

A N N U A L R E P O R T

Magtel

2022
ANNUAL REPORT

Magtel

**Annual Report
Magtel 2022**

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Letter from the President



I herein present you with the Magtel Annual Activity Report for 2022, a year dominated by large-scale uncertainty. The uncertainty opened up by the Russian invasion of Ukraine and the subsequent development of war, which was decisive in triggering the strong inflationary tensions that had already been present since 2021 and have affected a large part of the world, force us to reassess the resilience of economies after the pandemic.

These price tensions, mainly in energy prices, at a time when supplies were beginning to improve and international trade was showing signs of some stabilisation, led to a very complex scenario in which central banks raised interest rates by tightening their monetary policies. In the case of the ECB, 2.5 per cent, after six years of rates at zero.

In this scenario of soaring basic costs, business activity suffered and for several months we heard that the recession would arrive at the end of the year. Fortunately, however, this was not the case. Activity was maintained at this unforeseen level of costs, as was employment, with a commendable effort by the business community.

At Magtel, we responded to this situation in the same way we have always done: by increasing our efforts to match the circumstances and by redefining new objectives that were finally embodied in the 2023-2027 Strategic Plan through our main lines of business: energy, telecommunications, digital transformation and infrastructures.

These objectives are shared with the 800 plus people who form part of Magtel, and to whom I would like to express my gratitude for being an example of our values: Excellence, Commitment, Leadership, Innovation and Confidence.

Thank you very much

MARIO LÓPEZ MAGDALENO
Chairman of Magtel



Magtel is a **technology-based company** that contributes to the application of the most advanced systems in the fields of **infrastructure, energy, telecommunications** and **digital transformation**, contributing to **greater efficiency** in the use of natural resources and improving the **quality of life** for society.

Our History

1990

Our journey begins!

- Establishment in Posadas (Cordoba)
- We are a subcontractor of Abengoa and Telefónica

1991

- Opening of telephone shop
- Commercialisation of the first terminal models

1992

We all work at the Seville Expo 92!

1993

- **Crisis:** Search for new clients and new horizons

1994

- New clients are added: Alcatel, Radiotrónica, Cablinsa

1995

- Large fibre optic project: Enagás
- Roll-out among the municipalities of Dos Hermanas (Seville) and Ciudad Real

1996

- We participate in the analogue to digital switchover of our client Telefónica

1997

- We add another great client: Renfe
- We buy the first fibre optic and reflectometer equipment
- We are ISO 9001 certified

1999

We open new Delegations

- Opening of offices in Cordoba and Seville

2001

- We achieved EFQM certification in Communications and Security
- We carry out large-scale fibre deployment on high-speed rail (AVE) lines:
 - Madrid - Barcelona
 - Zaragoza - Huesca

2002

We are rewarded!

- Business Excellence by the Regional Government of Andalusia
- Recognition by the Association of Telecommunications Engineers

2003

- Addition of radio and mobile telephony to our client portfolio: Retevisión

2004

- We work with all major mobile operators: Movistar, Vodafone, Amena, Orange y Yoigo
- We are technologists for: Siemens, Nokia y Ericsson

2005

- We overhaul Retevisión centres
- We enter the energy sector with Endesa as a new client

1998

- Deployment of 5000 km of fibre optic cable for Renfe
- We add new clients following the liberalisation of telecommunications: Supercable and Uni2

2000

- We participate in implementing industrial estates with two of our major clients: Supercable y Telefónica

- The Water Division is created, developing quality projects, large infrastructures, building and civil works
- We build our first solar photovoltaic power plants

2007

- Establishment of the company Magtel USA Inc to develop photovoltaic projects in Texas (USA)

2009

- New market research in Libya, Colombia and Chile
- Opening of the Morocco office

2011

- Start of FTTH (Fiber To The Home): Fibra óptica hasta el hogar

2013

2006

Our clients are still by our side with more confidence!

- Opening of the polyethylene pipe factory with 14 production lines
- The Renewables Division is born

2008

- Internationalisation: first radio-link installation in Panama for Ericsson
- Commissioning of El Molino y La Castilleja
- Creation of Systems Division

2010

- Start of construction of our first solar thermal power plant

2012

- Unification of the various Magtel companies into a single, much stronger company: Magtel Operaciones
- La Africana solar thermal power plant comes on stream
- Opening of the Peru office

2015

- Opening of the Portugal office

2017

- Supervision and site management of the deployment of Peru's national fibre optic backbone

2019

- Towards full digital transformation
- Promotion of +2400 MW of renewable energy projects

2021

- We are committed to the mass integration and manageability of renewable energies by implementing a system of distributed storage based on reversible hydropower plants (BlueStorage)

2014

- Opening of the Paraguay office

2016

- Promotion of more than 1.700 MW in photovoltaic

2018

- Creation of our Mining Division

2020

- We strengthen our status as essential in the year of companies essential to society

2022

[Read more](#)



The keys to our **good** governance

BOARD OF DIRECTORS

Mario López Magdaleno

Isidro López Magdaleno

Juan Luis López Magdaleno

Antonio Manuel López Magdaleno

José Carlos López Magdaleno

Auxiliadora López Magdaleno

CORPORATE MANAGEMENT & DIVISIONS

Martín Salgado Devincenzi

Managing Director of Magtel

Juan Manuel Vizcaíno García

Director of Energy Division

Fernando Olivencia Polo

Director of Digital Transformation Division

Antonio Torres Espejo
y Pablo Muñoz Márquez

Directors of Telecommunications Division

Pietro Tucci

Director of Infrastructure Division

José Luis Aranda Hidalgo

Director of R&D&I Division

MISSION

What is our purpose?

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

VISION

What is our goal?

To lead projects
that create value for sustainable
and technological developments

