- Sice Tecnología y Sistemas
- Smart Motors
- Stadler Rail Valencia, S.A.U.

**Maintenance of systems, equipment and vehicles components**

- Aimen Centro Tecnológico
- Alstom Transporte, S.A.
- Aquafrisch, S.L.
- CAF Equipos y Componentes
- Danobat, S. COOP.
- Electrains, S.A.
- Kimua Group
- ICF - Ingeniería y Control Ferroviario
- Ingeniería Viesca, S.L.
- Nertatec, S.L.
- Newtek Solidos, S.L.
- Patentes Talgo, S.L.
- Tecnival, S.A.

**ASEA BROWN BOVERI, S.A.**

Rail is being rediscovered as a sustainable and energy-efficient form of transport. We understand the importance and implications of running these railway networks.

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🌐 **new.abb.com/railway/abb-solutions-for-transportation-rail-and-infrastructure**

**AIMEN CENTRO TECNOLÓGICO**

We are an innovation & technology Centre specialized in materials and in advanced manufacturing technologies, especially joining technologies and laser technologies applied to materials processing and robotics. We develop R&D&I in collaboration with companies in the field of the technologies for industry 4.0, and we offer technological services to industry in the field of welding and corrosion engineering, manufacturing engineering, design and simulation and mechatronics; developing customized and integral technological solutions which respond to the needs of our clients and associated companies. Our accredited laboratories provide analysis and testing services, especially failure analysis and in-service behavior of industrial components.

📍 **C/ Relva 27 A - Torneiros | 36410 O Porriño (PONTEVEDRA)**

☎ **+34 662 489 181**



✉ **aimen@aimen.es**

🌐 **www.aimen.es**

**ACYGS SALES MANAGEMENT, S.L.**

ACYGS is an engineering services consulting company dedicated exclusively to the railway sector and specialized in all the consulting and engineering services associated with a rolling stock maintenance workshop. We offer a personalized railway engineering service for each client, adapting to the needs of each workshop and project, developing its activity at an international level carrying out projects in the 5 continents, providing global solutions backed by the experience of more than 20 years in the rolling stock maintenance sector of the professionals who are part of Acygs.

📍 **C/ Loeches , 65 - Oficina 7 Madrid (MADRID)**

☎ **+34 914 85 52 88**



✉ **jazamora@acygs.com**

🌐 **www.acygs.com**

**AGUI, S.A.**

AGUI is a B2B subcontractor expert in the manufacturing of electro-mechanical assemblies for OEMs. We collaborate with the client in the design of the product, contributing with our knowledge in process engineering and welding, and once the product is defined, we industrialize and manufacture it according to the takt time. AGUI is certified in ISO-3834 and EN-15085, which positions us as a reference supplier for welded assemblies.

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☎ **+34 943 335 811 / 663 775 753**



✉ **+34 943 552 066**

✉ **lm.gil@agui.com**

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Design, production, installation of turnouts, track devices, crossings. For all type of purpose. Metro, tram, regional, conventional, high speed, heavy haul, ports and industrial.

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## Aquafrisch

### AQUAFRISCH, S.L.

More than 25 years of experience in the railway sector endorse Aquafrisch as a manufacturer of train washing systems, bogies washing cabins, WC extraction systems (CET) and other products for the maintenance of rolling stock in railway workshops.

Our equipment is installed in more than 30 countries on 5 continents. Aquafrisch is also a leader in industrial water treatment and purification. Aquafrisch takes care of the design, manufacture, installation, commissioning, training and maintenance of the machines according to the customer's needs. Aquafrisch is certified ISO9001:2015, ISO14001:2015 and ISO 45001:2018.

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 ✉ aquafrisch@aquafrisch.com  
 🌐 www.aquafrisch.com



### ARCELMITTAL

ArcelorMittal, as the steel industry leader in product and process innovation, is fully geared to meet the future requirements of the rail industry. With rail production facilities in Spain, Poland, Luxembourg and USA offers a wide portfolio of rails for subways, trains, trams, light rails, crane rails, crossings and rail accessories. We are a specialist in rail for high-speed net, with over 1 million tons produced, and presence in infrastructure of over 30 countries, the high technologic quality allows participating in the more demanding tenders all over the world. ArcelorMittal has its own R&D Rail Excellence Centre for developing new products and processes.

🚩 ArcelorMittal Asturias. Edif. de Energías, 2 pl. 33691 Gijón (ASTURIAS)  
 ☎ +34 985 187 750  
 📠  
 ✉ rails.specialsections@arcelormittal.com  
 🌐 https://rails.arcelormittal.com/

## Ardanuy

### ARDANUY INGENIERÍA, S.A.

Ardanuy Ingeniería, S.A. is an engineering consulting firm specialized in studies, projects, works management, safety engineering (ISA), operation / maintenance studies; and technical guidance for railways (high-speed, conventional, freights, metros, trams, cable cars), electrical engineering (sub-stations and high-voltage lines), roads (highways, freeways, BRT's, streets, etc.), buildings (architecture and facilities) and telecommunications.

The company was established in 1992 and is comprised of a permanent team of more than 200 professionals.

🚩 Avda. Europa, 34 28023 Madrid (MADRID)  
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 📠 +34 91 799 45 01  
 ✉ madrid@ardanuy.com  
 🌐 www.ardanuy.com



### CERTIFER BELGORAIL SA SUCURSAL IN ESPAÑA

Certifer Belgorail SA is a certification, inspection and safety evaluation entity for the guided transport sector, both conventional railways and subways and trams. We are an accredited body for the certification of interoperability (NoBo), national regulations (DeBo), safety evaluations under CENELEC standards (ISA) and under CE Regulations (AsBo). We are part of the Certifer Group, with a presence, in addition to Spain, in Belgium, France, the Netherlands, Germany, Austria, Italy, Sweden, Turkey, Algeria, Brazil, Australia, Vietnam, the United Arab Emirates and China.

