Magtel

INNOVATION & TECHNOLOGY

ANNUAL REPORT | 2024

Transforming

Your World

CONTENTS

Annual Report 2024

Published by:

Magtel
Avda. Gran Capitán, 23, 4ª planta
14008, Córdoba (Spain)

Drafting and design:

Magtel Communication Area

magtel.es
comunicacion@magtel.es

Magtel
INNOVATION & TECHNOLOGY

Letter from the **Board of Directors**

2024 has been a year of challenges and significant progress

We are pleased to present Magtel's Annual Report of Activities for the financial year 2024. A year that has continued to be marked by the complexity of the geopolitical and economic scenarios, but which, at the same time, has offered us new opportunities to continue growing, innovating and strengthening our commitment to sustainability and technology.

In an overall context, the economy has shown a remarkable capacity for development, sustained largely by the efforts and robustness of enterprises, which have coped with undoubtedly rising costs in all areas and the persistence of a heavy bureaucratic burden. However, companies have absorbed these factors even at the cost of slowing growth and possibilities and have maintained, for yet another year, the tone of strength in the economy.

In our case, during 2024, we have continued to focus on diversifying our activities, expanding and strengthening our presence in key industries and developing innovative projects with a strong impact on society. In the field of innovation and technology, we have consolidated our activity in telecommunications and digital transformation, and we have developed advanced solutions for the management of water and its integral cycle.

In infrastructures, we have participated in public and private projects of great value for the health, industrial and defence sectors, and we have strengthened our presence in the mining and railway sectors, in the latter through our collaboration with machine and equipment manufacturers.

On the other hand, our research and development activity remains a fundamental pillar of our identity. Our commitment to R&D enables us to continue innovating and improving our capabilities, consolidating our position as a benchmark in the sectors in which we operate. The expansion and strengthening of our Engineering division clearly represents this commitment.

All in all, 2024 has been a year of challenges, but also of significant progress. All the achievements have been possible thanks to the effort and commitment of the people who are part of Magtel, to whom we dedicate our recognition and gratitude.

We trust that this Activity Report will allow you to know in detail the work that Magtel has developed in 2024, which reaffirms our commitment to innovation, sustainability and the development of technological solutions at the service of society.

▸ **Magtel Board of Directors**

Transforming your world

At **Magtel** we offer you a world of **innovation and technology.**

An efficient and sustainable world that provides comprehensive solutions and technological transformation to boost the competitiveness and progress of our customers.

Our offer ranges from the digitalization and automation of processes to the implementation of renewable energies, including the advanced management of infrastructures and telecommunications systems.

Magtel
INNOVATION & TECHNOLOGY

Somos Magtel

▸ A technology company that applies the most advance systems in sector such as infrastructure, energy, engineering, telecommunications, digital transformation, mining and railways

▸ Our work supports greater efficiency in the use of natural resources, leading to an improved quality of life for society

Board of Directors

Mario López Magdaleno

Antonio Manuel López Magdaleno

Auxiliadora López Magdaleno

Juan Luis López Magdaleno

Isidro López Magdaleno

José Carlos López Magdaleno

Our Mission

▸ Driving an efficient and sustainable world by providing holistic and tech transformation solutions

Our Vision

▸ Leading projects that generate value for sustainable and technological development

Our Values

> Excellence
> Commitment
> Leadership
> Innovation
> Trust

> Engineering

> Energy

> Telecommunications

> Digital Transformation

> Infrastructure

> Mining

> Railway

1995

Leapfrogging of telecommunications technologies: From copper to fibre optics

2005

Entry into the energy sector and first steps into renewable energies

2014

Entry into the mining sector in the Pyrite Belt: Aznalcóllar, Tharsis and La Zarza, among others

2013

Incorporation of the Railway Operator Ecorail

2020

Betting on large-scale energy storage projects: 23 reversible pumping and desalination plants projects

2023

Commitment to biogas plants and lithium-ion battery plants

€140M
2024 Turnover

+800
Indirect jobs

+1,330
Indirect jobs

Magtel in figures

ENGINEERING	ENERGY	TELECOMMUNICATIONS	DIGITAL TRANSF.	INFRASTRUCTURES
24.46%	28.35%	23.02%	9.74%	14.43%

Investment

Mining, railways, renewables and R&D&I: building tomorrow's progress today

We solidly bet on technological investment and infrastructure for the sustainable growth of our sectors of activity

ENERGY STORAGE AND RENEWABLES (INVESTMENT SINCE 2005)	R&D&I (INVESTMENT SINCE 2008)	RAILWAY (INVESTMENT SINCE 2013)	MINING (INVESTMENT SINCE 2014)
+€500M	+€20M	+€100M	+€40M

Continued commitment to R&D&I is key for our business strategy

Innovation and value creation are deeply rooted in our core principles. Since 2008, we have worked tirelessly to find innovative ideas and implement ingenious solutions that drive our business sectors forward.

The value of our **human capital**

Corporate Strategy: a commitment to excellence

Fundamental Principles

At Magtel, our Strategic Plan 2023-2027 is based on the principles of excellence, innovation, commitment, trust and leadership. These values are the backbone of all our activities and guide every decision we make.

Priority Goals

Our goals include sustainability, attracting and retaining talent, strengthening the brand, streamlining operational efficiency, professionalising management and internal digitalisation.

Resilience and Innovation Trajectory

▸ Continuous Innovation

Throughout our 35-year history, Magtel has demonstrated a remarkable ability to adapt to decisive moments.

Milestones such as the deployment of fibre optics at our beginnings or the consolidation of R&D&I, renewable energy, solar thermal and railway projects reflect our capacity to innovate and evolve constantly.

The creation of the Fundación Magtel in 2012 is another significant milestone, reinforcing our commitment to social development and equal opportunities.

Diversification and Market Leadership

▸ Corporate Culture

Magtel's corporate culture, based on innovation, commitment and excellence, has been fundamental to our ability to diversify. We have been able to expand in key sectors, adapting to new challenges with agility.

▸ Technology drive

The technological drive and the commitment to talent have been essential in this evolution. We foster a collaborative working environment, where creativity and research enable the development of advanced and sustainable solutions. Thanks to this corporate culture, we have consolidated our presence in many areas of activity.

Recognition of our work

▸ Awards and Distinctions

Magtel has been recognised at the Renmad Almacenamiento 2024 Awards with the Grandas de Salime Reversible Hydroelectric Power Plant project (265 MW) in Asturias as storage project of the year. This recognition reinforces the importance of reversible pumping as a key system to enable the energy transition and the continued integration of renewables into the electricity system.

▸ Featured Projects

In last year's edition, we were also recognised for another project located in As Pontes (Galicia), highlighting our ability to lead in the energy industry.

Magtel Foundation

The social impact of our company

Our Foundation develops projects that promote the well-being of people and our environment through actions that favour labour and social integration, technological innovation and support for the communities in which we operate

Global figures 2024

37 initiatives implemented
+480 beneficiary entities
5,400 people benefited

We are working towards achieving the SDGs through the work of our Foundation

Actions that have a positive impact on people and the planet

Our organisation aligns with the Sustainable Development Goals (SDGs) to promote a more equitable and environmentally friendly future. Through innovative projects and strategic partnerships, we address challenges such as inequality, climate change and inclusive education. We believe in the power of joint action to transform realities, empower communities and ensure lasting impact for the benefit of current and future generations.

> SOCIAL INNOVATION

We drive and collaborate in in social innovation projects with the aim of applying know-how and experience to improve the quality of life of people with disabilities and in situations of dependency.

> EMPLOYABILITY

We contribute to the generation of employment opportunities among vulnerable groups or those at risk of social exclusion through training programmes and professional internships.

> INTERNATIONAL COOPERATION

We promote initiatives that contribute to the development and improvement of living conditions in developing areas.

> SOCIAL ACTION

We encourage the building of an egalitarian and more committed society through the promotion of solidarity activities.

Celebration of the 5th Fundación Magtel Awards

73 applications received from Spain, Italy, Mexico, Peru and Colombia

The Fundación Magtel has once again recognised the initiatives of individuals, entities and groups in social matters at an event held in Cordoba with the attendance of institutional representatives and professionals from the social field and of individuals, entities and groups that carry out their work there.

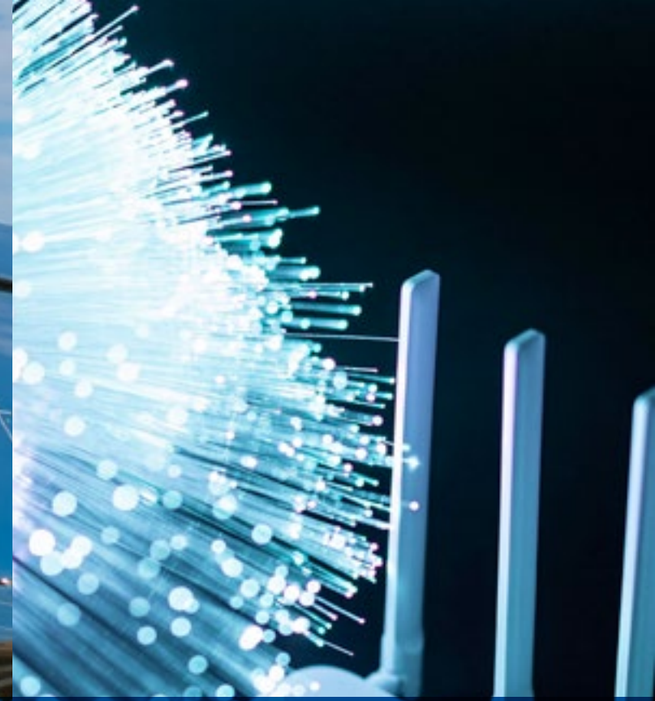
In this fifth edition, the jury was composed of Juan Luis Muñoz, director of AFA-Andalusian Associations and Foundations; Rafaela Chounavelle, president of ACPACYS; Leonardo Bueno, economic and financial director of CTA; Isabel Cabrera, deputy director of Canal Sur Radio y TV and Auxiliadora López Magdaleno and Adrián Fernández, president and director of the Fundación Magtel respectively.

Magtel

INNOVATION & TECHNOLOGY

ENGINEERING

ENERGY



TELECOMMUNICATIONS

DIGITAL TRANSFORMATION

INFRASTRUCTURES

MINING

RAILWAY

Energy storage: key to Energy Transition

The commitment to sustainability includes, among others, the challenge of the energy transition to an electricity system based on renewable energies. Europe has been spearheading this energy transition for many years now. And in Spain we can say that we are at the forefront. Time has proven us right - not only in terms of mitigating climate change, but also from a geo-strategic perspective. The conflict between Russia and Ukraine has exposed the vulnerability associated with energy dependence on other countries, particularly in relation to Russian natural gas.