VALUES

The principles of our identity

EXCELLENCE

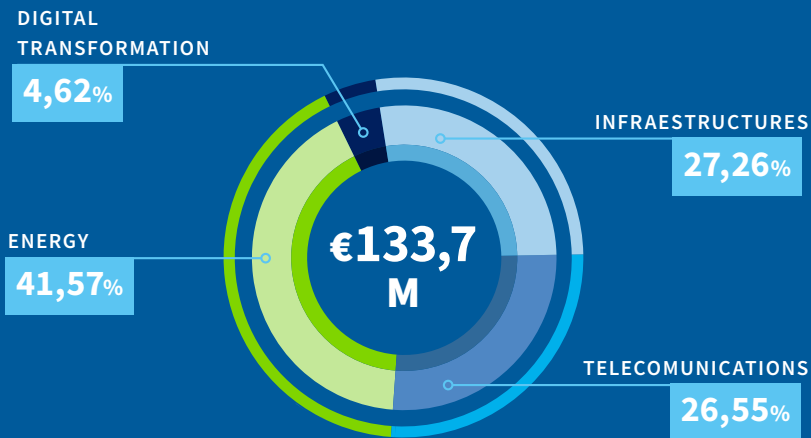
COMMITMENT

LEADERSHIP

INNOVATION

TRUST

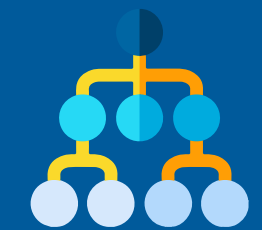
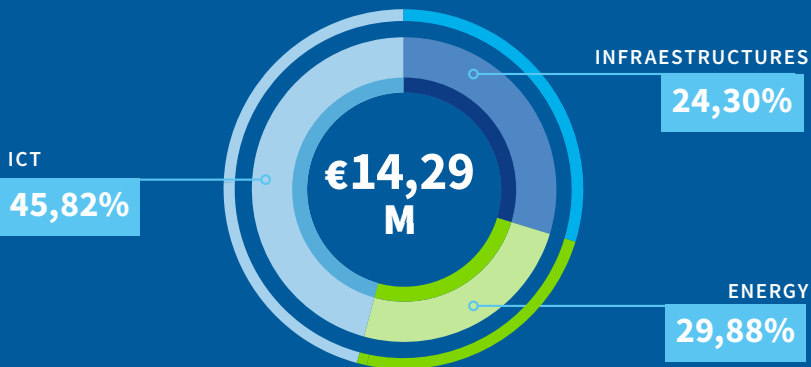
> TURNOVER 2022



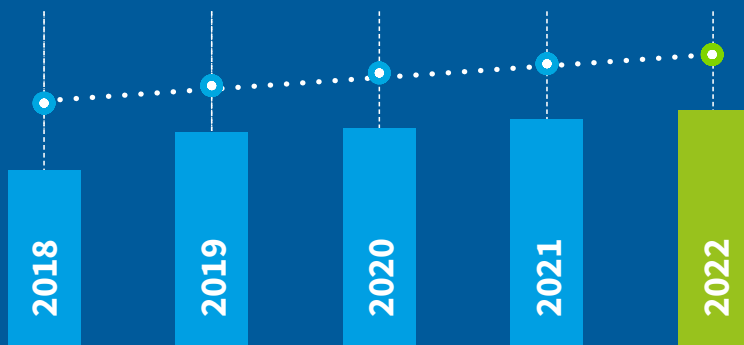
830+
DIRECT
PROFESSIONALS

> R&D&I INVESTMENTS

SINCE 2008



1.300+
INDIRECT
PROFESSIONALS



€12,6M €15,4M €15,7M €18,3M €19,2M Evolution EBITDA

€91,8M €102,9M €116,3M €124,8M €133,7M Evolution Turnover

Areas of action:



> Energy

- > EPC
- > FACILITIES AND SERVICES
- > ENGINEERING
- > ENERGY EFFICIENCY



> Telecommunications

- > FIXED AND MOBILE NETWORK
- > CUSTOMER I&M
- > RAILWAY INSTALLATIONS
- > SPECIAL PROJECTS



> Digital Transformation

- > ICT INFRASTRUCTURES
- > SMART SERVICES
- > PROCESS OUTSOURCING



> Infrastructures

- > HYDRAULIC INFRASTRUCTURES
- > CIVIL WORKS
- > CONSTRUCTION

Corporate culture



Magtel Corporate Services promotes and strengthens the management and development of all company employees to foster commitment, good performance, commitment to excellence and the achievement of desired objectives

> A code of ethics inherent to our activity

In Magtel we develop our activity from the respect for legality, ethics, rigour, integrity and honesty; values included in our Code of Ethics and present in each and every one of the actions we do in Magtel, as well as in our relations with third parties.

> Sustainability

We pursue excellence in respect and care for the environment through the professional quality of our teams when executing projects, with the aim of continuous improvement in this field.

We promote sustainable development in the environs where the company is present, and we encourage the implementation of environmental actions by the impact of our company's know-how in benefit of the environment.

> Quality and Environment on site

The coordination of waste management for all projects has been promoted and the training of staff in waste management divisions has been supervised.



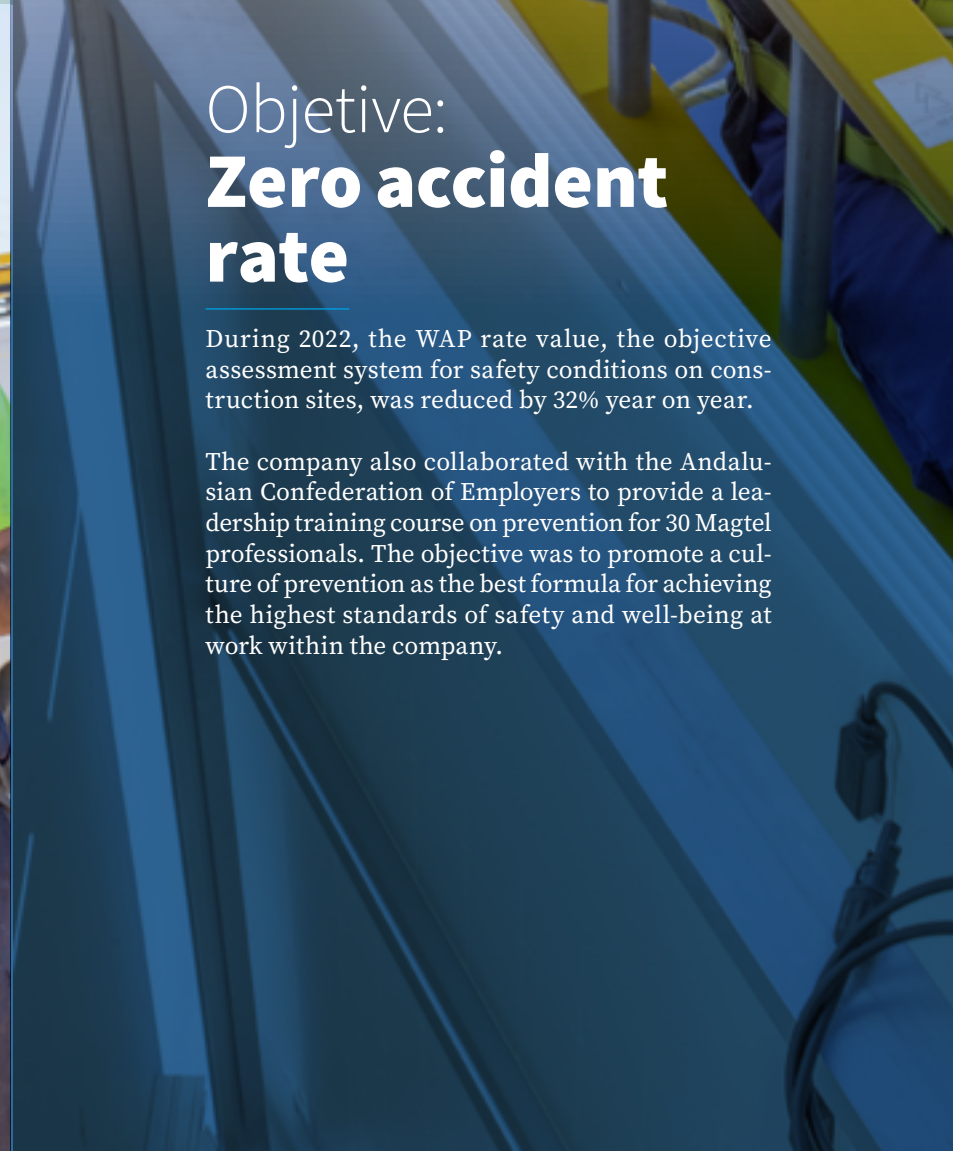
> Management systems, synonymous with quality