🚩 Pº de la Castellana, 127 M 2º A 28046 Madrid (MADRID)  
 ☎ +34 91 764 72 21 / 626 683 435  
 📠 +34 91 770 88 67  
 ✉ info@belgorail.be  
 🌐 www.belgorail.es



### CABLES DE COMUNICACIONES ZARAGOZA, S.L.

Cables de Comunicaciones is one of the main European companies dedicated to the design, manufacturing and commercialisation of telecommunication, signalling and optic fibre cables. Ever since its foundation in 1971, it has contributed to the development and extent of the telecommunications infrastructures. Railway companies from the main European countries entrust us with the manufacture of their cables. Among them, they stand out: Adif, SNCF, NetworkRail, Infrabel etc. Cablescom undertakes its activity in Zaragoza, in the Malpica industrial park, over a surface of 77,000 m2, which includes a production plant, offices and warehouses.

🚩 Polígono de Malpica, C/D, 83 50016 Zaragoza (ZARAGOZA)  
 ☎ +34 976 729 900  
 📠  
 ✉ j.alzorritz@cablescom.com  
 🌐 www.cablescom.com



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

CAF is one of the world leaders in the design and implementation of comprehensive transit systems. CAF provides comprehensive project and engineering management throughout all stages of the project including feasibility analysis and investigations, system design, civil work, signalling, electrification and other electromechanical systems, rolling stock supply and system operation and maintenance. In terms of rolling stock, CAF supplies and maintains high speed trains, regional and commuter trains, locomotives, metro units, tramsways and buses.

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 📠 +34 943 881 420  
 ✉ caf@caf.net  
 🌐 www.caf.net



### ARIÑO DUGLASS, S.A.

50 years' experience behind us as a company specialised in glass for architecture and railway. An extensive presence in the Spanish, European and world markets has enabled us to obtain the knowledge and know-how in order to offer the most technologically advanced products of high quality.

It is in our DNA to continuously research and develop technology that allows us to adopt the very latest manufacturing methods, resulting in business excellence and ongoing innovations. In partnership with a number of organisations and institutions, we collaborate, cooperate and lead different research projects.

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 📠 +34 976 455 085  
 ✉ felix.fernandez@duglass.com  
 🌐 www.duglass.com



### ARTECHE

The Artech Group is focused on offering equipment and solutions for the electricity and railway business worldwide. The expertise of more than 70 years manufacturing instrument transformers and electromechanical relays gives the client the assurance of a technological leader. With projects over more than 40 countries, our dedicated range of railway relays are designed to meet the highest standard requirements of the sector and its reliability and durability allow them to be used not only as general purpose relays, but also in all kind of safety functions, both for on-board and signalling applications making them suitable to be used in circuits requiring up to SIL-4 safety integrity level.

🚩 Derio Bidea, 28 48100 Mungia (BIZKAIA)  
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 📠 +34 946 155 628  
 ✉ marketing@arteche.com  
 🌐 www.arteche.com



### AZVI

Azvi is the company which undertakes construction within Grupo Azvi. For over 100 years, Azvi has carried out a significant number of large scale civil engineering and building projects. Azvi has extended its activity to all construction areas in Europe, America and the Middle East, without losing sight of its origins and railway background. By applying principles of responsibility to the whole business sphere, seeking the creation of value, maintaining a strong commitment to all its stakeholders in all countries where it is present and investing in R&D Azvi continues constructing a company capable of facing the new challenges of an increasingly globalised market.

🚩 Almendralejo, 5. 41019 (SEVILLA) / Maudes, 51, 2º. 28003 (MADRID)  
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 🌐 www.azvi.es



### CAF EQUIPOS Y COMPONENTES

CAF Equipment and Components is a key player within CAF Rail Services, the CAF Group's services division, as a Centre of Excellence in Equipment and Components to address the challenges of the railway industry. Our extensive experience as a key player in the CAF Group, has enabled us to develop a portfolio of products and services focused on the operational improvement of our customers' maintenance activities:

- Maintenance and improvement of Equipment and Components
- Supply and management solutions of Spare Parts and Components
- Comprehensive solutions in Workshop Equipment
- Refurbishment and Accident Repair

🚩 Pol. Ind. Apatia Erreka C/Uzturre 1, Local 101, 20400 Ibarra (GIPUZKOA)  
 ☎ +34 943 028 646 | +34 699 26 57 79  
 📠  
 ✉ abarrena@cafgroup.net  
 🌐



### CAF POWER & AUTOMATION

CAF Power & Automation designs and develops electric traction systems, energy storage systems and control & communication, which guarantee adaptable reliable and committed solutions with transport. Our systems are modular and flexible and can be integrated both in new vehicles and in those in service or that need refurbishment. Traction systems; Energy Storage (GREENTECH) and Control & Communication (COSMOS). Railway systems modernisation and refurbishment: Equipment and components, system integration, installation, maintenance and guarantee. Railway system maintenance: Technical support, spare parts, training courses, test benches.