The current energy mix in Spain combines nuclear power plants with wind, photovoltaic and hydropower renewable electricity generation plants, and fossil fuel plants, natural gas, as the coal-fired plants have already closed. And our electricity system is prepared to guarantee stability and security of supply under these conditions.

Wind and photovoltaic plants generate when there is a renewable resource, i.e. wind and sun respectively, which does not necessarily coincide with the energy demand in the system. It is said in this sense that they are not manageable. Therefore, as the weight of renewables in the energy mix increases, the necessary adjustment between generation and demand becomes more complex.

The key to the penetration of renewable energies in the electricity system is therefore the development of energy storage. It is essential to store renewable energy at times of the day when there is a surplus, to make it available to the system at times when demand is higher.

Since 2019, Magtel is developing the BlueStorage project, which consists of a distributed storage system based on Pumped-Storage Hydropower Plants. This type of facilities are also called reversible hydropower plants, as they pump water from a lower reservoir, using the surplus renewable energy, to an upper reservoir where

Arturo Buenaventura Pouyfaucon
Director of Hydraulics and Environment

it is stored until the energy is needed to meet demand, at which point the stored water is pumped back down to the lower reservoir, turbocharging it and thus generating electricity. They therefore allow large amounts of energy to be shifted from, for example, the central hours of the day to the evening and night hours, where demand is higher.

In addition to providing the manageability that renewable energies lack, pumped storage also provides stability and security to the electricity system, as their characteristics mean that they have synchronous inertia, i.e. large rotating masses (the reversible pumps and their alternators) that can absorb voltage and frequency variations that may occur in the grid.

Not only do they provide stability and security to avoid blackouts, but they are also a backup for the system in the event of one, as they can use the water stored in the upper reservoir to start generating from scratch, providing the necessary voltage and frequency so that other generation plants can also start up.

As mentioned at the outset, the energy transition presents a significant challenge, particularly for the electricity system. The integration of renewables must be accompanied by the development of energy storage solutions that ensure their manageability, enabling us to guarantee system stability and security of supply at all times.

Engineering

BESS SYSTEMS

PUMPED STORAGE

GREEN HYDROGEN

OFFSHORE WIND

DESALINATION

BIOGAS

GROUND-MOUNTED PHOTOVOLTAIC SYSTEMS

FLOATING PHOTOVOLTAICS

BESS systems

A system capable of providing flexibility and stability to the electricity system, allowing energy to be stored and released when needed

A system that enables the balancing of supply and demand and shifts the inherently variable renewable generation to the periods when its contribution is most needed.

These systems can provide ancillary services such as frequency regulation and voltage stabilisation, which help to maintain optimal operation of the power grid.

They are fast response systems thanks to their power electronics, which allows participation from the most urgent mechanism of Primary Regulation to Tertiary Regulation, providing stability to the grid.

Project development and engineering

9
PROJECTS

449
MW TOTAL POWER

1,972
MWh TOTAL STORAGE CAPACITY

MALAGA, CORDOBA AND SEVILLE

Pumped storage

Pumped-storage power plants are key to ensuring the transition to an emission-neutral economy and the effective integration of non-manageable renewable energies into the electricity system

This also brings flexibility to the system and stability to the network.

Magtel is developing the BlueStorage© project, which consists of a distributed storage system based on pumped-storage hydropower plants.

The milestones achieved are:

- REE's granting of the access and connection point for the reversible pumping in Grandas de Salime (247 MW / 3,783 MWh)
- The hydraulic public domain concession for the As Pontes pumped-storage hydroelectric power plant (250 MW / 3,907 MWh)

23
PROJECTS

4,638
MW
TOTAL POWER

55,655
MWh
TOTAL STORAGE

Green hydrogen

From Magtel we contribute to the promotion of green hydrogen as an energy vector

Our R&D&I Division is participating in the "Ad-Grhid" initiative, consolidating its position as a leading Spanish developer, construction company and operator for the development of the next generation of microgrids and H2 plants, which will result in a lower cost of energy and greater circularity for the projects that Magtel develops.

In this way, we consolidate our position in providing energy solutions to residential and industrial customers.

In addition, internally we have a task force for this technology in which new steps are being planned with hydrogen as a key element in the transition towards energy autonomy and decarbonisation.

+200
MW PROJECT DEVELOPMENT AND ENGINEERING

Offshore wind

We are driving marine engineering for large-scale offshore wind power development, with over 400 MW of installed capacity.

Selection of strategic sites, supported by rigorous feasibility studies and resource assessment, ensures optimal use of offshore wind.

+400
MW PROJECT DEVELOPMENT AND ENGINEERING

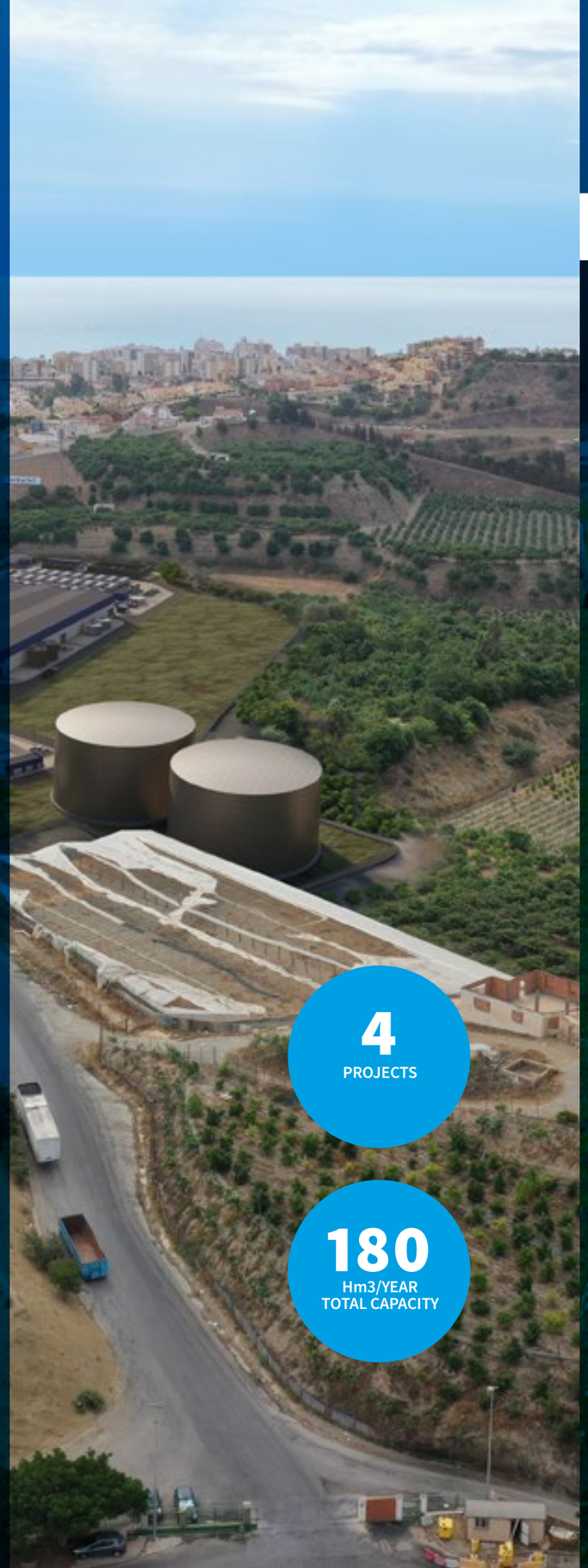
Desalination

Drought is a cyclical issue, so it is essential to promote infrastructures that guarantee a stable water supply in the long term, regardless of climate variability

Since 2020 we contribute to solving this problem through renewable desalination, using sustainable energy sources to enable a safe and reliable water supply in arid and coastal regions.

Renewable desalination ensures:

- Agricultural production in the region
- Water resources for industrial production
- It recovers areas degraded by desertification processes
- It contributes to the preservation of areas of high landscape value
- It enhances the value of the areas in which it is located



4
PROJECTS

180
Hm3/YEAR
TOTAL CAPACITY

Biogas

Magtel is developing a portfolio of biogas projects that will allow biomethane and other valuable byproducts to be obtained from waste treatment

Biogas seeks the recovery of this waste generated throughout the process by applying a circular economy model in the primary sector, mainly in rural areas, contributing to their supply capacity and energy autonomy.

7
PROJECTS

400
GWh/YEAR

Ground-mounted photovoltaic systems

We have more than fifteen years of experience in ground-mounted photovoltaic systems.

We develop large-scale sustainable infrastructures from development and design engineering, framed within the energy transition.

We are one of the leading companies in the renewable energy sector in Southern Europe. Over the years, we have promoted more than 50 projects reaching 2,500 MW of energy capacity.

This experience allows us to offer advanced and sustainable solutions, adapted to the specific needs of each client and project.

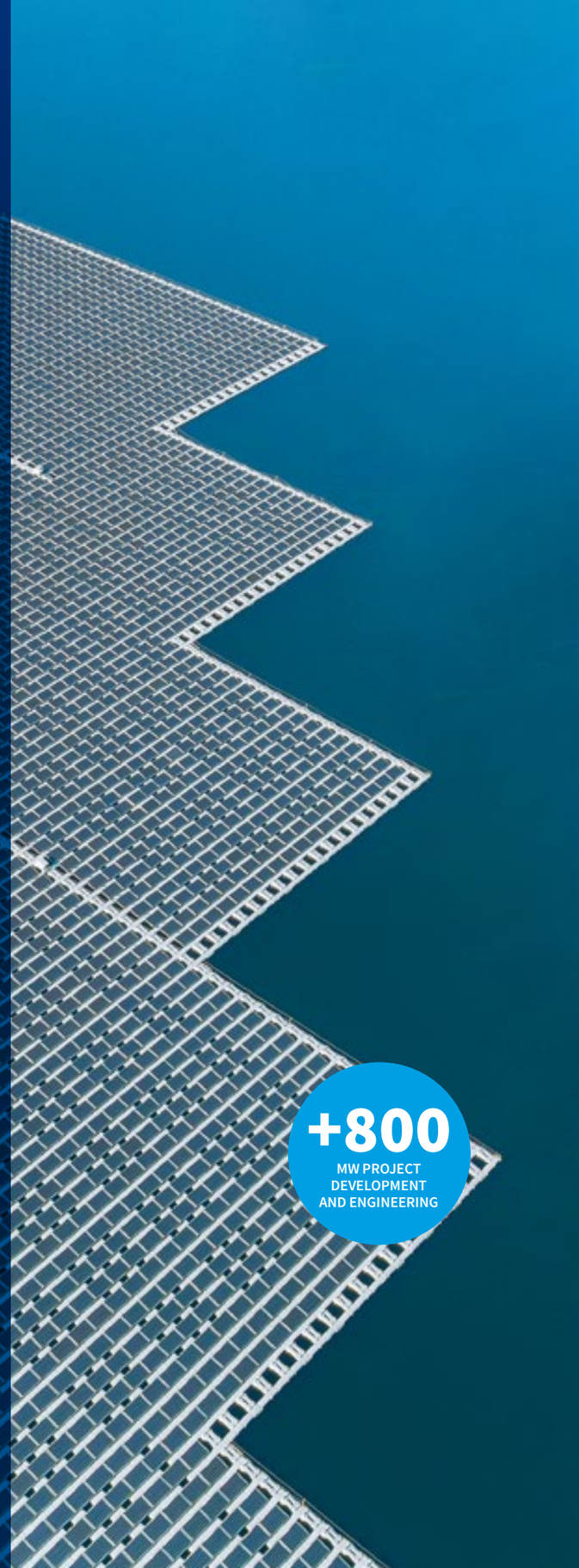
2,500
MW TOTAL POWER

Floating photovoltaics

Development of 18 projects relating to this technology to integrate 3.8 GW into the system

Our projects are part of the energy transition towards a decarbonised model, in line with the National Integrated Energy and Climate Plan (PNIEC)

Thus, we contribute to the goals of reducing greenhouse gas emissions, increasing the share of renewable energy.