All of us at Magtel are convinced that process improvement is key to achieving unbeatable effectiveness

We have the following management systems in place:

- > Quality Management System (ISO 9001)
- > Environmental Management System (ISO 14001)
- > Occupational Health and Safety Management System (ISO 45001)
- > R&D&I Management System (UNE 166002)
- > Information Security Management System (ISO 27001)
- > Halal certified by the Halal Institute (renewed in 2022)
- > Energy Management System (ISO 50001)
- > NATO Quality Assurance Requirements for Design, Development and Production (PECAL/AQAP-2110)
- > Accreditation as an approved supplier for the construction of the low level waste and intermediate level waste cell closure slab with quality level II, awarded by the National Radioactive Waste Company





Magtel renews its commitment to equal opportunities with the 3rd Equality Plan 2022-2026

This document reflects the company's commitment to equal opportunities between women and men as a strategic principle of the Corporate and Human Resources Policy.

Its application is extended to the company's 18 offices in Spain and abroad, thus reaching the entire workforce, in addition to all future positions that will progressively be added at Magtel.

The 3rd Equality Plan addresses any type of discrimination, direct or indirect, based on gender, sexual orientation and/or work-life balance. It also ensures equity and promotes the presence of women in the traditionally male sectors in which the company operates.

Objetivo: Zero accident rate

During 2022, the WAP rate value, the objective assessment system for safety conditions on construction sites, was reduced by 32% year on year.

The company also collaborated with the Andalusian Confederation of Employers to provide a leadership training course on prevention for 30 Magtel professionals. The objective was to promote a culture of prevention as the best formula for achieving the highest standards of safety and well-being at work within the company.



72
AWARENESS RAISING ACTIONS



800+
PROFESSIONALS TRAINED IN
HEALTH AND SAFETY AT WORK



11,494 h
CERTIFIED TRAINING ON
HEALTH & SAFETY AT WORK



2048
TRAINING ACTIVITIES ON
HEALTH & SAFETY AT WORK

Corporate social responsibility: Fundación Magtel

> The entity celebrated its 10th anniversary in 2022

During this time, the institution served more than 39,300 people; 900 plus professionals were trained in the telecommunications sector; and more than 240 scholarships were awarded. In addition, during these years, more than 158,000 euros were allocated to social actions; more than 420 people were trained in the renewables sector, and more than 60% job placement via our Programme for Initiation into the Entrepreneurial Sphere (PIAE).

The Fundación Magtel is a non-profit organisation created in 2012 to create, support and promote initiatives that contribute to building a better and more egalitarian society both in Spain and internationally.

Its aim is to be a benchmark in improving the quality of life of people and their environment, through values such as excellence, innovation, transformation, cooperation and sustainability.



Areas of action:

> Social Action

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

> Employability

Contributes to creating job opportunities among vulnerable groups or those at risk of social exclusion through training programmes and internships.

> Social Innovation

Promotes and collaborates 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.

> International Cooperation

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





> Innovation moves the world



ISIDRO LÓPEZ MAGDALENO

Vice-president of Magtel



Innovation moves the world. It has always done so, since the beginning of mankind, but it has been referred to by other names depending on each era.

In recent decades – now with its name – innovation has been part of a sum, as the third element of: R&D&I, Research plus Development plus Innovation. And in recent years, it has taken on a life of its own, as I believe was inevitable, in the business and social world as a synonym for progress and transformation, a transformation that turns ideas into value and wealth.

In my opinion, that is a good definition of what innovation is today, why it has earned the right to a capital letter in the trio, and because it responds to what the true entrepreneurial spirit is, turning an idea, or an entrepreneurial business initiative, into value and collective wealth.

With this purpose in mind, Magtel commenced its work over 30 years ago: to create value from entrepreneurial initiative, and we did so in the telecommunications sector, the tech spearhead of the early nineties.

Today, as yesterday, and probably tomorrow, technology, applied to any field of human activity, is the major paradigm for innovation. Indeed, much technological progress, especially in the wake of the expansion of the digital universe, is pure innovation.

Telecommunications is one of Magtel's four main divisions, together with Energy, Infrastructure and Digital Transformation, and its main areas of activity are the design, construction, operation and maintenance of ICT networks and infrastructures, as well as the provision of smart services and process outsourcing.

The division, consolidated in both engineering activities and the deployment of fibre to the home (FTTH) networks, as well as in I&M services, is also involved in the adaptation of infrastructures for modern 5G mobile communications networks.

In our Digital Transformation Division we work to improve the competitiveness of our clients, transforming their key business processes and managing their ancillary processes, which ensures we can build a more interconnected and sustainable world, the *raison d'être* of our company.

Naturally, all this is part of a strategic journey where the true stars are people, because the capacity for innovation in any field, and especially in any technological application, is what characterises human beings.

Cordoba has enormous innovative potential, within the framework of an Andalusia that has a multitude of examples of innovative ideas turned into consolidated companies with a great future. Companies that keep pace with the tools and processes provided by technological innovation.

There is no doubt that we still need a lot of business muscle, but I am certain that we are on the right track. Despite the circumstances. After all, overcoming adversity has always been, and always will be, innovation.



MARTÍN SALGADO DEVINCENZI
Managing Director of Magtel

An recent months we have been witnessing a very important debate on the speed needed to meet the targets set by the European Commission and the continent's governments for the energy transition. A debate that is, in reality, global, but which has accelerated following the geopolitical instability that has opened up in the wake of Russia's invasion of Ukraine.

The new circumstances posed by the conflict, which in energy matters involve minimising Europe's dependence on Russian oil and gas, have raised doubts about the effective capacity to implement the main milestones of the energy transition in a timely manner. Doubts, in particular, about maintaining the use of fossil fuels for longer than the Russian replacement cost, and increasing public investment to secure supplies and storage.

However, a large part of the institutional, business and social positions are calling for an accelerated commitment to clean energy, from the countries most affected by the conflict, Germany for example, to those of us who are making good progress in producing electricity from renewable sources, such as Spain. In fact, data from the national operator, Red Eléctrica, show that this generation is increasing and even approaching one hundred percent, as was the case at the beginning of April, albeit for a short period of time and on a one-off basis.

> Accelerating the energy transition

At Magtel we are convinced that this is the only way to achieve the energy transition that will lead us to a more sustainable world with enormous and undreamed-of possibilities for growth and development. Now is not the time to go backwards, but to once again dive the post-pandemic public policy goals of an ambitious green agenda and a profound technological transformation.

For this reason, our Strategic Plan pivots on these axes, working along well-defined lines for environmental sustainability and digitalisation. Lines that provide infrastructures with the most advanced and efficient technological systems for the use of natural resources and that pursue excellence in respect and care for the environment through the professional quality of our teams when executing projects.

Currently, in many of the projects we are implementing in Andalusia, we are providing tech solutions, both in terms of energy efficiency and TD, for regional industry and infrastructures. Projects jointly with relevant Andalusian companies as well as for the different administrations, which allow us to deploy our best resources and apply the constant innovation that characterises our business actions.