🚩 Mikeletegi, 58 - 2, Parque Tecnológico de San Sebastián (GIPUZKOA)  
 ☎ +34 943 309 251  
 📠  
 ✉ info@cafpower.com  
 🌐 www.cafpower.com



### CAF SIGNALLING, S.L

CAF Signalling, the technological subsidiary of the CAF Group, designs and provides Integral Signalling Solutions, both in Spain and abroad. The company has its own advanced technology products, both for onboard and wayside applications that make up the core of its integral solutions. As a result of a significant and growing effort in R&D&I, particularly in the area of critical safety systems, CAF Signalling promotes continuous innovation and customer focus.

CAF Signalling, boasts the Company's own in house engineering and expertise to take on "turn-key" railway signalling projects.

🚩 Avda. de la Industria, 51 28108 Alcobendas (MADRID)  
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 ✉ cabsignalling@cafsignalling.com  
 🌐 www.cabsignalling.com



**CAF TURNKEY & ENGINEERING**

CAF Turnkey & Engineering was created in 2007 with its head office 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.

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✉ info@cafte.com  
🌐 www.cafte.com

**CALMELL, S.A.**

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.

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**CEIT**

We are a Basque Technology Center founded by the University of Navarra, whose main objective is to develop applied R+D+i projects with companies to improve their competitiveness. We are part of BRTA (Basque Research & Technology Alliance), which includes 16 agents that constitute the Basque Network of Science, Technology and Innovation (RVCTI). We also participate in Shift2Rail Joint Undertaking as associated members. We focus our R+D+i activity within the railway sector in the following topics: energy efficiency, maintenance, railway dynamics, component design and characterisation, embedded systems (SIL4), positioning, data intelligence.

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**COLWAY FERROVIARIA, S.L.**

COLWAY FERROVIARIA S.L., a company belonging to the COLWAY Group, is specialized in the design, engineering, manufacture, installation and commissioning of turnkey railway interiors and toilet modules projects. Revamping of seats and floors for a significant improvement of the coaches, with a controlled investment, is included among its capabilities. Through the integrated management of modular supplies & systems, based on experience, research and innovation, satisfaction and expectations of railway constructors and Public Administrations are achieved. Its work is based on the application of strong values: commitment, professionalism, ethics and agility.

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**COMSA**

COMSA is the company of COMSA Corporación specialised in railway infrastructures. Founded in 1891, the company provides a comprehensive service in the field of construction, maintenance, electrification and control and communication systems for high-speed and conventional lines, metros and tramways. In this business activity, it is leader in Spain, where has been involved in the carrying out of all high-speed lines, and has permanent operations in Argentina, Brazil, Croatia, Denmark, Mexico, Poland, Portugal and Uruguay. It has also taken part in a large number of projects in other markets such as Italy, the Philippines, Taiwan, Malaysia, India, etc.

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**CUNEXT COPPER INDUSTRIES**

Cunext in the way to continuous development has created the entire cable product range for overhead line electrification adapting at any speed from local transport to high speed line. Our modern technology together with a wide experience at cable and alloy manufacturing makes us the best partner for railway companies offering best product quality and service. Cunext Group locate production plants at strategic places such as Cordoba for copper products, Vitoria and Brescia for aluminium products.

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**CELLNEX TELECOM, S.A.**

Cellnex manages a portfolio of more than 130,000 sites – including forecast roll-outs up to 2030 – in Spain, Italy, the Netherlands, France, Switzerland, the United Kingdom, Ireland, Portugal, Austria, Denmark, Sweden and Poland. Cellnex's business is structured in four major areas: telecommunications infrastructure services; audiovisual broadcasting networks, security and emergency service networks and solutions for smart urban infrastructure and services management (Smart cities and the "Internet of Things" [IoT]).

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**CETEST, S.L. Centro de Ensayos y Análisis**

Fully accredited ISO17025, CETEST is an experienced laboratory in railway vehicles and components testing. Its offering covers a wide variety of component test benches at their facilities as well as portable ones. CETEST provides a global on-track measurement deployment capacity. From validation and verification test in the development phase to product homologation and failure detection / root cause analysis in the after-sales operation, CETEST can assist you during the full lifecycle of your product. Their customers include passenger, freight and special track maintenance vehicle manufacturers, component suppliers, as well as Notified Bodies, engineering firms and authorities.

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**CITEF (FUNDACIÓN PARA EL FOMENTO DE LA INNOVACION INDUSTRIAL)**

CITEF (Railway Technology Research Centre) was created in 1997 as part of F212 (the Foundation for the Development of Industrial Innovation) for research, innovation, experimentation, study and teaching purposes within the railway knowledge area. It is a non-profit organisation pursuing aims of general interest within any rail transport technology sector.

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Specialised Machine Tools and production systems for railway industry offering technologically advanced solutions and services, including among others engineering, consultancy, which are fully adapted to clients' needs. DANOBAT focuses its activity in the supply of turnkey solutions for the manufacturing and maintenance of railways rolling stock, incorporating own leading technology products, together with those manufactured by specialised companies.

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**DINÁMICAS DE SEGURIDAD, S.L.**

DSAF is a entrepreneurial society focused on the safety of the movement of people at risk. Committed to the new technologies applied to the design of signaling systems, prevention and emergency in safety, DSAF promotes the development of products that guarantee the highest grade of security according to the standards of type approval current in generalized risk societies such as global ones. The activity of DSAF focuses on these two major sectors: road / rail tunnels and wind towers.

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**ENCLAVAMIENTOS Y SEÑALIZACIÓN FERROVIARIA ENYSE S.A.U.**

Enyse is a Signalling company belonging to the Industrial Services division of the ACS group. For Enyse, the success of their projects is based on a high level of adaptation to functional and operational needs of the various railways - flexibility is the key word. In an industry increasingly integrating technology standards, the required Reliability, Availability, Maintainability and Safety standards not only apply to system design level, but are the actual premises to properly implementing and commissioning turn-key Signalling projects.