+800
MW PROJECT DEVELOPMENT AND ENGINEERING

Transforming our world together

Every year we are reminded why we chose this path: to transform the world through innovation, sustainability and technology, and 2024 was no exception. At Magtel, we have turned challenges into opportunities, growing steadily in key sectors and reaffirming our commitment to people and the environment.

During the year, we strengthened our position in telecommunications, digital transformation, energy, infrastructures and engineering, developing projects that contribute to the efficiency of natural resources and the promotion of a more sustainable society. The strengthening of our strategic divisions and our ongoing commitment to R&D&I have enabled us not only to grow, but also to lead high-impact initiatives.

The value of our team, together with a corporate culture based on excellence, commitment and trust, has been key to achieving the results we present today. Thanks to their efforts, we maintain our position as a strategic player in technological and sustainable development.

Management Team

Magtel faces the future with ambition and responsibility, reaffirming its commitment to progress, innovation and the generation of solutions that improve people's lives and strengthen the productive framework of society. That is, and will continue to be, the true meaning of what we do in the company.

On this path, every achievement is also a starting point. That is why we continue to drive a constant transformation that allows us to anticipate the needs of the environment, with innovative, sustainable and people-centred solutions.

This is the only way we understand growth: as an active commitment to the future, we want to build, based on responsibility, excellence and a shared vision of progress.

Energy

EPC PROJECTS

- DESIGN
- DETAILED ENGINEERING
- LOGISTICS AND PLANNING
- QUALITY CONTROL PROGRAMME.
- ASSEMBLY AND INSTALLATION
- COMMISSIONING

SOLAR INSTALLATIONS

- CONSTRUCTION OF PV INFRASTRUCTURE
- ELECTRICITY SUBSTATIONS
- SELF-CONSUMPTION (INDUSTRIAL AND AGRIVOLTAIC)

OPERATION AND MAINTENANCE

- SOLAR INSTALLATIONS
- INDUSTRIAL (LV/MV)

LV/MV INSTALLATIONS

- LINES AND DISTRIBUTION
- TRANSFORMATION CENTRES
- EARTHING
- PROTECTION SYSTEMS
- SPECIAL PROJECTS

ELECTRIC VEHICLES CHARGING STATIONS

- CHARGING STATIONS
- COMMUNICATION NETWORK
- PROTECTION AND SAFETY

ENERGY EFFICIENCY

- LED LUMINAIRES FOR URBAN PROJECTS
- AEROTHERMAL ENERGY SYSTEMS
- SPECIAL PROJECTS

EPC (Engineering, Procurement, and Construction)

In Zaragoza, the SPVPP Larral y La Peñaza 3 project has been developed, a 70.73 MWp solar photovoltaic plant for OPDEnergy. This BOS EPC project has included some key activities. First, the necessary engineering design and implementation was carried out. Then, various civil works were carried out, such as earthworks and the creation of ditches and drains. As far as the structures are concerned, the foundations were driven, the structure was installed and the solar panels were mounted. The electrical installation was another key component, with the addition of central inverters, concentrator boxes, wiring and connections. In addition, control and monitoring facilities were implemented, including weather stations, CCTV and SCADA systems.

Solar Installations

A 122.63 kWp photovoltaic installation has been carried out for EDP Clientes S.A. in the La Alcaidesa housing development, located in San Roque, Cádiz. This project included the installation of two canopies, as well as photovoltaic modules and inverters. Monitoring equipment was also installed and work was carried out on channelling, protection and electrical wiring.

On the other hand, in Cordoba, a 283 kW photovoltaic installation has been installed at the San Juan de Dios Hospital. This project involved the installation of 125 kW on the roof of the church, using coplanar and triangular structures, and an additional 158 kW on canopies in the car park. Bifacial photovoltaic modules and three inverters were installed, together with the necessary protections and REBT (Low Voltage Electronic Regulations) electrical wiring. The structures used included both coplanar and triangular structures and aluminium canopies, with a total of 190 modules on the flat and pitched roof and 306 modules on the canopies.

Operation and maintenance

In the province of Huelva, we carry out the maintenance of high and low voltage electrical installations for Giahsa. This project covers preventive maintenance, scheduled corrective maintenance, emergency corrective maintenance and electrical upgrades of 400 water supply and sanitation facilities. The activities carried out include both high and low voltage electrical work, as well as work on high voltage lines and the opening of disconnectors for the preventive maintenance of the Substation and LV of the Sierra area.

In Alcalá de Guadaíra, Seville, maintenance work was carried out for the SPVPP Elvisa, with the aim of guaranteeing optimum performance of the facility for Zelestra Ingeniería S.L. Preventive maintenance activities included module cleaning, visual inspection of all components, checking electrical connections, inverter verification, structure control, monitoring and pest and vegetative control. In addition, predictive maintenance tasks were carried out, such as thermography and IV curves, and corrective maintenance, which included attending to possible breakdowns, monitoring the solar timetable, drawing up monthly reports for the client, stock control and management of equipment warranties.

LV and MV installations

In the Virgen Del Águila housing development in Alcalá de Guadaíra, Seville, a project was carried out for the installation and refurbishment of three substations. These centres were handed over to the utility company to provide service to the development. One of the substations was refurbished and another was retrofitted to replace the previous ones. The activities included the installation of the new substations, the installation of medium-voltage lines to feed the substations, the construction of prefabricated buildings and the implementation of the medium-voltage switchgear.

Telecommunications

FIXED NETWORK

- ENGINEERING, PERMITS AND LEGALISATION
- DEPLOYMENT OF FTTH-FTTN-FTTX-MAN-LD-HFC NETWORKS
- OUTSIDE PLANT MAINTENANCE
- SERVICES AFFECTED
- ASSEMBLY AND INSTALLATION
- COMMISSIONING

MOBILE NETWORK

- **E2E PROJECT DEVELOPMENT**
- **INSTALLATION AND COMMISSIONING OF TELECOMMUNICATION EQUIPMENT**
- **ENGINEERING SERVICES**
- **RADIO LINKS**
- **RADIANT SYSTEMS**
- **CONSTRUCTION OF RURAL/URBAN SITES AND TECHNICAL ROOMS**
- **ADAPTATION OF BASE STATION INFRASTRUCTURES**
- **PLANT AUDITS**

CUSTOMER I&M

- **FTTH AND ADSL INSTALLATION**
- **HFC TECHNOLOGY**
- **CONNECTION AND TESTING**
- **INSTALLATION AND MAINTENANCE SERVICE FOR CLIENTS**

RAILWAY INSTALLATIONS

- **COMMUNICATIONS**
- **SIGNAGE**
- **SECURITY**
- **GSMR SYSTEMS**

SPECIAL PROJECTS

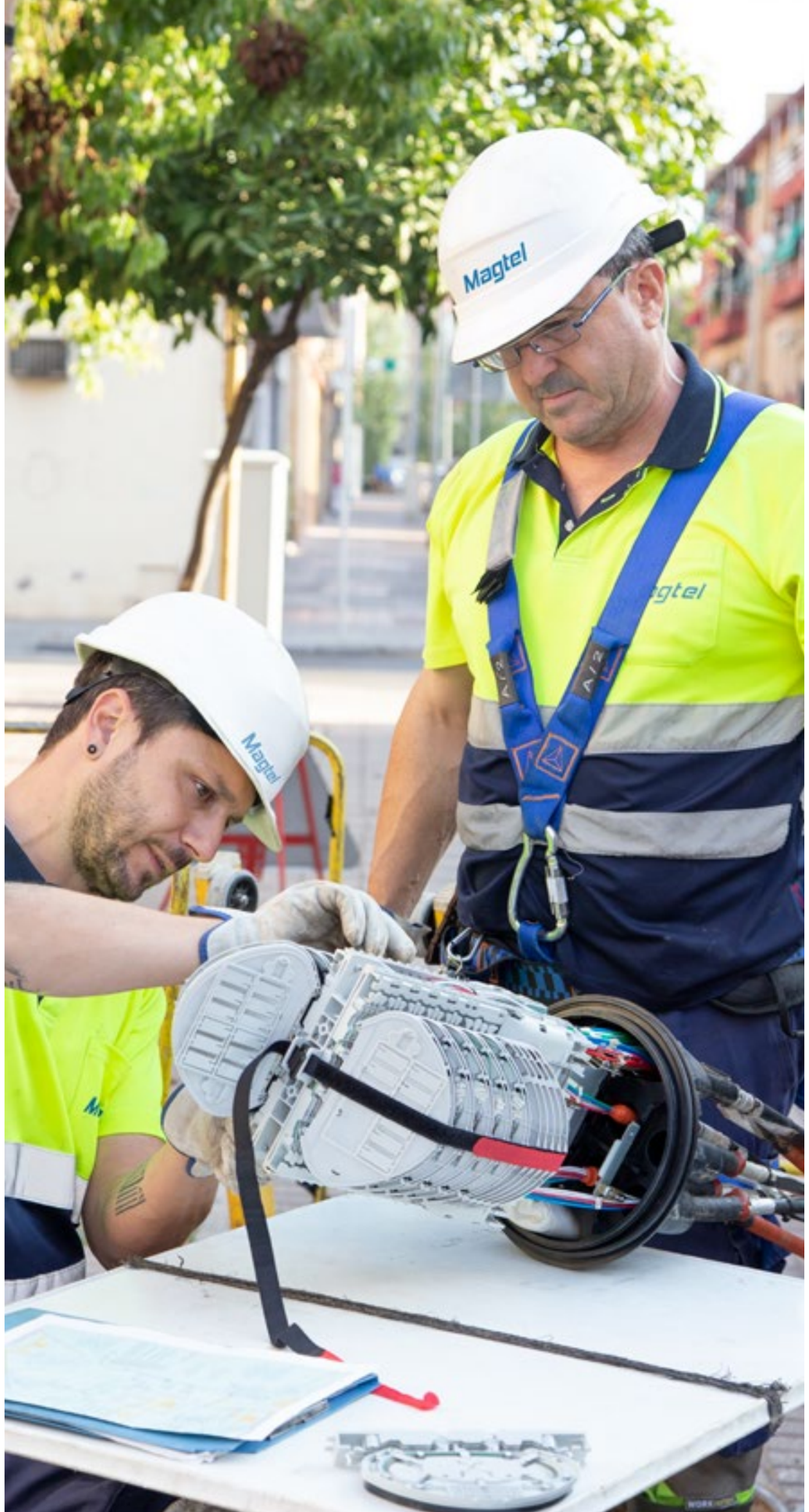
- **SAFETY INSTALLATIONS**
- **SSTV**
- **PUBLIC ADDRESS**
- **CONTROL AND HOME AUTOMATION**