Finally, with regard to environmental sustainability, I would like to highlight two commitments. The implementation of ESG criteria as a benchmark for corporate identity, and our commitment to the SDGs in order to create a positive impact on society when carrying out our activities. Commitments that stem from our values and show our determination for sustainability at all levels. At Magtel we do it every day, because it is in our DNA.



> Aim: to strengthen sustainability





ENERGY DIVISION

Active agents of the
energy transition



Solving the energy constraints of society and industry. Our future lies in becoming a national benchmark for integrated energy solutions in any scenario

So far, conceptual, basic and detailed project engineering activities have been carried out.

Land-based photovoltaic, solar thermoelectric, desalination, reversible pumping and floating photovoltaic projects.

In the field of EPC, solar photovoltaic and medium-temperature solar thermal plants, while in energy efficiency, industrial PV self-consumption and street lighting initiatives have come to fruition.

In terms of installations and services, small self-consumption projects, LV, MV and HV installations, photovoltaic O&M and MV have been carried out.

> Engineering

- » Basic and detailed conceptual engineering
- » Technical management, consultancy and technical advice

> EPC

- » Photovoltaic (terrestrial/floating)
- » Solar thermal
- » Reversible hydro
- » Offshore/onshore wind
- » Desalination
- » Green hydrogen
- » Biomass
- » Biogas
- » Energy transformation, transport and distribution infrastructures
- » Tech hybridisation

> Systems and services

- » HV, MV and LV installations
- » Lines and substations
- » Singular infrastructures
- » Operation, monitoring and control
- » Predictive, preventive and corrective maintenance:
 - ▶ Networks
 - ▶ Industry
 - ▶ Generation infrastructures

> Energy efficiency

- » Industrial photovoltaic and thermal self-consumption
- » LED street lighting
- » Air conditioning
- » Thermal envelope
- » Smart energy management
- » Shared self-consumption and energy communities
- » Infrastructures for sustainable mobility



Our experience

We have over 15 years of experience in the renewable energy sector




> Project Engineering

We carry out all phases of the project in a comprehensive manner: From advice, consultancy and feasibility analyses, to the management and supervision of works and the implementation of technical development plans.




> Inspection and self-monitoring

Our Magtel Joint Prevention Service (SPM) performs intense inspection and self-monitoring activities of the projects developed. We have a specific security review system following the IPAL (Occupational Accident Prevention Indicator) method.




> Management and planning


We have a specific area exclusively dedicated to the supply of the materials and equipment required for the correct development of the project. This ensures that we are competitive and offer better prices and quality, as well as to optimise planning periods.



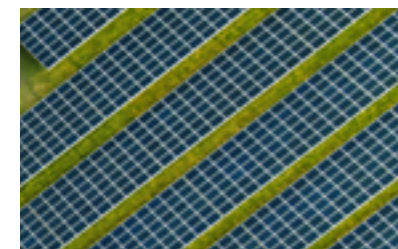
PROJECT DEVELOPMENT AND ENGINEERING




+800 MW
Floating photovoltaics



+4.000 MW
Reversible pumping



+2.350 MW
Terrestrial photovoltaics




+400 MW
Offshore wind



200+ hm³
Renewable desalination



DETAIL ENGINEERING & CONSTRUCTION




40+
Projects



+450 MW
Potencia instalada



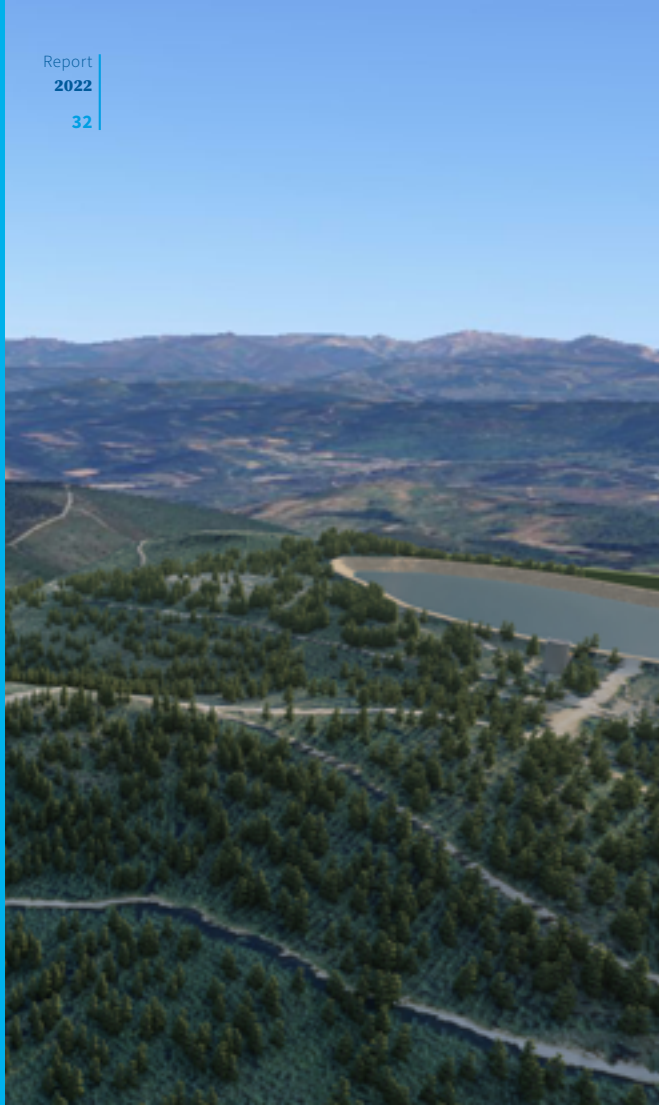
OPERATIONS & MAINTENANCE



25
Projects



+300 MW
Managed



Reversible Hydraulic Power Plants

Development of 28 projects with a total capacity of more than 4 GW

Reversible 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 reversible pumping stations. During 2022, an important milestone was reached with the award of the hydroelectric concession by Augas de Galicia for reversible pumping in As Pontes (250 MW).



Renewable desalination

Infrastructures for the generation of resources to correct the water deficit in Andalusia

Since 2020, we have been conducting the processing, coordination of collaborators and engineering tasks and fieldwork necessary to develop four seawater desalination plants in Andalusia, with a total capacity of 200 hm³ per year.

In this context, the basic project was delivered for the seawater desalination plant in the municipality of Velez-Malaga (Malaga) with a production capacity of 40 hm³ and future expansion to 60 hm³. The project is currently in the competition phase.