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**ELECNOR DEIMOS**

Elecnor Deimos is the technological subsidiary of the Elecnor Group that operates in the railway transportation sector, information and telecommunications systems, space, aeronautics and defense. In the railway sector, Elecnor Deimos is responsible for the development and evolution of passenger information platforms and remote station management. In addition, the company is specialised in delivering comprehensive turnkey projects as well as the development, implementation, and maintenance of these systems.

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**ELECTROSISTEMAS BACH, S.A.**

Electrans, established in Barcelona in 1977, has had a successful career path that turn it in an international relevant supplier in signalling, particularly in the field of level crossing protection solutions, railway and tramway signalling, detection systems and LED lighting, obtaining its products and solutions worldwide recognition.

Electrans' constant progress is motivated by the commitment to innovation, at the service of the adaptability of systems and products for the current needs of railway projects.

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**FLEXIX, S.A.**

FLEXIX, develops, manufactures worldwide since 1950 INJECTION and EXTRUSION RUBBER PARTS, rubber-metal, rubber-plastic, special elastomers and assemblies. We are part of the KÄCHEL-FLEXIX Group, with 2 plants in Germany, 1 in Spain and a warehouse in USA. For the RAILWAY SECTOR we produce mainly for infrastructures, absorption of vibrations under track, tie pads for sleepers, different range of stiffness (14-152 kN/mm). We provide development in geometries (FEM), materials, (conductivity, non-harmful gases...)  
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**FUNDICIONES DEL ESTANDA, S.A.**

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Funorsa is a Steel casting foundry with more than 20 years in the railway sector. We are specialized in pieces of high responsibility as couplers, Pivots, connection rods and different parts of the bogies. We are able to cast low alloy, alloy and inox castings up to 1.300 kg with a capacity of 2.000 Tons per year.

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**MAFEX**Spanish  
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FIND OUT MORE ABOUT ALL ACTIVITIES AND SERVICES WE HAVE PREPARED FOR 2023 REGARDING INTERNATIONALISATION AND COMPETITIVENESS AND INNOVATION

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**GAIKER CENTRO TECNOLÓGICOS**

GAIKER Technology Centre, located in the Technological Park of Bizkaia, is devoted to the development of new technologies to be transferred to the industry. Since 1985, the Centre has carried more than 2,000 R&D Projects in the areas of Plastics and Composites, Environment and Recycling and Biotechnology. Besides, GAIKER offers to its customers Advanced Technological Services, Analysis and Tests and Technological Dissemination Services. GAIKER counts on 87 employees and was awarded in 2008 by the European Foundation for Quality Management (EFQM) with the "Prize Winner" for the best European organisation in "Management for Process and Facts".

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Leaders in the development of horizontal and multiprocess lathes, and specialized in railway sector, where we are proud to support the manufacturers of trains and maintenance lines, among other agents in the value chain. We offer customized solutions with highly reliable machines for the maintenance of rolling stock. Our lathes are specialized in the machining of axles, axle-wheel set and wheels.

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TRIGO Spain is a supplier of quality services and support in the supply chain in industrial sectors. Founded in 2001, it offers quality assurance services in products, maintenance, industrial means management and metrology with more than 600 quality professionals in Spain. TRIGO GROUP is present in 25 countries with a team of more than 10,000 professionals.

TRIGO Spain exports to the railway sector good practices of high added value developed in sectors such as aerospace and automotive.

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ICF offers technical and sustainable solutions for railway signalling. In this area, our vocation is betting heavily on the development and innovation, constantly releasing new products that can be used to improve and optimize existing technology solutions. All the level crossings since June 2001 have been protected by ICF with its level crossing protection system SPN-900. We are working worldwide with more than 1000 international references. For us it's very important to be sustainable so we have worked hard to design systems that reduces dramatically its power consumption which allows it to work taking its energy only from sun, getting a zero CO2 emissions and zero external power supply.

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**IDOM CONSULTING, ENGINEERING  
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IDOM is one of the leading companies in the field of professional services in Engineering, Architecture and Consultancy. An independent company established in 1957 and it has participated in over 30.000 projects in five continents. In 25 countries with 42 offices. More than 3.500 staff possesses the expertise and experience to cover all the phases of a railway project (high speed, conventional, freight, metro, light rail, tramway, depot and workshops). From conception to commissioning and beyond and facing the challenges of an innovative, efficient and resilience Transport System. IDOM accompany the client by providing the correct technical assistance required for the decision making process.

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**GMV SISTEMAS S.A.U.**

GMV is a leading firm in the design, development, implementation and rollout of Intelligent Transportation Systems (ITS) guaranteeing compliance with the railway sector standards. Main products and services: On board units for location and communications, Fleet Management Systems, Fare Collection Systems, Passenger information systems, CCTV systems, PA & Intercom system, Systems for security reinforcement, Eco-driving systems, Software for planning and scheduling of services. Conceived for all railway modes (tram, metro, commuter train, long distance, high speed trains...)

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**HIERROS Y CARBONES, S.A.**

Since 1997 Hicasa is specialised in transformation, tailored cut, storage and distribution of railway tracks materials, all kinds of rails and railways accessories with a permanent stock of more than 3.500 MT.

In 2006 we have incorporated to our Group of companies a factory specialised in manufacturing light rails from 7 kg/m to 48 kg/m, manufacture according European and American Standard, Australian or South African together with other types of Standard (AREMA).