Main areas and featured projects

> Traditional Telco

Throughout 2024, the Traditional Telco area continued its growth and consolidation trajectory. The most important milestones in this area include:

- Consolidation as a leading supplier to operators: we have strengthened our position as one of the key suppliers to major telecommunications operators in the country, such as MasOrange, Vodafone, Finetwork and Avatel. We have also consolidated our alliance with Telefónica, actively participating in the development of the Hispalnet telecommunications network.
- Geographical expansion of branches: we have expanded our national coverage, with the opening of new branches in Asturias and Gran Canaria, which allows us to provide a better service to our clients in these new strategic locations.
- Expansion of 5G rural coverage: In 2024, we have intensified our expansion of 5G coverage in rural areas, especially in the regions of Andalusia, Extremadura and Castilla La Mancha, improving connectivity in underserved areas and contributing to the technological development of these regions.



> Innovation and Technology

Both areas have been boosted by the adoption of new technologies, with a strong emphasis on innovation to improve the quality of services:

- 5G networks: we continue to lead the expansion of the FTTN network across the country, with a special focus on rural areas, ensuring that technological advances reach more regions and benefit less connected communities.
- Internet of Things (IoT): we have integrated IoT solutions for infrastructure monitoring and maintenance, improving security and reducing system downtime.

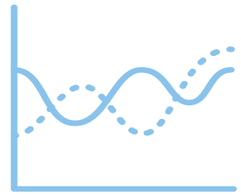
> Challenges and Solutions

- Challenges in integrating new technologies: the implementation of advanced technologies, especially in the railway sector, has been a challenge. However, we have successfully addressed these challenges through specialised training and collaboration with trusted technology partners.
- Geographical and logistical expansion: Expansion into new delegations and rural areas has posed logistical challenges, but we have managed to overcome these obstacles with a strategic deployment plan and key partnerships.

> Future Plan

In 2025, we have big plans for expansion and consolidation in both industries:

- 5g network expansion: We will continue to expand 5g coverage, with a focus on new regions and industry sectors.
- Railway project development: we will continue to collaborate with ADIF and other key players in the railway industry, expanding our presence in new signalling and railway system projects in both urban and rural areas.



+13.4%

Growth in 2024 mainly driven by increase in 5G projects and railway developments

+500Km

More than 500 km of networks (FTTN / FTTH) installed and several railway installations in various locations

Network Deployment Services

> FTTH - FTTN network deployment for Más Orange

We have designed and built networks for 23,000 Real Estate Units in cities of low, medium and high population density in Andalusia, Extremadura and Castilla La Mancha. The work has included permitting, design and registration of as-built drawings, civil works, installation of fibre optics cables and splices, as well as commissioning and coverage of the Real Estate Units.

> Civil Works project for Vodafone ONO

We have been responsible for the maintenance and deployment of HFC and FO networks, including expansion, construction, maintenance, site upgrades and implementation of network deployment projects on Vodafone's own or third party infrastructures. This project has also covered the management of high impact claims and customer supply failure incidents on the network. We have also developed new FTTH and CTV networks in Andalusia, Extremadura and Melilla, accumulating more than fifteen years of experience with operators such as Supercable, Auna, ONO and Vodafone.

I&M Services

> Installation and civil works for fibre optics infrastructures

We have performed civil works, installation, splicing and fibre optics performed for clients such as, among others, Adif, Cobra, Comsa, Kapsch Trafficcom Transportation, Reintel..

> Outside plant maintenance for Más Orange

We are in charge of attending to and resolving faults in Orange's fibre optics network, as well as the extension of substations due to saturation. We maintain more than one million homes in Eastern Andalusia, Melilla and Madrid.

> Más Orange Installation and Maintenance (I+M)

We have carried out approximately 66,023 FTTH and ADSL installations to customers' homes, including connection, testing and commissioning of telephone, internet and television installations. We also carry out the maintenance of the external plant of the FTTH network in Eastern Andalusia, Melilla, Madrid and Las Palmas de Gran Canaria.

Experts in railway infrastructure, communications and signalling

We are backed by 25 years of experience in the completion of projects throughout the national territory. We have an extensive experience in railway communications through fibre optics deployment, operation and maintenance of networks and communications on High Speed Rail Lines (HSL). In addition, we carry out track construction and maintenance, turnout assembly, track welding, rail replacement, buffer stop construction, aluminium-thermal welding and stress relieving approval (special class C licence), infrastructure machine operator's licence and safety licence (safety pilot). Our track welders, safety pilots and infrastructure machinery operators have been approved by ADIF.

> Collaboration with ADIF

In 2024, we have consolidated our position as collaborators with various ADIF regional authorities, working mainly with our client CAF Signalling on several large-scale projects. Key achievements are, without limitation, the engineering and commissioning services in the Galicia region (León sub-directorate), the railway signalling installations on the Grañén - Monzón (Huesca) section (Catalonia sub-directorate), the collaboration in the installation and civil works for the execution of the Cotos - Cercedilla section (Madrid sub-directorate), and the railway signalling installations between La Gineta and Socuéllamos (Levante sub-directorate).

> Modernisation of the railway line between the Pablo de Olavide University and Montecarmelo

The joint venture formed by Magtel, Enyse and Sineox Raíl is executing the project to modernise the railway system of the tram line connecting the Pablo de Olavide University with Montecarmelo, in Alcalá de Guadaíra, which is currently not being used. This project, with a budget of 23.2 million euros and an estimated duration of 16 months, aims to ensure the efficient and safe operation of this line, which is used daily by thousands of passengers. It includes the installation and commissioning of signalling, communications, control and safety systems, as well as the optimisation of energy consumption to reduce environmental impact.

Digital Transformation

ICT INFRASTRUCTURE IMPROVEMENT

- CORPORATE NETWORKS
- DATA PROCESSING CENTRE
- SUPPLY OF TECHNOLOGICAL EQUIPMENT

SMART SERVICES

- RE-ENGINEERING AND AUTOMATION OF PROCESSES
- IOT NETWORKS AND SERVICES
- CULTURE, TOURISM AND SMART HERITAGE

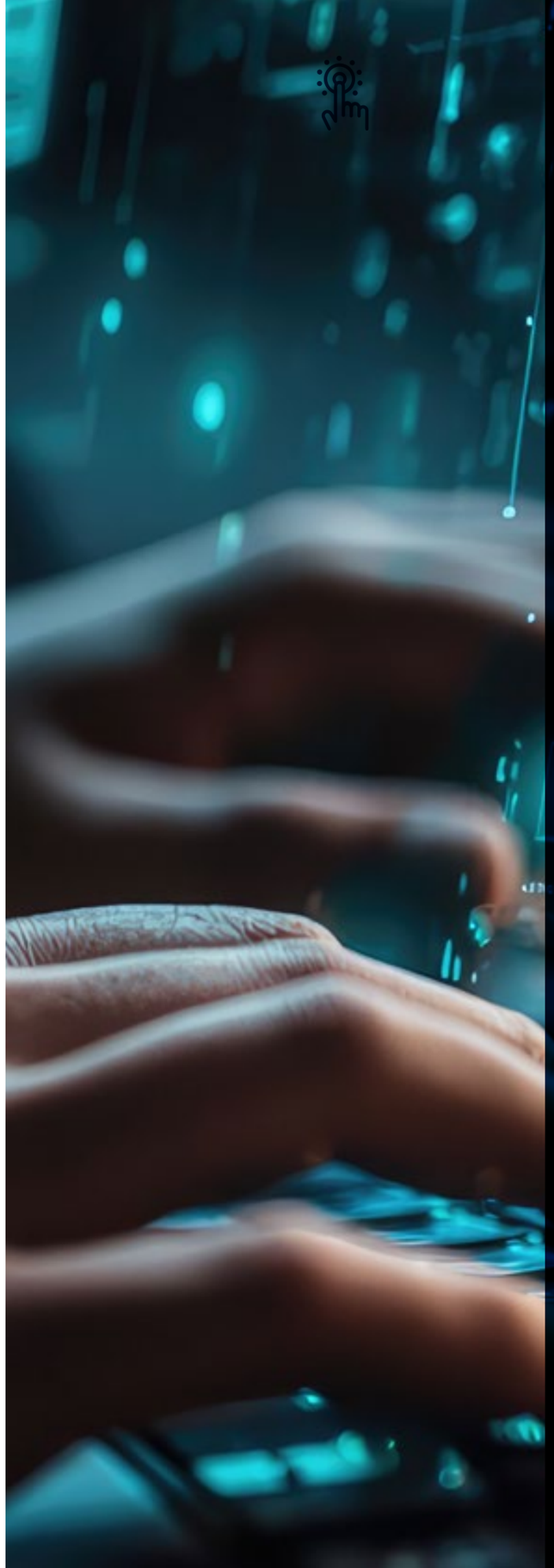
PROCESS OUTSOURCING

- PROJECT OFFICE
- TECHNICAL ASSISTANCE
- MULTI-CHANNEL SERVICE CENTRE

Magtel renews its service contract for the Junta de Andalucía's Corporate Telecommunications Network

Magtel has renewed the contract for operational support services for the Andalusian Regional Government's corporate telecommunications network and other projects of the Andalusian Digital Agency, through the Sociedad Andaluza para el Desarrollo de las Telecomunicaciones

The continuity of this service provision is valued very positively by the Cordoba-based company, since, through its digital transformation activity, it will continue to carry out customer management, quality, engineering, interconnection, infrastructure and systems tasks, among others, for the Andalusian administration's corporate network. The new contract is in force for a period of 18 months with the possibility of subsequent extension.