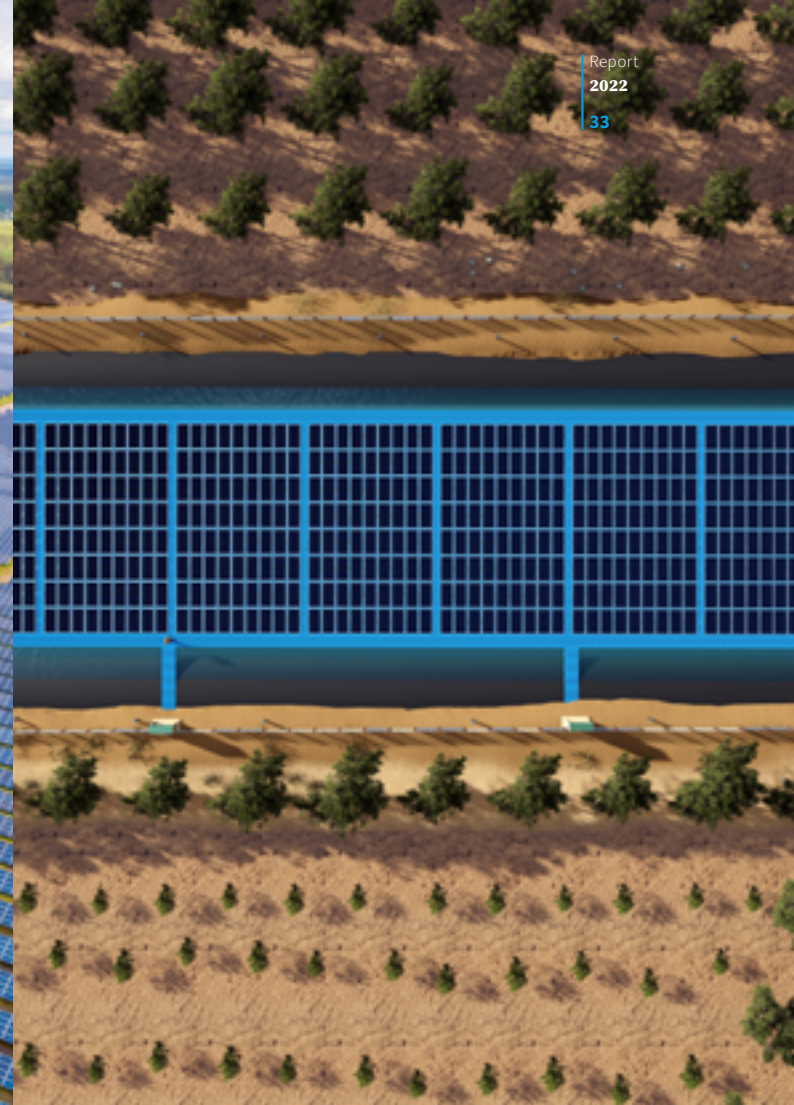
Seawater desalination will generate the additional water resources necessary to correct the water deficit situation in Andalusia, recover the good state of its bodies of water and guarantee long-term ecosystems.



Terrestrial photovoltaics

Detailed engineering for renewable energy projects

In 2022, a team of 30 plus professionals with specific profiles in civil works, hydraulics, electricity, industry, environment and instrumentation and control, undertook the engineering of lines, substations and the construction of terrestrial photovoltaic plants for renewable energies, accumulating 2,350 MW in the projects developed.



Floating photovoltaics

Engineering for the development of 18 projects to integrate 1.1 GW into the system

These projects are part of the energy transition towards a decarbonised model, in line with the National Integrated Energy and Climate Plan (PNIEC), contributing to the objectives of reducing greenhouse gas emissions, increasing the share of renewable energies and improving energy efficiency.

One more step forward in renewable energies through storage

The aim is to couple their generation with consumption

Our Renewables Division had promoted and developed 1,400 MW of photovoltaic installations by 2022

Of these, 558 MW of grid-scale photovoltaic projects successfully advanced to a ready-to-build status, obtaining Environmental Impact Statements for the rest in order to continue with the development and processing of the mandatory administrative authorisations, with a forecast investment of more than 800 million euros.

Currently, 330 MW of solar thermal power plant projects are under development with thermal storage. This new generation of solar thermal plants are designed as hybrids with photovoltaic plants to take advantage of the synergies of both technologies, thus achieving better production costs with the capacity to store and produce during the night that solar thermal offers and to compete in new emerging markets.

> El Carrascal project

Meriting mention is El Carrascal project, in the municipality of Hornachuelos, with 110 MW of electrical power and 6 hours of storage, which will provide electricity from renewable sources even when there is no solar resource. This project will create some 500 jobs during the construction phase and then another 50 stable jobs during the lifetime of the facility for its operation and maintenance.

The penetration of renewable energy sources is accompanied by the inherent intermittency of this type of resource, and there is therefore a decoupling between the time of its generation and its consumption. The storage and subsequent dispatch of energy when it is really needed is the solution that will allow the definitive accommodation of renewable energies in our lives.

> Sun2Store project

The Sun2Store project promotes the storage of electrical energy by means of heat pumps in molten salt tanks, and the subsequent delivery of this energy to the grid for more than 10 hours at an output of 100 MWe.

This grid-scale installation will be able to provide renewable energy during periods when there is no solar or wind resource available, thus contributing to the coupling between production and demand and consequently leading to a greater penetration of renewable energy sources in the generation mix.

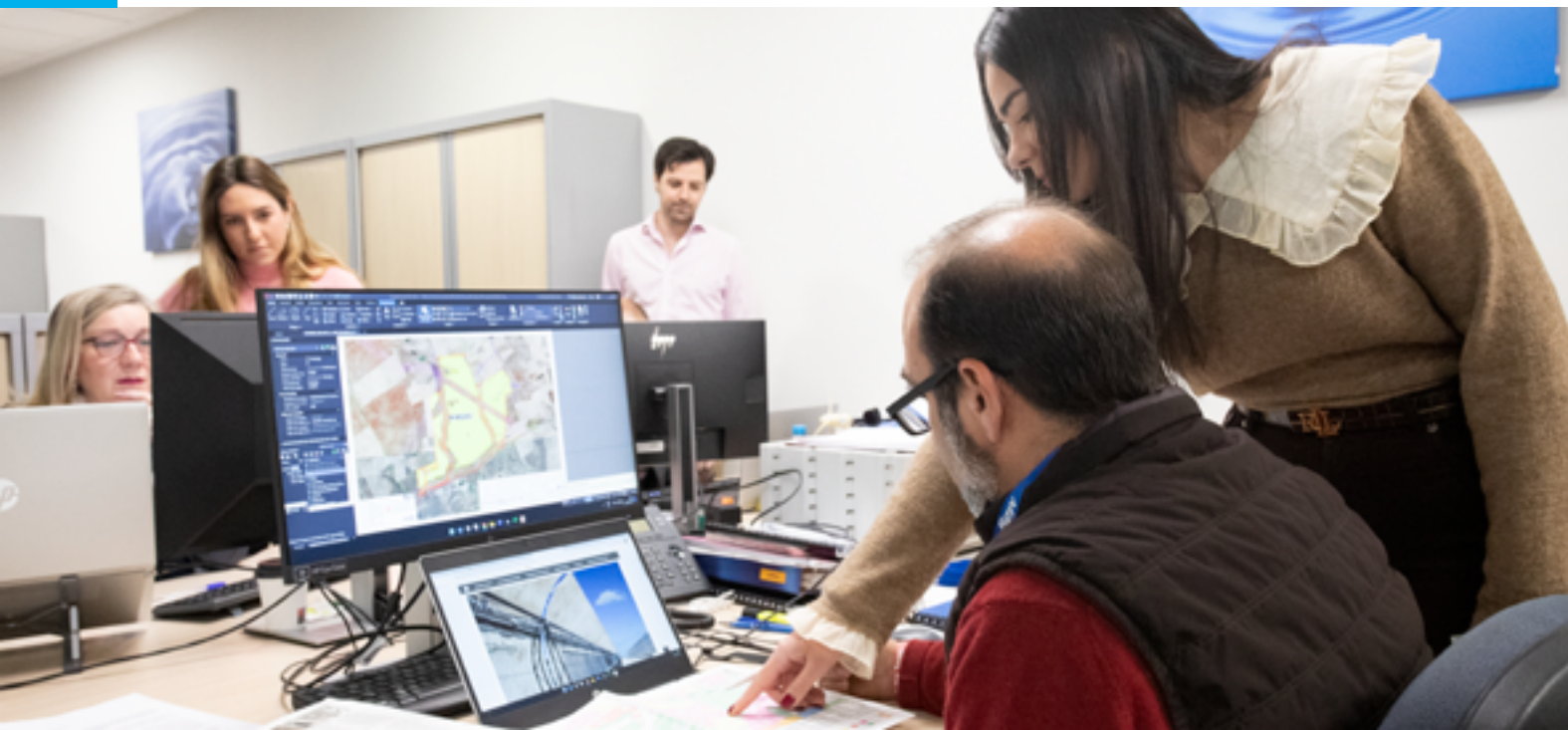
> Construction of a photovoltaic park at Covap facilities for its new circular economy model