Our own experience allows us the optimal management of the supply chain, exporting to more than 30 countries all over the world.

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**IKUSI, S.L.**

At Ikusi, we provide complex turnkey integration project design, engineering and development services both for rolling stock and for infrastructure, with the agility and flexibility required by the rail industry. We are oriented towards improving our clients' competitiveness and innovation capacities, thanks to our deep business knowledge developed during these years. Our business focus is the design and supply of innovative technological solutions to help vehicle builders, transport operators and authorities optimize and transform their business while guaranteeing quality of service and enhancing passenger experience in terms of security, information, comfort and accessibility.

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**INDRA**

Indra is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defense markets, and a leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate Minsait. Its business model is based on a comprehensive range of proprietary products, with a high-value focus and with a high innovation component. In the 2018 financial year, Indra achieved revenue of €3.104 billion, with 43,000 employees, a local presence in 46 countries and business operations in over 140 countries.

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**INECO**

Global leader in transport engineering and consultancy, it has contributed to the development of transport infrastructures for over 50 years in more than 50 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 HS2 project in the United Kingdom or the deployment of ERTMS in Europe.

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**INGENIERÍA VIESCA S.L.**

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**INGETEAM POWER TECHNOLOGY, S.A.**

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**INSE RAIL S.L.**

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**KIMUA ENGINEERING, S.L.**

Kimua designs and produces different types of auxiliary tools for lifting, transporting, assembling and doing maintenance of rolling stock and its components during any stage of the Railway value chain. Additionally, Kimua has added 2 new business units to its portfolio; one for providing renting services of standard solutions and a second one for providing its clients with specific training courses in areas like handling and lashing of big and large loads.

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**LA FARGA YOUR-COPPERSOLUTIONS, S.A.**

La Farga is able to produce all the range of railway products in an integrated process. Our railway range includes all alloys used, the different measures of grooved contact wire and all supporting and electricity supply elements, feeders, hangers and cables. Furthermore, we offer technical visits and assessment to our clients and we constantly develop new railway products with the aim of introducing the best copper solutions into the market. La Farga is a family-run metallurgical company, with more than 210 years of history. We produce semi-finished copper products and their alloys for several technological sectors.

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**LADICIM - UNIVERSIDAD DE CANTABRIA**

LADICIM participates in R&D projects focused on the innovation of the railway superstructure, carrying out studies on the development of its elements, acc to national (Adif), European (EN) and American (AREMA) reference standards. The results are reflected in more than 500 reports, 25 research papers with a high impact index and 7 Doctoral Theses. The projects include collaborations in countries such as the USA, Canada, Saudi Arabia, Turkey, Germany, Senegal, Tanzania, Morocco or Ethiopia. LADICIM has implemented a quality system according to the UNE-EN ISO/IEC 17025 standard, being accredited by ENAC (Spanish Accreditation Board) for the testing of fastenings, sleepers and rail welds.

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Hispacold, a World leader Company for climate systems with more than 40 years' experience is specialized in passengers comfort. Hispacold designs and manufactures HVAC solutions for all rail vehicles: trams, metros, EMUs, DMUs, LRVs... with proven and reliable technology solutions. Hispacold is certified in the most recognized International quality management, environment and safety standards: ISO 9001, ISO 14001, OSHAS 18001, EN 15805-2 and the prestigious IRIS ISO/TS 22163.

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**INTERTEK IBÉRICA SPAIN SLU**

Intertek has agreements with governments, customs and standard organizations to ensure that imported products meet the quality and safety regulations of the country of destination, thus protecting consumers from sub-products. Conformity Verification Programs provides smooth customs clearance for exporters. Intertek also supports the energy, engineering and construction sectors, supporting the design, commissioning, maintenance and decommissioning phases of infrastructures, plants and equipment to assure their integrity. Services include technical inspection and audit, non-destructive testing and technical staffing, and others.

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**IBÉRICA TECNOLOGIA EN SISTEMAS DE SEGURIDAD FERROVIARIOS SL (ITSS)**

IBERICA TECNOLOGIA EN SISTEMAS DE SEGURIDAD FERROVIARIOS SL (ITSS), founded in 2005, is a leading manufacturer and supplier of railway hazard monitoring equipment, focusing mainly on hot axle box / hot wheel and Wheel impact load / Weighing in motion detectors. The ITSS systems use state-of-the-art infrared and fibre-optic technology. The PEGASUS HABD/HWD multi beam system monitors the axle box and brake temperatures of coaches. The AGUILA WIM/WILD system uses fibre-optic sensors to detect off-centre wheels and flat spots. It can also report train weight and overloading. ITSS products are the model representation of a perfect combination of experience and innovation.

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**LANDER SIMULATION & TRAINING SOLUTIONS**

Lander Simulation & Training Solutions, S.A. specialises in designing, developing and implementing cutting-edge commercial simulation devices for training purposes. On the basic premise of preventing accidents and loss of human life, Lander works with each customer to build training simulators which meet the specific needs of each operation. Lander was incorporated in 2002, and now operates in more than 20 countries across all 5 continents. Its solutions cover the entire range of railway operations - suburban trains, long-distance units, high-speed trains, freight, monorail systems, metros or light rail..

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**LANTANIA**

Lantania specializes in the construction of heavy civil works (roads, highways, dams, water treatment plants, maritime works, railways and airports), building construction and energy projects. The company began its activity in 2018 with the acquisition of the construction, energy and services business units of the Isolux Corsán Group and the subsequent purchase of the Velasco Group in 2019. One of the differential characteristics of Lantania is its ability to execute any kind of rail project in an integral way. The company has built more than 150 km of infrastructure, tunnels and railway viaducts, as well as more than 50 traction power substations and more than 1,500 km of overhead line..