Multi-channel support services

Monitoring and specialised attention unit for the citizen attention and information services of different regional ministries and bodies of the Andalusian Regional Government for Sandetel

It encompasses:

- Top-tier training to units
- Maintenance of the knowledge database
- Relationship and escalation with tertiary care staff
- Advanced tax, treasury and public debt information and support services
- General administrative information services of the Regional Government of Andalusia
- Citizens Advice Service Info.Vivienda
- Citizens Advice Service Consumo Responde
- Technical support service in the use of the e-processing platform
- Citizen information and support service on the Environment, Employment, Training, Self-employment, Industry, Energy and Mines, Knowledge and Universities
- Legal advice service on gender-based violence of the Andalusian women's support line
- Advice and Assistance Service for companies and citizens regarding equal treatment of women and men and for work-life balance
- Document management specialist for the information and services centre

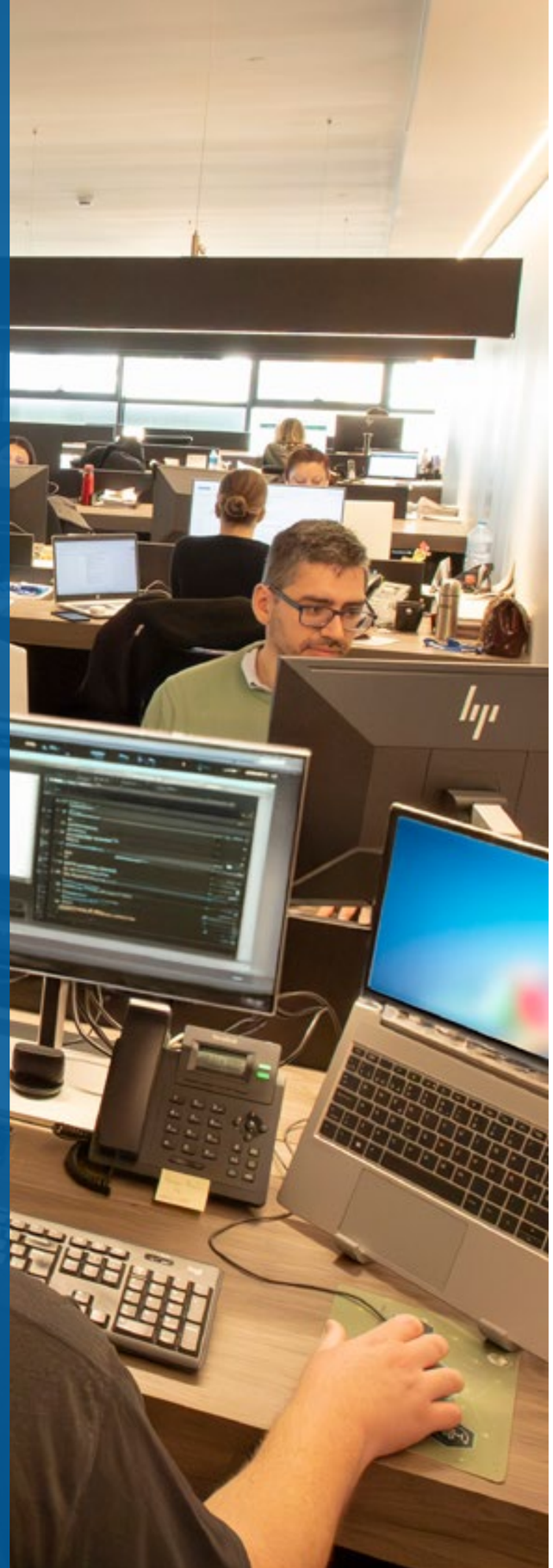
Operational support services

To the Corporate Telecommunications Network of the Regional Government of Andalusia and other projects of the Digital Agency of Andalusia

Support for activities related to the Corporate Telecommunications Network of the Regional Government of Andalusia for Sandetel

We develop this service by means of the following duties:

- Customer and service management
- Telecommunications technical office
- Service level and quality management
- Engineering, infrastructure and systems management
- Provision management
- Project management
- Value-added catalogue



Support for territorial deployment of digital training for women, preferably unemployed and living in rural areas of Andalusia

Support office for the "Preparadas" programme throughout Andalusia to raise awareness of the programme

Services have included:

- Supporting demand generation and ensure the development of training actions for women
- Enhancing digital skills for unemployed persons to boost entrepreneurship and rural development
- Raising awareness of the programme in municipalities with less than 30,000 inhabitants
- Training 59,002 women
- Creation of a network of alliances in the territory with public and private organisations, associations and entities that act as driving forces for the programme in their territory
- Actions for the control, monitoring and inspection of training actions.

Adaptation project of the Pabellón de Francia building in Seville, Sandetel's head office

Comprehensive refurbishment of the building, replacement of furniture, as well as the installation of advanced communications systems, lighting, air conditioning and intelligent lockers.

Magtel has contemplated the services of:

- Comprehensive refurbishment of the building.
- Replacement of furniture
- Installation of advanced communications systems
- Implementation of lighting control systems, climate control and smart lockers

Supply and installation of cold corridor enclosures in the CPD TARFIA of the Andalusian Regional Government

Supply and installation necessary for the complete enclosure of the cold aisles in the CPD TARFIA for an efficient management of the air conditioning to the IT equipment and consequent improvement of the energy resources towards optimal PUE values for Sandetel

This project has comprised:

- Dismantling of the current TARFIA I enclosures and transfer to the CPD ZOCO
- Supply of cold aisle enclosures and independent elements for the CPD TARFIA
- Installation of cold aisle enclosures in the CPD TARFIA
- Installation of the relocated cold aisle enclosures in the CPD ZOCO

Magtel's Director of Digital Transformation, Fernando Olivencia, appears in the Andalusian Parliament to speak on Artificial Intelligence

Before the **Task Force on Artificial Intelligence** under the **Committee on the Presidency, the Interior, Social Dialogue and Administrative Simplification** of the **Parliament of Andalusia** to deal with the comments and questions from the different Parliamentary Groups on Artificial Intelligence

Infrastructure

HYDRAULIC INFRASTRUCTURES

- RENOVATION OF SUPPLY AND SANITATION NETWORKS
- PIPELINE REHABILITATION
- INTEGRAL WATER CYCLE
- BREAKDOWN REPAIRS AND NETWORK MAINTENANCE
- RENEWAL OF METERS AND EXECUTION OF NEW OPPORTUNITIES
- TREATMENT
- IRRIGATION
- DESALINATION

CIVIL WORK

- LINEAR TRANSPORT INFRASTRUCTURES
- URBANISATION WORKS
- WASTE MANAGEMENT AND RECOVERY
- INDUSTRIAL WORK
- LARGE INFRASTRUCTURES
- MINING
- SOUNDINGS AND EXPLORATION
- PROCESS PLANTS
- WATER TREATMENT PLANT

CONSTRUCTION

- NEW RESIDENTIAL CONSTRUCTION
- INDUSTRIAL
- UTILITIES
- REHABILITATION OF HISTORIC BUILDINGS
- COMPLETE RENOVATION

Health Infrastructure Projects

>New Outpatients building in the Mother and Child Department

The Hospital Universitario Reina Sofía in Cordoba has awarded the ACSA Obras e Infraestructuras-Magtel joint venture the construction of the new Mother and Child Outpatients building in 2024, which will improve outpatient care for children and gynaecology. This future building will cover approximately 10,000 m^2 and the works include the execution of the structures, enclosures, flooring, roofing, finishes, thermal envelope and woodwork, as well as plumbing, air conditioning, centralised technical management, electricity, photovoltaic, communications, security and fire safety, mechanical transport and medical gases. The construction of the new emergency road and the planned new sewage network are of particular importance.

>Centro de Salud El Ejido Nordeste health centre

The future Centro de Salud El Ejido Nordeste, built by the Magtel & Lirola joint venture for the Regional Ministry of Health and Consumers of the Andalusian Regional Government, will be in a strategic area of the municipality on a plot of 3,075 square metres provided by the City Council. This health building will have more than 2,000 square metres distributed over two floors and a plot reserved for surface parking spaces. The work includes earthworks, the foundations of the building, the structure of two of the three blocks and underground sanitation of the building.

>Centro de Salud de Bujalance health centre

The Centro de Salud de Bujalance, built by the Magtel & Lirola joint venture for the Regional Ministry of Health and Consumers of the Andalusian Regional Government, will have a building with a total built area of 2,867.30 m^2, conceived around a central common and longitudinal space that distributes different areas on the ground and first floors. The new facilities will include care areas, critical care and emergency departments, minor surgery, dentistry, health education, rehabilitation and physiotherapy, radiology, citizen support and staff area. The work includes demolition of the existing building, earthworks, excavation of the basement, foundations and party walls, construction of two concrete slabs and backfilling of the walls and the car park forecourt.

Rehabilitation and Modernisation Projects

> Rehabilitation of Casa de la Solidaridad

The rehabilitation of the Casa de la Solidaridad in Cordoba, carried out for the Municipal Urban Planning Department, was completed in 2024 with the adaptation and rehabilitation of the upper floor of the south-east hall of the former Lepanto barracks. The work includes renovation of interior walls, repair of façades, redistribution and new construction of interior partitions, work on the evacuation staircase, toilet facilities, ventilation system, electrical and air-conditioning installation.

> Improvement and rehabilitation of the Villa del Río bridge

The improvement and rehabilitation of the Villa del Río bridge in Córdoba, performed for the Regional Ministry of Development, Infrastructures and Territorial Planning of the Regional Government of Andalusia in a Joint Venture with Hierros Fuente Palmera, has carried out the complete rehabilitation of the metal spans, upper and lower reinforcements of the arches, supply and assembly of upper transverse bracing, deck and arch starts. As for the factory spans, grouting of the boreholes with sleeve pipe was carried out and the formation of the deck was started. The bridge, built in the early 20th century and partially reconstructed in 1950/51, has retained the historic aesthetics of the outer metal arches.

> Housing and Urban Development

The construction of the "Residencial Góngora" building of 20 subsidised housing units for the Fundación Vympica in Mairena del Aljarafe has been carried out on a 572 m² plot and includes 21 storage rooms, 25 parking spaces and 2 commercial premises. The 20 three- and four-bedroom flats are distributed over six floors, with underground floors for parking and storage rooms, and a ground floor occupied by business premises and common areas. One house on the first floor has been adapted for people with functional diversity. The building has been built in accordance with energy efficiency criteria and innovative systems such as natural ventilation in the garage. The project is in an area of growing expansion and population boom in Seville, acting as a “dormitory town" for thousands of citizens.

Water Infrastructure Projects

> Implementation of NB-IoT system for reading water meters

In collaboration with Contazara and promoted by Empresa Metropolitana de Abastecimiento y Saneamiento de Aguas de Sevilla (Emasesa), we have successfully deployed NB-IoT technology in the city of Seville and 11 municipalities in the province. This solution enables real-time transmission of consumption data, optimising supply management and favouring the early detection of incidents. Automating readings improves monitoring accuracy and streamlines billing processes, eliminating manual readings and reinforcing our commitment to sustainability and innovation in water management.