Magtel has contributed to the new circular economy model that Covap will start operating in 2024, building a photovoltaic park on the premises of the Valle de los Pedroches Livestock Cooperative. The objective is to cover 80% of its energy needs from renewable sources from that year onwards.

This project is an example of the contribution of advanced tech solutions in energy and environmental sustainability for industry, applying the innovation that characterises Magtel.

In addition to the 6 MW photovoltaic plant with an output of 11,000 Mw/year, a 7 MW biogas plant to be developed by Genia Bioenergy, which will supply 40,000 MW/year, and the biomass plant of 13.4 MW with thermal storage. This new generation of solar thermal plants are deployed by Veolia that will generate 80,000 MW/year.

This commitment to sustainability has led Covap to invest 25 million euros in an extensive renewable energy programme with which it intends to establish a 360° management system in which, using solar energy, waste and by-products from the members' livestock farms and manufacturing processes and organic material of forestry origin, it will generate the electricity and steam needed by its five industrial plants.



> Larral and La Peñaza 3 solar photovoltaic plants

Construction of photovoltaic park located in Zaragoza for the company Opdenenergy.

The project includes the construction of two photovoltaic plants, Larral and La Peñaza 3, with an access capacity of 54.99 MWp and 15.73 MWp, respectively, as well as a 30/132 kV medium and high voltage electrical substation, which will transform the energy evacuated by the two plants. An overhead high voltage line will also be constructed.

The aim of the project is to supply approximately 35,000 households with clean energy, thereby contributing to the decarbonisation process towards which society is moving. These figures are equivalent to the planting of 140,000 trees.

The project will involve these actions:

> Earthworks:

- » Execution of ditches and drains

> Structures:

- » Driving of profiles
- » Installation of the structure
- » Assembly of panels

> Electrical installation:

- » Installation of concentrator boxes
- » Cable laying and wiring
- » Control and monitoring system installations (weather stations, CCTV, SCADA)
- » Electricity substation
- » Evacuation line

> Elvisa solar photovoltaic plant

58 MW photovoltaic plant project for the generation and connection of renewable energy to Red Eléctrica de España (REE) through the Don Rodrigo 400 kV electrical substation.

The initiative is being entirely developed by Magtel, taking on the full scope of EPC (Engineering, Procurement and Construction). Thus, the company is responsible for the engineering, equipment procurement, site management, legalisation and commissioning of the project. Its activity is expected to reduce CO2 emissions by 12,000 tonnes.

The project is being developed in Alcalá de Guadaíra (Seville) for Solarpack Ingeniería SL.

> Cartago II – Marchamorón

► Substation and high voltage line

Execution of the Marchamorón substation, which includes two 225MVA 220/30kV power transformers and a high voltage line for interconnection.

The project also includes the construction of the building and installation of the transformers and other HV/MV electrical equipment, as well as the erection of supports and cable laying.

The project is being developed in Alcalá de Guadaíra (Seville) for Solarpack Ingeniería SL.



> Project for the evacuation of the Mercuria power infrastructure

Magtel executes for the company Mercuria Sostenible the complete EPC project of two electrical substations and two overhead high voltage lines of 220 and 400 KV.

The Campos substation has two 220kV-100MVA power transformers, and the Matallana substation has a 400kV-450 MVA power transformer.

The corresponding evacuation lines are also being built, as well as a metering enclosure at the Don Rodrigo substation.

This project, located in the municipalities of Carmona, Alcalá de Guadaira, El Viso del Alcor and Mairena del Alcor (Seville), will enable the evacuation of several photovoltaic solar plants to be built in the future to the transmission grid of Red Eléctrica de España (REE).



> HV, MV and LV installations

► Supervision and installation of MV by Imasa Ingeniería

The inspection and review was done for the MV installations executed by Imasa in photovoltaic plants under construction in Toro (Zamora).

► Reform of the electrical installation of schools

Adaptation of electrical wiring in twelve public schools in Cordoba for the Cordoba City Council.

Work began in May 2022 and is scheduled for completion in the first half of 2023.

The aim is to increase the power of the schools to be able to supply the new air-conditioning machines as well as the usual facilities at a school.

► LV installations in the Guadalmedina station of the Malaga Metro

Low-voltage installation including protection panels, distribution conductors and lighting.

This project, developed for the joint venture formed by the companies Sando and Acciona, is being carried out on the Malaga Metro infrastructures.



> Lines and substations

► Splitting line in Puente Genil (Cordoba)

Execution of the connection for a new concrete part manufacturing line and its general protection panels for the client Pavimentos del Genil SA.

> Unique facilities

► LV and HV maintenance for the JV Presas Jaén 2022

Preventive maintenance of transformer substations and checking of LV earthing installations.



> Predictive, preventive and corrective maintenance

► Maintenance for Gestión Integral de Aguas de Huelva (Giahsa)

Maintenance of some 460 MV/LV electrical installations and 24-hour breakdown service in the province of Huelva.