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**LLALCO FLUID TECHNOLOGY**

Llallo Fluid Technology is one of the few manufacturers and suppliers of impact absorption technology for end of track rail lines -Buffer Stops. World Class Technology that protects people, machinery and the Environment. Their products are highly sophisticated end of rail track shock absorbers with a unique performance. Llallo has a wide range of models with gas hydraulic buffers, sliding friction shoes or a combination of both. Their technology allows to control the deceleration to the desired value. They have been delivering high quality Buffer Stop projects in Spain & Portugal since 1970 and in America and other European Countries since 2004. Llallo is also ISO9001, 14001 & 45001 Certified.

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### LUZNOR DESARROLLOS ELECTRONICOS, S.L.

LUZNOR is a company specialized in the design and manufacture of professional torches, emergency lighting and other electronic security devices. LUZNOR puts at your disposal highly qualified technicians, a high quality standard, efficient development, manufacturing and control systems and, above all, a philosophy of commitment to clients that allows LUZNOR to offer innovative products with advanced technology and recognised prestige.

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### MAINRAIL S.L.

MainRail is a high-tech startup devoted to providing IT-based solutions to help you digitizing and optimizing the railway infrastructure maintenance operations. We combine our expertise in a wide range of technologies (e.g. big data analysis and visualization, digital twins, IoT, machine learning, etc.) with a solid knowledge in railway maintenance and operations. Our solutions are based in a customizable IT platform (MainRailMT) for the management of all maintenance-related operations and a family of IoT devices (MainRailID) for a continuous and cost-effective inspection of your infrastructure.

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### METALOCAUCHO, S.L. (MTC)

MTC, being part of Wabtec Corporation, designs and manufacture rubber-metal components for suspension and vibration control systems used on railway, automotive and industrial applications. With headquarters in Spain, MTC has 4 production facilities in 1) Spain, 2) China, 3) India and 4) USA, which offers to customers the possibility to localize production in any of these countries. Thanks to a wide commercial presence in any country of the world, MTC gives local support to develop projects for both OE and Aftermarket business.

Our main products are related to Primary Suspensions, Secondary Air Springs, Bushings, Buffers, Layer Springs, Subassemblies, Elastic Wheels, etc.

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### NEXT GENERATION RAIL TECHNOLOGIES, S.L. (NGRT)

NGRT S.L. is a company focusing on railway safety, working with railway regulators and helping infrastructure managers and train operators secure their infrastructure and operations. NGRT's products are designed to detect any anomalies that occur in the railway infrastructure.

The NGRT applications will detect rolling stock, independent of speed, direction and track conditions at any location, in all weather conditions, as well as anomalies impacting on the railway infrastructure.

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### NEWTEK SOLIDOS, S.L.

NEWTEK is mainly active in the manufacture of systems for filling sand in trams, trains and locomotives. NEWTEK supplies installations composed of storage silos, fixed sand feeders, sand feeding mobile units, aspiration systems and dust collection devices. The company also designs, manufactures and maintains custom installations according to the needs of each client.

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### NRF

Since 1927 NRF is a leading manufacturer and supplier of cooling products for the automotive market, industrial, railway and marine sector. NRF is known for the production of high quality radiators, but also produces and supplies a large range of other engine cooling and air conditioning products. NRF has global engineering, testing and development facilities. Railway and ship manufacturers, large retailers of vehicle parts, radiator shops and specialists in more than 80 countries worldwide daily rely on NRF's high quality products.

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### MGN TRANSFORMACIONES DEL CAUCHO, S.A.

MGN was established in 1957 and since then it has been developing its activity both designing and manufacturing rubber-metal components, mainly for the railway industry. MGN invests in research and innovation as a basis for the development of elements to be adapted in the new understanding of passenger and freight trains, taking the latest technological advances of the rubber world, vibration control and damping systems. - Primary and secondary suspensions. - Conical springs - Bushes and spherical bearings - Rods, Bogie subsystems - Pivot Bushes - Elastic Supports - Compression buffer and Draw Gear springs - Bellows, Gangway protections - Profiles, o-rings and seals.

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### MIERES RAIL S.A.

Design, manufacturing and supply of turnout systems, and their components, for Metro, classic or conventional lines, industrial and heavy haul or High Speed up to 350 km/h.

Design, manufacturing and supply of casted manganese steel crossings. Trimetallic flash butt welding.

Insulated glued joints, transition rails, fastening systems, locking systems, wear measuring devices.

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### NERTATEC S.L.

NERTATEC is an engineering company specialized in design, instrumentation and automation applied in the railway field.

Based on the development or analysis of test procedures, NERTATEC designs and builds (or adapts) automatic, semi-automatic or manual test benches, addressing the stages of 3D and constructive design, electronic electrical design, control and automation software, manufacturing, training, calibration and maintenance.

NERTATEC is also working on projects for the development of analytical models of energy consumption and technical assistance for the engineering of transformation of railway vehicles powered by LNG and Hydrogen with fuel cell.

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### PARRÓS OBRAS, S.L.

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.

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### PATENTES TALGO, S.L.U.

Talgo is a Spanish company with more than 70 years of experience, specialized in designing and manufacturing trains, maintenance equipment as well as providing maintenance services to railway operators worldwide. Today, Talgo is the leading global reference for Spanish High Speed Technology and the number one player in Spain's railway market. Due to Talgo's successful expansion strategy and its globally acclaimed products, the company has become truly international. Its key success factors are innovation, unique technology, sustainability, safety, competitiveness and tailor-made projects with clear focus on customer. Talgo trains are internationally recognized as the best in their category.