> Installation and maintenance of meters and connections

As part of Emasesa's reading service, the installation and maintenance of CTAC modules and remote reading systems has been carried out. Likewise, meter operation works have been developed, including the installation of new equipment, management of voluntary and ex officio disconnections, as well as the re-establishment of the service. These actions have been complemented by interventions on public roads to ensure a correct installation and a service adapted to the needs of users.

> Monitoring and supervision of the supply and sanitation network

Within the framework of the PERTE for the digitalisation of the water cycle, linked to the Recovery, Transformation and Resilience Plan (PRTR), water quality monitoring stations, flow meters, limnimeters and equipment for sectorisation have been installed in the Emasesa supply network. The actions included the installation of control cabinets, remote-controlled valves and probes for physico-chemical monitoring in the Ranilla basin. This allows for efficient monitoring of the operational and environmental parameters of the water system.

> Continuous improvement and drought management measures

In the municipality of Seville and 11 other municipalities, inspection work has been intensified to detect and eliminate fraud in consumption, promoting responsible use of water resources. The installation and maintenance of remote reading systems has also been reinforced to streamline consumption monitoring. Verifications with portable standards ensure the accuracy of measurements and transparency in billing, in line with the measures adopted in the face of water scarcity scenarios. All these actions have been carried out for Emasesa.

> Modernisation of irrigation systems with remote management

In the irrigation community of the Nacimiento of Coín, "Llanos a Juntillas", we have modernised the irrigation installations by equipping them with remote management. A pressure manifold consisting of different branches has been built to carry the irrigation water from the Nacimiento to the plots, with pipes of different diameters. The water network includes primary, secondary and tertiary components, plot outlets and meter cabinets. The water intake at the Nacimiento is equipped with vertical pumps and electrical supply and control cabinets, as well as a medium-voltage network and a transformation centre.

> Maintenance and rehabilitation of collectors

We have carried out maintenance and rehabilitation work on collectors belonging to the network of the Empresa Municipal de Aguas de Córdoba (Emacsa), as part of the Magtel & Insituform joint venture, using trenchless technologies to avoid civil works. The actions include the rehabilitation of collectors under the ADIF subways and the renovation of strategic streets in the city centre of Cordoba.

Sustainable reactivation of historic mines in the Iberian Pyrite Belt

Since Tharsis Mining acquired the mining rights to the historic Tharsis, La Zarza and San Telmo projects at the end of 2018, we have been committed to the sustainable reactivation of these legendary mines.

In these years, the company has invested more than 40 million euros of its own funds in a constant effort to revitalise mining activity in the Iberian Pyrite Belt, with a long-term vision and commitment to technical excellence, safety and sustainability.

This effort has enabled the creation of a highly qualified, multidisciplinary and cohesive human team, which today totals around 30 people, and whose work has been key to achieving significant milestones. These include the definition of more than 220 million tonnes of polymetallic massive sulphides with significant contents of Copper, Zinc, Lead, Silver, Gold, Cobalt, Sulphur and Iron.

We are currently working with some of the leading international consultancies to define the most appropriate metallurgical processes to demonstrate the technical feasibility and economic viability of these projects. The objective is clear: to reopen the mines with a modern, efficient and environmentally friendly approach

Manuel De la Haza Acuaviva
Managing Director of Tharsis Mining

economic development and value for local communities. We are also firmly committed to the discovery of new mineral deposits in Andalusia, mainly in the provinces of Cordoba and Seville.

This work is taking place in a global context of growing demand for raw and strategic materials such as copper and cobalt, which are essential for the energy and digital transition. Europe has identified the need to ensure a stable and autonomous supply of these materials, which makes projects such as Tharsis Mining a key part of the new European industrial model. In parallel, the revival of interest in pyrite as a source of sulphur for fertilisers and industrial processes, especially in an environment of international logistical constraints, further strengthens the relevance of our assets.

At Tharsis Mining we continue to move forward with responsibility, commitment and ambition. We are committed to innovative mining, combining respect for the environment with the creation of sustainable opportunities for current and future generations. We are confident that the coming years will allow us to take the decisive step towards the reopening of our mines, returning them to the leading role they played during the 19th and 20th centuries and which is their rightful place in the mining industry of the 21st century.

Mining

We bet on our land

> We are the only company with 100% Andalusian capital dedicated to the metal mining sector in the Iberian Pyrite Belt

Tharsis Mining is the only company with 100% Andalusian capital engaged in metal mining in the Iberian Pyrite Belt, which has the mining rights to the mines of Tharsis in the municipality of Alosno, San Telmo in Cortegana, and the mine of La Zarza, located in the municipality of the same name.

Our offices are located in Tharsis, in the century-old office where the Tharsis Sulphur and Copper company was once based.

Currently, Tharsis Mining's business is focused on the investigation of the old deposits with the intention of returning to this area of Andévalo its historical mining activity, thus reactivating the economy of these population centres.

Tharsis Project

Seven mineral deposits make up this mythical mine in Huelva, which still has enormous potential

In November 2018, Tharsis Mining acquired Nueva Tharsis S.A.U., the company awarded the concessions to exploit the Tharsis mining district and owner of the land, and undertook the evaluation of various ore bodies through drilling between 2020 and 2022.

A total of 219 boreholes have been drilled with 76,011 metres accumulated, of which 23,577 samples have been analysed by the ALS laboratory.

With the results of this study, in 2023, the consulting firm CSA Global has carried out the Preliminary Economic Assessment (PEA) of the project, in which it estimates, for the whole of Filón Norte, San Guillermo, Sierra Bullones and Filón Oeste, mineral resources of 120.6 Mt in the JORC code. Of this figure, 79% would be in the Most Indicated Measured Resources category. In addition, it defined 8.8 Mt (±25%) of Au- and Co-rich stockwork ore, which have not been considered in the economic model.

The study considers differential flotation methods as alternatives for the production of Cu, Pb, and Zn concentrates, alongside global flotation followed by leaching of the concentrate for the production of Cu, Pb, Zn, and Ag with high purity. This route represents the most cost-effective option.

CSA recommended the valuation of Au and Co resources, which were not considered in the PEA, to enhance the project's viability.

The studies conducted include flotation in collaboration with Wardell Armstrong International, oxidation and leaching with SGS and METSO, and roasting and leaching with METSO.

These tests have successfully yielded copper, zinc, silver, lead, gold, and cobalt.

Additional investigations on roasting combined with cyanidation are underway; in addition to the recovery of gold and silver, these studies explore the potential for sulphuric acid and energy production.

IGAN has initiated a conceptual mine study, incorporating the results obtained from the various industrial process alternatives.

For the regional investigation, a hyperspectral flight combined with other sensors has been completed. The data acquired are currently under processing. The interpretation will be supported by the results of hyperspectral, mineralogical and analytical studies of rock samples.

La Zarza Project

In 2022, Tharsis Mining resumed research with the objective of increasing mineral resources with a view to restarting mining activity

Between 2022 and 2023, 24 drill holes (12,424 metres) were drilled with the aim of expanding the Mineral Resources.

A total of 3676 samples were analysed at ALS, the results of which, complemented with historical information after validation, allowed CSA-Global to define a resource of 107Mt with the JORC category, of which 63% correspond to the Measured + Indicated Resource category.

In addition, it considers 21.6 Mt (±25%) of Potential Resources, which are not included in the JORC category, as they require further investigation.

With the ore obtained from the drill holes, samples composed of the massive ore and the silicate type ore have been prepared for metallurgical tests, global and selective flotation tests with the company Wardell Armstrong International. Final results are expected in 2025. A sample of concentrate ore will be sent to METSO for oxidation, roasting and leaching tests.

With the results obtained to date, IGAN has initiated a conceptual mine study.

For the investigation of the concessions, beyond the known deposit boundaries, a RGB optical, Lidar, Thermal and hyperspectral VNIR and SWIR sensor logging flight has been completed to obtain structural, geological, hydrothermal and supergene alteration information. The data, still in progress, will be interpreted with the support of hyperspectral, chemical and mineralogical study of rock samples.

New Explorations

Tharsis Mining continues to expand and diversify its portfolio of mining projects with the submission, in 2023, of 19 new research permit applications for Section C, covering a total area of 99,282 ha across the provinces of Córdoba, Seville, and Jaén.

To date, a total of 70 research permits have been applied for in Section C, encompassing 14,063 mining squares (423,626 ha).

This activity aims to locate, explore, and investigate the subsoil resources of all Section C minerals, including base and precious metals, iron, rare earth elements, and other critical and strategic minerals.

Additionally, Tharsis Mining has submitted applications for four permits targeting the exploration of geothermal resources (Section D) in the provinces of Córdoba, Seville, and Huelva, with the objective of incorporating industrial rock projects into its portfolio.

The investigation is being conducted through desk research by a multidisciplinary team, which has commenced fieldwork on the first permits granted.

Advanced solutions for the exploration, recovery, and valorisation of mineral resources

Tharsis Mining reaffirms its strong commitment to research, development, and technological innovation as strategic pillars for the future of mining. From the Metallurgy and R&D division, to the establishment of its own analytical laboratory and active participation in advanced European projects, the company leads initiatives focused on achieving more efficient, sustainable, and environmentally responsible mining.

Metallurgy and R&D Department

The Metallurgy and R&D division comprises a team of eleven professionals who ensure Tharsis Mining's dedication to technological innovation. Their efforts concentrate on developing advanced tools to design new processes and enhance existing methodologies for the extraction of metals from mineral deposits and mining waste within the Iberian Pyrite Belt.

Analytical and R&D Laboratory

The laboratory, located within Tharsis Mining's facilities, has completed its commissioning phase and is now fully operational. It performs analyses on exploration samples as well as other critical materials required for various R&D&I projects. Samples from the drilling campaign conducted in the waste dumps, concluded in March, have also been processed.

Furthermore, accreditation of the laboratory's analytical methods in accordance with international standards has been pursued:

- ISO 9001:2015
- ISO 14001:2015
- ISO 45001:2018

Collaboration in European R&D&I projects

RAWMINA

This project focuses on validating technologies for the recovery of cobalt, tungsten, germanium, and gallium contained in mineral residues adjacent to historic mining deposits.

RESILEX

The objective is to develop eight technological and business solutions to enhance the sustainability of the critical raw materials value chain through a circular economy model. Economic, social, and environmental impacts will be evaluated via a comprehensive pilot demonstration.

MASTERMINE

This initiative aims to establish a digital ecosystem for the mine of the future. It integrates sustainability, digitalisation, and social acceptance, utilising a digital twin of real mines within an industrial metaverse environment. Tharsis Mining participates with two sites: Tharsis and La Zarza. Tharsis and La Zarza.

METALLICO

The project targets the recovery of strategic battery metals from primary and secondary resources, promoting European autonomy in critical raw materials through sustainable and innovative approaches.

All these projects receive funding under the European Union's Horizon 2020 and Horizon Europe programmes.

TERRAVISION

This project aims to develop an integrated platform leveraging Earth observation (EO) technologies to optimise the entire critical raw materials value chain in sustainable mining.