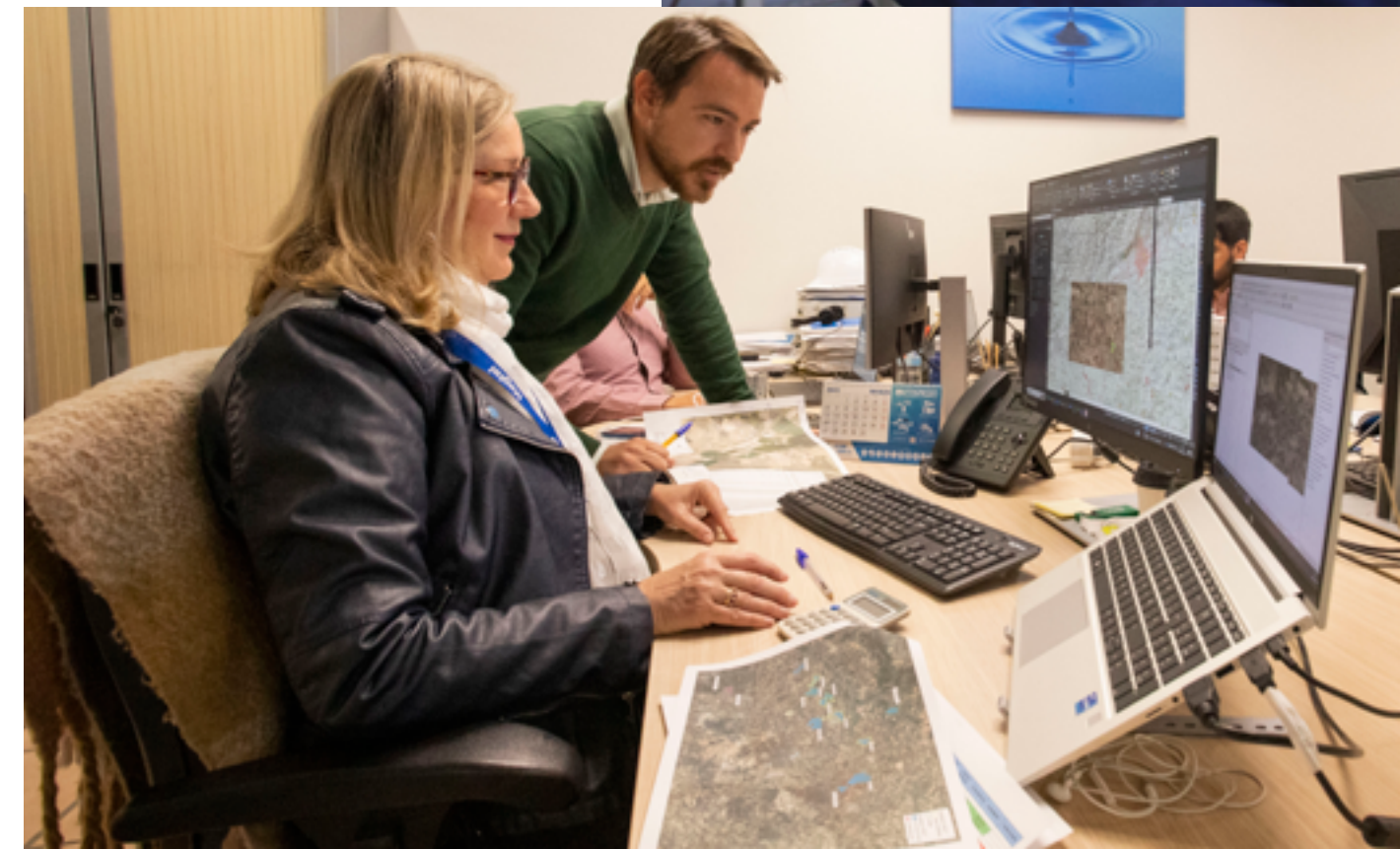
The work includes the repair of the electrical component of the infrastructures, as well as the maintenance of the electrical equipment and the execution of the necessary civil works.

► Cellnex site maintenance

Preventive maintenance of transformer substations and MV lines of approximately 163 electrical installations owned by Cellnex throughout Andalusia. 44 authorised inspections for MV, corrective and 24h breakdown services were done.

► Emacsa electrical workshop

Inspection, repair and execution of electrical installations integrated in drinking water and wastewater treatment facilities.



> Operation and maintenance of photovoltaic plants

We guarantee the operation of photovoltaic infrastructures through comprehensive operation and maintenance services

We carry out the following tasks:

- > Predictive maintenance
- > Corrective maintenance
- > Monthly profitability reports
- > Photo reports
- > Thermography of electrical panels
- > Thermography of modules and inverters
- > IV Curve analysis
- > Plant control
- > Monitoring from the control centre
- > Face-to-face security or from CMS

Our current clients include MTB Ren, La Castilleja Energía, Sol de Moguer, Sando, Comunidad de Regantes Virgen del Rocío, Covap, EDP, etc.

> Industrial thermal and photovoltaic self-consumption

► Photovoltaic installation for self-consumption of 252 kWp in Plasencia for Sovena

Project carried out for EDP at the Sovena Group factory in Plasencia (Cáceres), which includes the installation of the fixed life line and roof access staircase.

► Photovoltaic self-consumption installation for Factor Energia

Installation of photovoltaic self-consumption in Andalusia and Ciudad Real. Specifically, a car park in Chiclana was equipped with of 3 charging stations and several of the Colegios Mayores group of photovoltaic installations with about 80 kWp in total.

► Self-consumption photovoltaic installations and preventive maintenance for EDP

Photovoltaic installations for self-consumption and preventive and/or corrective maintenance were executed for EDP at various sites. Specifically, self-consumption (780 kWp) was implemented in Andalusia and Extremadura, and maintenance (around 80 interventions) in Andalusia, Castilla la Mancha and Madrid.



> LED street lighting

► Upgrading of outdoor lighting and lighting of sports facilities by changing LED technology in Villa del Río (Cordoba)

Replacement of existing light fixtures in the town centre, as well as the floodlights of the sports facilities in the town centre, with similar fixtures but with LED technology, which represent a saving of up to 70% compared to the consumption of the current light fixtures.

► New public lighting in Posadas with the aim of reducing electricity consumption and the emission of polluting gases

The actions belong to the programme of subsidies for the singular projects of local entities that favour the transition to a low-carbon economy in the framework of the ERDF operational programme for sustainable growth.

Replacement of existing sodium vapour, mercury vapour and metal halide light fixtures with new energy-saving LED technology fixtures with improved performance. New ornamental columns with LED fixtures were also installed in the Plaza de los Reverend Padres Salesianos.

This project has made it possible to reduce final energy consumption by 30%. As a result of this reduction, greenhouse gas emissions will be reduced by 333.09 t CO₂eq/year.



> HVAC and thermal envelope

► Energy modernisation of the thermal envelope and overhaul of installations for the thermal use of biomass

Work carried out for various projects undertaken in preschool and primary schools located in the province of Cordoba: Torrecampo, Villaralto, Algallarín and San Sebastián de los Ballesteros.

The latest technologies were applied to systems for refurbishment and improvement of the building envelopes and the adaptation of installations to optimise energy performance to the maximum.

Specifically, we did the following actions:

- > Renovation of the thermal envelope
- > Replacement of diesel boiler with a biomass boiler
- > Replacement of carpentry for others with better thermal resistance
- > Replacement of outdoor carpentry with thermal break and double glazing
- > Energy upgrading of roof and façade
- > Replacement of electric underfloor heating with biomass boiler and installation of pipes and radiators
- > Construction of boiler house and pellet storage silo

Likewise, in this area, the replacement of the roof and thermal improvement of the tile roof, as well as the enclosure and replacement of exterior joinery of the multi-purpose building in Villaharta, also in the province of Cordoba, were also implemented.