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### PREFABRICACIONES Y CONTRATAS, S.A.U. (PRECON)

PRECON is the Spanish leader in design and supply of precast concrete products for railway tracks, either ballast and ballastless tracks. It has supplied monoblock, twinblock, block slabs and sleeper for switches and crossings, Either for high speed, conventional lines, haul, subways and tramways.

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**PRETENSADOS DEL NORTE, S.L.**

PRETENSADOS DEL NORTE, is one of the most important producers of pre-stresses steel in the word. Our products are recognised for having the best quality on the market. Our high standards of quality mean that we are talking about the best pre-stresses steel you can find. Our company has more than 30years' experience in manufacturing and investment tha have led to what we are today: PRETENORTE. Technologically, we have equipped our company in Vitoria-Gasteiz with the best state-of-the-art machinery. We continue to incorporate the latest novelties for your complete satisfaction. Pretenorte is highly specialised in pre-stressed sttel and its many applications.

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**REVENGA SMART SOLUTIONS**

Revenge Smart Solutions offers comprehensive solutions for the transport sector: railways and metros, roads, ports & airports. In railways & metros we focus on passenger experience solutions, ranging from intercomms, public address and information panels, to systems related with revenue/cost issues, like ticketing, tolling and access control, and also with operator oriented solutions like railway telephony, signalling (level crossings, point heaters and inspection systems) and station control. More than 45 years of experience. Projects deployed in 24 countris.

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**RICARDO CERTIFICATION IBERIA S.L.**

Ricardo Certification Iberia is part of Ricardo Group. We provide independent assurance, certification, testing and consultancy services for railway and other sectors. We are accredited as NoBo, DeBo, AsBo and ISA in line with national and international standards. With capabilities in all disciplines - rolling stock, signalling and telecommunications, energy efficiency, safety management, operational planning and so on, we help our customers to overcome the technical, regulatory, operational and commercial demands of the industry. By maintaining constructive dialogue throughout the process, we help to eliminate inefficiencies, thereby to reduce risks, delays and costs overruns.

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**SGS GROUP SPAIN**

SGS is the world's leading inspection, verification, testing and certification company. We are recognized as the global benchmark for quality and integrity. With more than 97,000 employees, we operate a network of more than 2,600 offices and laboratories around the world.

Our core services can be divided into four categories: Certification, Inspection, Testing and Verification.

We are constantly looking beyond customers' and society's expectations in order to deliver market leading services wherever they are needed. Our independent services add significant value to our customers' operations and ensure business sustainability

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**SICE TECNOLOGÍA Y SISTEMAS, S.A. (SICE TYS)**

SICE Tecnología y Sistemas, (SICE TYS) is a group of companies that provides solutions and systems for Transport and Traffic, Environment and Energy efficiency, Smartcities and Telecommunications.

SICE TYS, as systems integrator, offers technological solutions adapted to the railways sector, conceiving a centralized management with functionalities oriented to the operation of public and private transport, integrating: - Security Systems - Telecommunications Systems - Signaling (Interlockings, Level Crossings, CTC) (ENYSE) - Automatic Fare Collection - Traffic Prioritization of Public Transport - Engineering (OFITECO): railway lines; Tunnel monitoring; Load test (railways bridges).

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**SIEMENS MOBILITY, SLU**

Siemens Mobility is a separately managed company of Siemens AG. As a leader in transport solutions for more than 160 years, Siemens Mobility is constantly innovating its portfolio in its core areas of rolling stock, rail automation and electrification, turnkey systems, intelligent traffic systems as well as related services. With digitalization, Siemens Mobility is enabling mobility operators worldwide to make infrastructure intelligent, increase value sustainably over the entire lifecycle, enhance passenger experience and guarantee availability.

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**SATYS INTERIORS RAILWAY SPAIN**

Satys is a Spanish company specializing in the design and manufacture of galley systems for railway rolling stock.

A galley system is broken down into 3 main families of equipment:

- Refrigerated cabinets
- Functional systems. Cooling, electricity, water, lighting, etc.
- Interiors. Countertops, lining, etc.

Satys offers a wide range of products specifically for each one. Thanks to the unique and highly efficient Satys technology, our products are internationally recognized as the best in their class in terms of quality, safety, availability, reliability, accessibility and environmental friendliness.

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**SEGULA TECHNOLOGIES**

SEGULA Technologies is an engineering group with a global presence, helping boost competitiveness within all of the major industrial sectors: automotive, aerospace, energy, rail, naval and defense, pharmaceutical and oil & gas. Present in 30 countries and with 140 offices worldwide, the Group fosters a close relationship with its customers thanks to the expertise of its 12,000 employees. A leading engineering specialist placing innovation at the heart of its strategy, Segula Technologies conducts large-scale projects, ranging from studies to industrialisation and production.

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**SENER INGENIERÍA Y SISTEMAS, S.A.**

SENER is one of the leading engineering and technology groups in Europe with over one billion euros of annual turnover, more than 2,000 professionals and a continuously growing international presence with offices in over 15 countries. In the field of railway engineering, Sener counts 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 and ICE services.

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**SIMULACIONES Y PROYECTOS S.L.**

Simulaciones y Proyectos (SyP) is a company dedicated to solving complex fluid dynamics problems using CFD (Computational Fluid Dynamics) tools. SyP solves any fluid dynamics problem thanks to its engineering team and state-of-the-art software tools (FLOW-3D, HELYX, ANSYS DISCOVERY, SpaceClaim, FluidFlow...).