Core components include the creation of an EO data ecosystem, data standardisation, dynamic risk mapping, and the promotion of supply chain resilience.

Tharsis Mining contributes as a test site for the application of remote sensing techniques and in situ measurements for exploration, waste dump assessment, and geotechnical risk analysis.

MINEYE

The project's goal is to enhance European raw materials autonomy while minimising environmental impact through EO technologies applied throughout the mining lifecycle.

Development of the IPOP platform will enable generation of mining waste prospectivity and characterisation maps.

Tharsis Mining offers operational expertise, supplying data, geological sample analysis, and access to active mines for experimentation.

Request for strategic declaration to the EU to reopen historic mines

Investment and delimitation of areas of interest

Tharsis Mining has requested the European Union to designate the project as strategic to accelerate reopening of mines in the Andévalo region of Huelva, following a €40 million investment. Areas of interest have been identified at the Tharsis, La Zarza, and San Telmo sites, supported by over 200 boreholes drilled.

History and acquisition of rights

Mining activity in this region dates back to 1853 with pyrite extraction. Operations ceased in the 1990s at San Telmo and La Zarza and in the 2000s at Tharsis. In 2018, Tharsis Mining acquired Minera La Hispalense and Nueva Tharsis S.A., targeting exploration of additional metals such as copper, zinc, lead, silver, cobalt, nickel, gold, and silver.

Current estimates and evidence

In 2022, the company completed its first mineral resource estimate at Tharsis with Wardell Armstrong International, followed by an update and Preliminary Economic Assessment (PEA) by CSA Global, and in 2023 a resource estimate at La Zarza by CSA Global. Together with Metso, tests are underway to determine the most cost-effective extraction method.

Expectations and permissions

Last summer, Tharsis Mining applied to the EU for strategic project status to expedite permitting under a new regulation limiting the process to a maximum of 27 months. The company anticipates submitting the operating permit application in 2026 and commencing facility construction in 2028, projecting employment of 1,000 personnel during the initial phase and 500 during operations.

Studies and expansion

Due to the proximity of resources at Tharsis and La Zarza, feasibility of a shared processing plant is under evaluation. Additionally, Tharsis Mining holds exploration permits for Lora del Río and El Castillo de Las Guardas, and has applied for 70 further permits in Section C covering Córdoba, Seville, Huelva, Jaén, and Málaga, plus four geothermal research permits.

Community engagement

> Tharsis Mining maintains a firm commitment to the territory through active participation and support of the socio-economic fabric of the municipalities in which it operates.

The company enhances its expertise by applying R&D to discover new resources that enable a sustainable future.

Key priorities include minimising environmental impact, contributing to remediation of existing environmental liabilities, promoting socio-economic development of local communities, and restoring mining activity integral to the region.

This commitment to responsible mining is evident in every project undertaken, always prioritising sustainability and community well-being.

Through continuous training and adoption of advanced practices, Tharsis Mining strives to lead in fostering a more sustainable and prosperous future for all.

Eco Raíl addressing the challenges of railway innovation in Spain

Rail transport, since its inception in the United Kingdom during the first quarter of the 19th century, has experienced diverse phases in both passenger and freight movement. It has become evident that the substantial private investments underpinning its establishment have struggled to generate sustainable returns over time. The emergence of the automobile in the early 20th century, coupled with its mass production from the 1950s onward, exacerbated the crisis of this transport mode, further compounded by the rise of air transport. Consequently, governments across many countries were compelled to intervene, leading to the nationalisation of railways.

Today, however, rail is witnessing a renewed resurgence as a sustainable transport solution that contributes significantly to decarbonising a sector responsible for over 40% of greenhouse gas emissions and a primary source of pollution in major urban centres. Meanwhile, high-speed rail has attained highly competitive journey times, and commuter networks facilitate the daily movement of large passenger volumes.

In Spain, railway development has been markedly unbalanced. Significant advances have been made in high-speed and passenger transport, whereas freight rail continues to languish with a modal share below 4%.

It is within this context that Eco Raíl, a company of the Magtel group, was established to provide innovative solutions for both freight and passenger transport.

In freight transport, this is pursued through the development of rail motorways, specifically the Algeciras-Zaragoza rail motorway. Eco Raíl leads this initiative via its majority shareholding and its chairmanship of Rail & Truck Strait Union. R&T will operate seven Euro 6000 locomotives and 150 “poche”

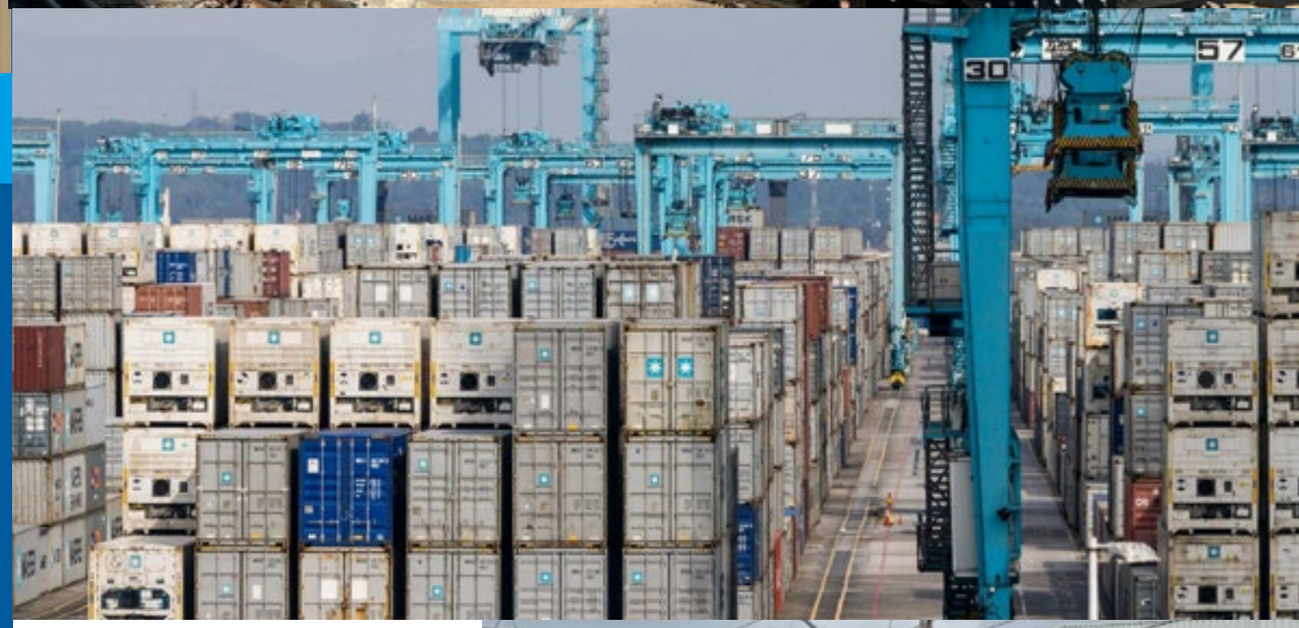
Julio Gómez Pomar
President of Eco Raíl

the terminal at the port of Algeciras to Zaragoza. This project has garnered European recognition, securing significant funding from the NextGenerationEU funds. Alongside the Seville-Madrid motorway, these represent the initial implementations of this innovative rail freight transport model.

Eco Raíl also seeks to establish a presence in the high-speed rail sector, collaborating with other leading transport companies to engage in forthcoming phases of railway liberalisation in Spain, including the Madrid-Galicia, Madrid-Asturias-Cantabria, Madrid-Cádiz, and Madrid-Huelva routes. This would mark the entry of purely private, Spanish-flagged companies into the rail market, bringing substantial technological innovation both operationally and in customer relations.

Finally, within the scope of “public service obligations,” which must be competitively tendered in compliance with EU regulations, Eco Raíl proposes an innovative offering encompassing price and service optimisation: timetable management, passenger handling, fare systems, customer service, and more. As an Andalusian company, Eco Raíl holds a strong commitment to operating within Andalusia while maintaining a national vocation that motivates participation in transport solutions across the entire territory.

In summary, Eco Raíl represents an innovative and dynamic venture, poised to make a significant impact on the evolving rail transport landscape.



ecoraíl

Railway

Our focus lies in passenger and freight transport, guided by principles of sustainability, innovation, and accessibility, underpinned by a fully digital, customer-centric strategy.

We deliver technological solutions tailored to unique projects through the deployment of continuously evolving management processes and tools.

We advocate for a model grounded in this generation system, applied to rail, the most sustainable mode of transport, with the objective of achieving a net-zero emissions balance.

Our project development and management prioritise intermodality as the foundation for efficient and sustainable transport.

Railway motorway

A strategic alliance connecting the Port of Algeciras and Zaragoza Plaza via a railway motorway.

Ecorail, Marcotran, and CMA CGM have united to form Rail & Truck Strait Union, providing an alternative to road freight by integrating ship, truck, and rail transport. This pioneering initiative links the Port of Algeciras and the Zaragoza Plaza Terminal through a rail motorway corridor.

The route represents a key strategic axis connecting the Maghreb region, Spain, and northern Europe. The innovative transfer of goods loaded on semi-trailers from trucks to rail will facilitate increased traffic and foster the development of new business lines.

This commitment to intermodality supports sustainability goals by reducing the number of lorries on roads and significantly lowering CO_2 emissions.

Algeciras-Zaragoza Railway Motorway Project: Advancing Sustainable Mobility

Connectivity and Sustainability

The rail motorway linking Algeciras and Zaragoza, developed by Rail & Truck, marks a significant milestone in Spain's transport infrastructure. This initiative, connecting the port of Algeciras with Zaragoza via a 1,074-kilometre railway corridor, is designed to enhance freight transport efficiency while reducing the logistics sector's carbon footprint.

Context and objectives

The port of Algeciras stands as one of the foremost in Spain and Europe, serving as a crucial hub for international trade. The rail motorway aims to streamline goods transport from this key port to inland destinations and onward into Europe.

Its primary objective is to encourage a modal shift from road to rail, thereby fostering more sustainable and competitive mobility.

Key measures include modernising railway signalling, extending station tracks to 750 metres, and upgrading infrastructure at strategic points to boost route efficiency and competitiveness.

Impact on truck traffic

Ecorail holds a concession at the Port of Algeciras, through which approximately half a million lorries transit annually, with projections rising to 700,000 within three to four years.

Ecorail plans to address this demand by operating three daily trains, each capable of transporting up to 30 semi-trailers. Future expansion plans envisage extending services towards the Basque Country and Catalonia, linking with the international gauge for seamless European traffic integration.

Cooperation Strategy

Rail freight remains underutilised in Spain. The operational strategy for this infrastructure is grounded in cooperation with road transport. The rail motorway offers trucking companies a solution to operational challenges, including driver shortages, while reducing transport-related carbon emissions and mitigating toll costs.