Among others, we can solve:

Comfort and HVAC studies in trains, stations and infrastructures.

Optimization of ventilation shafts, tunnels.

Studies of aerodynamics and aero acoustics in trains.

Train-tunnel pressure studies.

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**SMART MOTORS**

Smart Motors applies new technologies to generate added value from the monitoring of critical railway assets that believe that Digitalization and the uses of advanced analytics are the way to service excellence. The priority is to generate new knowledge about the operation of railway assets that satisfies the requirements of the most demanding environments and with a real day to day contribution.

Smart motors has its own Digitalization Platform to help maintenance and operation that brings together signaling monitoring systems, infrastructure and rolling stock, as well as IoT sensors adapted to the railway sector.

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**SOFTWARE QUALITY SYSTEMS, S.A.**

SQS is a company specialised in software validation and verification with extensive experience in safety critical systems and, specifically, in the railway sector.

We accompany our clients throughout their development process, optimizing it and guaranteeing compliance with specific regulations and standards for their sector in terms of safety, functionality, quality, etc.

Likewise, we design and implement automated test environments and complement our offer with training activities in the field of software testing and quality.

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**STADLER****STADLER RAIL VALENCIA, S.A.U.**

International rail vehicle construction company, Stadler, is headquartered in Bussnang in Eastern Switzerland. Founded in 1942, it has a workforce of over 8,500 based in various production and over 40 service locations. Stadler provides a comprehensive range of products in the heavy and urban transport segments: High-speed trains, intercity trains, regional and commuter heavy rail trains, underground trains, tram trains and trams. Stadler also manufactures main-line locomotives, shunting locomotives and passenger carriages, including the most powerful diesel-electric locomotive in Europe. It is the world's leading manufacturer in the rack-and-pinion rail vehicle industry.

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Talleres Alegría, s.a.

**TALLERES ALEGRÍA, S.A.**

Talleres Alegría, s.a. is a family owned company devoted since 1900 to design, manufacturing and after sales assistance of all kind of fixed track material, its accessories and spare parts. Developing of Designing and Commissioning Integral projects of turnouts to be installed at Depots and Industrial Ports and Factories. Design, manufacturing, repair and maintenance of self propelled vehicles to carry out works at the infrastructure. Design, manufacturing, retrofitting, repair and maintenance of freight wagons.

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**TECNIVIAL****TECNIVIAL, S.A.**

In TECNIVIAL we specialize in all types of fixed signalling for track ( Marker Boards), conventional lines and High Speed lines. We are one of the companies approved by the Spanish Railway Infrastructure Administrator (Adif) and the others. The last product boosted to the market have been the NANOTEC SIGNS ( R+D). The incorporation of cutting-edge materials (carbon nanoparticles) to the signs manufacturing , allows the improvement of its behavior and mechanical features: light, corrosion-free, low residual value and maintenance, eco-friendly, resistant to loads ( snow/ wind). Besides, we develop Corporative Image projects according to the needs of the customer; design & installation.

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**TELTRONIC**

Backed by over 40 years of experience in the design, manufacturing, and deployment of Professional mobile radio projects on a turnkey basis, Teltronic presents a broad portfolio of critical communication solutions for transport sector, providing complete solutions: network infrastructure, control centre, and end-user equipment, including specialized onboard systems specifically designed for train, metro, tram and LTR. Besides voice and data transmission solutions, the company offers integration services with other subsystems: PA and intercom, applications to manage and control fleets and for operating aid, real time CCTV or communications support for signalling systems ETCS, CBTC, PTC...

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**THALES****THALES ESPAÑA GRP S.A.U.**

Thales is a World leader in Mission Critical Solutions for Land Transportation. Thales Spain, with more than 60 years of experience, has been pioneer and leader in the technological development of the Spanish railways, been one of the main suppliers of safety and telecommunication systems for the Spanish Railways Administrations and present in countries as Turkey, Mexico, Algeria, Malaysia 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.

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**TPF GETINSA EUROESTUDIOS, S.L.**

Passion for excellence  
Our priority : developing solutions that meet our client needs. This approach is based on three pillars: expertise, efficiency and continuous innovation.  
Today, TPF is ranked among the most important multidisciplinary companies active in the following sectors: building, transport infrastructure, water and energy.  
Over the years, the group successively expanded in Europe, Asia, Africa and America through a series of acquisitions and became a key player, internationally recognized in its field.

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**TEKNIKER**

R&D center oriented to technology transfer through research projects.

Specialization areas:

- Advanced manufacturing: laser processes, LMD coating and repair, cutting processes
- Surface engineering: friction and wear studies, physical-chemical coatings seeking to improve anti-corrosion, wear, easy cleaning, anti-adherence, optical and aesthetic characteristics
- ICTs: solutions for inspection and measurement based on vision and AI techniques, O&M, condition monitoring, data management, Smart components, sensor development
- Product engineering: new product development, tribological testing, fault diagnosis.

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**TEL DAT S.A**

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**ZELEROS**

Zeleros is the Spanish company developing a hyperloop transport system, already considered as "the fifth means of transport". Its focus on the vehicle optimization allows to reduce infrastructure costs and to operate at safer pressures for the passengers. Zeleros has already raised substantial private and public support, and collaborates with companies such as Renfe (Trenlab) and Altran, research centers (Universitat Politècnica de València, CIEMAT, UPM) and is supported by investors such as Plug and Play, Angels or ClimateKIC. Currently Zeleros is preparing the construction of its own 2-kilometer test-track in Sagunto to demonstrate the system at high speed.

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