Institutional support and European Funds

The management plan for the Algeciras-Zaragoza railway motorway has garnered widespread institutional support. This project has secured the highest level of European funding among freight decarbonisation initiatives, receiving €45 million for equipment acquisition.

Currently, Ecorail operates three locomotives and 15 wagons on this route, with plans to procure an additional seven locomotives and 135 semi-trailers by 2025, bringing the total fleet to 150.

Future Project

The future success of the Algeciras-Zaragoza rail motorway hinges on overcoming existing challenges through effective public-private collaboration. Expanding rail motorway services to additional routes and adapting tunnel and overpass gauges are essential steps toward establishing a more sustainable and efficient freight network.

With robust support and cooperation across sectors, this project has the potential to substantially enhance connectivity and sustainability within the logistics industry, advancing greener and more efficient mobility.

Passenger Transport

The forthcoming opening of rail corridor competition for passenger traffic in 2024 presents a significant opportunity for our company.

We have planned a network comprising four railway lines, with a projected mobilisation exceeding two million users nationwide by 2026, underpinned by a sustainable and highly digitalised management model.

Our project is centred on people, encompassing all facets of passenger transport: long-distance, regional networks, and metropolitan areas.

As a digital-native operator, we leverage the full potential of emerging technologies to deliver safe, accessible, and connected mobility.

Innovation and Digitalisation Applied to Passenger Transport

Eco Raíl is redefining passenger transport with a clear focus on sustainability, innovation, and accessibility. Through a fully digital, customer-centric strategy, the company seeks to transform mobility across Spain, delivering transport solutions spanning long-distance, regional networks, and metropolitan areas.

Placing people at the centre, Eco Raíl aims to provide an inclusive travel experience seamlessly integrated within sustainable mobility frameworks. As a digital-native operator, it harnesses the full potential of emerging technologies to ensure safe, accessible, and connected mobility.

Since the liberalisation of passenger rail transport in Spain on 14 December 2020, new opportunities have emerged for operators such as Eco Raíl.

Innovation and Technology

Recognised for leveraging advanced technologies to enhance the passenger experience, Eco Raíl has implemented travel management systems that enable efficient and convenient journey planning and management. Furthermore, the digitalisation of its services promotes integration with other transport modes, advancing intermodal and sustainable mobility.

Focus on Sustainability

Sustainability stands as a core pillar of Eco Raíl's strategy. The company is committed to lowering the carbon footprint of passenger transport through the deployment of electric trains and the adoption of green operational practices. This dedication not only supports environmental stewardship but also addresses the increasing demand from consumers for more sustainable transport options.

Eco Raíl is making a tangible impact on passenger transport in Spain through its emphasis on sustainability, innovation, and accessibility. With adequate support and collaborative efforts among stakeholders, this initiative holds the potential to significantly transform mobility nationwide, offering a greener, more efficient alternative for commuters.

R&D&I

The Engine Driving Our Activity

2024 has marked a pivotal milestone for Magtel's R&D division, solidifying an approach with strong international and European outreach.

This period has been defined by intensive work in technical management and project engineering, with particular emphasis on advancing highly disruptive technologies to scale.

A prime example is the SolarsCO2ol project, which has represented a substantial portion of our budget, tackling a significant challenge: replacing traditional steam power blocks with supercritical CO2-based power blocks operating at temperatures up to 600°C and pressures reaching 180 bar.

Throughout the year, crucial progress has been made during the engineering phase, alongside procurement of critical components for the groundbreaking plant Magtel is set to construct in Portugal. Additionally, we have completed detailed engineering for the AD-GRHID renewable hydrogen facility, planned for installation in the province of Córdoba, integrating hydrogen production, storage, and utilisation alongside electricity through a hybrid system.

Further strategic advances have also been achieved across multiple fronts, including the deployment of artificial intelligence, optimisation of irrigation and smart fertilisation in agriculture, development of a sensor for water eutrophication detection, and the design of energy flexibility services for electricity grids.

>^<^<Technology centres and universities

>^<^<Co-financing entities:

Energy

Ad-Ghrid

Advanced technology to increase flexibility and resilience of distribution grid

Magtel is spearheading an innovative project in Villanueva de Córdoba, focused on the development of hybrid AC/DC microgrids incorporating renewable energy sources, solid oxide electrolysis, fuel cells, and recyclable, leak-proof hydrogen storage systems.

This initiative is being carried out in collaboration with Eléctrica Villanueva de Córdoba, H2B2, Protio Power, Carbotainer, Ingelectus, Nasika, and Premo, alongside research groups from PowerUS-AICIA, the University of Córdoba, Loyola University, AIMPLAS, and IREC.

The project is supported by funding from the CDTI, NextGenerationEU Funds, and the Andalusian Technological Corporation (CTA).

SolarSCO2OL

Magtel is leading the EPC work for the project's pilot plant.

In addition to Magtel, others particiupating in the project are: Rina Consulting Spa, Kungliga Tekniska Högskolan, Moroccan Agency for Sustainable Energy SA, Ikerlan S. Coop, Università degli Studi di Genova, Ethniko Kentro Erevnas Kai Technologikis Anaptyxis, Franco Tosi Meccanica Spa, European Solar Thermal Electricity Association, Mas AE Proigmenes Technologies Energeias Kai Ischyos, Lointek Ingeniería y Técnicas de Montajes SL, Nuovo Pignone Srl, Seico Heizungen GmbH, Abengoa Energía SA, Ocmiotg Spa, Universidade de Évora, Deutsches Zentrum für Luft und Raumfahrt e.V., and Build to Zero Energy Sociedad Limitada.

HYELD

Multi-stage steam gasification and synthesis gas purification demonstration plant for the conversion of waste to hydrogen in Tarragona.

The project's kick-off meeting has taken place, with Magtel serving as coordinator alongside Inveniam. Together, they presented the initiative and outlined the work packages in which they are actively engaged. The clients/participants are:

- Technology and research centres (Eurecat Eut Foundation, CSIC, Sintef).
- Technology developers (Magtel, Waste-To-Energy, H2site, Mincatec)
- Industrial Institutions (Cemex, Enagas, La Farga, Arcelormittal, Synhelion)
- Waste managers and suppliers (Veolia Aces, Cetaqua)
- Engineering and strategic consultancy (Aris - teng, Inveniam)

Environment and Infrastructure

› Fic-Fighters

This project demonstrates a circular solution for the regeneration of seven phosphogypsum stockpiles across Europe.

It targets five key economic sectors: batteries, packaging, construction, detergents, and fertilisers. Magtel leads the construction of a mobile pilot plant designed to recover up to 700 tonnes per year of phosphogypsum through sustainable processes.

Tharsis Mining operates and validates the pilot plant, manages the recovered products, and delivers them to end users. The University of Seville oversees the sampling, characterisation, and validation at an intermediate scale, supporting both Magtel and Tharsis Mining in process validation and result analysis.

Project partners include Tharsis Mining & Metallurgy, IDENER Research & Development, University of Seville, Åbo Akademi University, Civil Engineering Institute of Macedonia, Wroclaw University of Science and Technology, University of Novi Sad Faculty of Sciences, Consiglio Nationale della Recherche, Belgium Nuclear Research Center, Prehnit - Croatia, CapturaCO2, S.L., Association pour la Recherche et le Developpement d'Innovations et de Technologies pour la Protection de l'Héritage Environnemental, European Federation of Geologists, Universidad de Huelva, Asistencias Técnicas Clave, S.L.U., Persán - PR, Cementos Cruz, Agencia Estatal Consejo Superior de Investigaciones Científicas, ECTA Group, PRAYON, Fraunhofer IKTS, Association Européenne pour la Démocratie Locale, Chrysteins, Fundación Ciudad de la Energía, Municipality of Barreiro, Federal Agency for Nuclear Control, and the Municipality of Kavadarci - North Macedonia.

› Magboat

Prototype of an unmanned floating vehicle equipped with onboard devices for ecosystem impact analysis and monitoring, as well as preventive and predictive maintenance management of floating solar plants.

This data will support the development of maintenance protocols to ensure the future efficiency and sustainability of these facilities. With this innovation, the aim is to drive more efficient and environmentally friendly floating solar energy solutions.

- Research organisations: Universidad de Córdoba

ICT

› Critical Fog

Innovation in dual-use technologies for critical infrastructures.

A research project focused on distributed computing systems, integrating Edge, Fog and Cloud paradigms to deliver more efficient and secure solutions. Current efforts are centred on the design and deployment of a hybrid Fog/Cloud system targeted at critical infrastructures, ensuring continuous and optimised computing capabilities under all conditions. This initiative supports the development of advanced technologies to enhance efficiency, safety and availability in strategic environments. Led by Magtel in collaboration with the research group: AICIA.

› Omega X

Energy data space developed by a consortium of 30 European companies across 11 countries.

The project focuses on the creation of a shared data and services marketplace, structured around four use case families that will demonstrate the value of a unified data space: renewables, local energy communities, electromobility, and flexibility. In addition to Magtel, others particiupating in the project are:

Atos IT Solutions and Services Iberia S.L.; Atos Worldgrid Sas; Atos Spain SA; Fundacion Tecnalia Research & Innovation; Electricite de France; C4NET Centre For New Energy Technologies SA; EDP Solar España SA; Estabanell y Pahisa Energía SA; Elia Transmission Belgium; 50Hertz Transmission Gmbh; Universitat Politecnica de Catalunya; International Data Spaces Ev; Intracom Single Member SA; Telecom Solutions; Odit-E; Open & Agile Smart Cities; Rina Consulting Spa; Revolt Societa a Responsabilita Limitata; Aarhus Universitet; Imt Transfert; Institut Mines-Telecom; Maieutica Cooperativa de Ensino Superior Crl; Institut Mihajlo Pupin; Sener Ingenieria y Sistemas SA; Estabanell y Pahisa Impulsa; Astea Spa; Universidade Catolica Portuguesa; Groupement Pour L'itinerance des Recharges Electriques de Vehicules; Energy Web Devhub Gmbh; Meteo For Energy SL; Norce Norwegian Research Centre SA and Sovity Gmbh.

Our offices

Andalusia

Asturias

Canary Islands

Extremadura

Madrid

Morocco

Our Territorial Network

Our regional presence reflects a strong commitment to proximity, full coverage, and responsiveness to the specific needs of each community.

We currently operate 19 offices strategically located across Andalusia, Asturias, the Canary Islands, Extremadura, the Community of Madrid, and Morocco.

This network not only enables us to deliver fast and effective support to our users and partners, but also deepens our understanding of local dynamics, allowing us to generate more tailored, agile, and sustainable solutions.

Our territorial structure supports an integrated approach, fostering collaboration across regions and strengthening both our technical and human capabilities on the ground.

magtel.es
info@magtel.es

Putting their trust in us

Magtel

INNOVATION & TECHNOLOGY