All these interventions, within the framework of the Energy Efficiency Section of the Energy Division, have achieved:

- > Reduction of energy consumption and greenhouse gases
- > Improved efficiency and energy savings compared to the baseline scenario
- > Adaptation of the installations to current legislation



> Shared self-consumption and energy communities

► Installation of self-consumption photovoltaic plants for the Virgen del Rocío Irrigation Community in Villamanrique de la Condesa (Seville)

Execution of the construction works for five 100 kW photovoltaic plants for self-consumption of electricity from five boreholes of the Virgen del Rocío Irrigation Community in Villamanrique de la Condesa (Seville).

In particular, the most important aspect of the project is the construction of three floors with a raised structure for the use of roads, due to the expansion of the estate, and for full use of the area.

► Modernisation of the irrigation installations of the Irrigation Community of the Nacimiento de Coín Llanos a Juntillas (Malaga)

This project involved the installation of pipes and the transformer station, the execution of the water pumping system and the remote management of the irrigation system.

Magtel's Infrastructure Division was responsible for the installation and supply of pipes for the irrigation network, some 180km long in the municipality of Coín; the pumping of water from the existing underground catchment; the remote management of the irrigation system; and the installation of the transformer substation. The project will supply nearly 2500 plots with meters and outlets.

The main objective of the modernisation is to replace a gravity irrigation system with a localised irrigation system. This change will achieve an overall irrigation system efficiency of 86% and an effective water saving of 40.7%.

Regarding the water catchment in the Nacimiento River Gap, the parties have agreed to replace the pumping units with more efficient ones.

A flow meter will also be installed at the outlet of the pumping station. Finally, an electrical installation will be built that includes a 400 kVA transformer station, a low-voltage connection, a protection and control panel, and the low-voltage lines to each of the receivers .



► Photovoltaic plant installations in the province of Huelva for the El Fresno Montemayor Irrigation Community in Moguer, Lucena del Puerto and Valdemaría to optimise their activity

The first action consisted of the installation of a 408 kWp photovoltaic plant in Moguer that will serve two 160 kW solar inverters. These elements will allow the hydraulic pumps used for the crops to be used directly by the solar panels.

In this way, the irrigation community will be able to use solar energy as much as possible for the correct supply of its plantations.

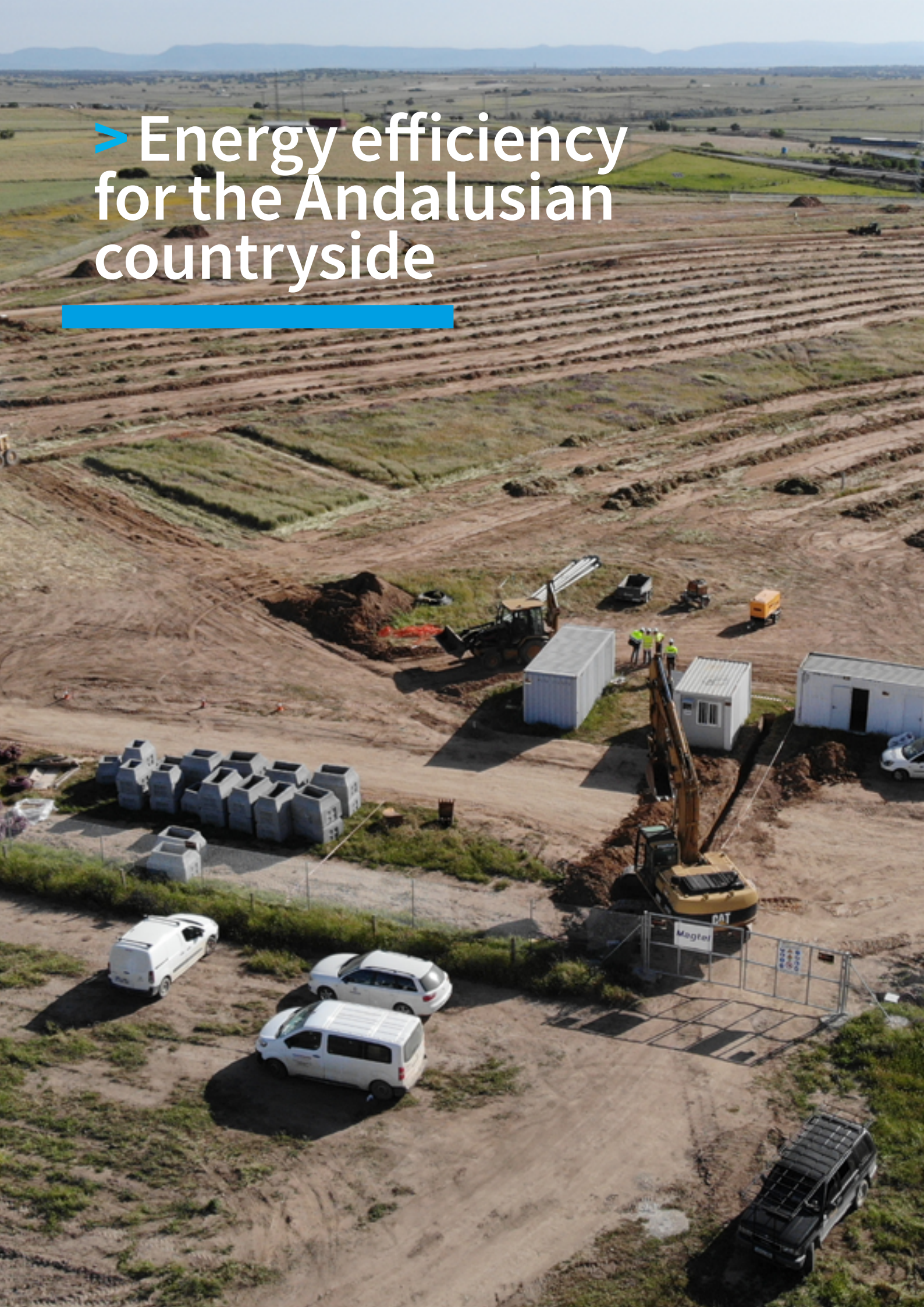
Specifically, it is a photovoltaic solar power plant of 2109 KWp for self-consumption using HV. The installation is shaped as a structure driven into consolidated ground, a structure driven into the slope of a basin, and another part on a roof.

The Energy Division also executed another installation, in this case with a capacity of 700 kW in Lucena del Puerto, also in the province of Huelva. In this case, it consists of a 522 kWp solar photovoltaic plant, of which 60 kWp are roof-mounted and the rest ground-mounted.

Magtel also executed the Valdemaría photovoltaic installation, also deployed in the Huelva municipality of Moguer, which will supply 550 hectares of crops. The plant, with a surface area of 1955 m², has an output of 409 kWp, serving two 160 kW solar inverters. It will save 90 TOE/year of CO₂ (tonnes of oil not used) and 22 t/year of final electrical energy.

This type of project makes it possible to reduce energy dependence, as the pumping for which the photovoltaic installation is allocated consumes less energy from the grid. They will guarantee the storage and supply of a larger quantity of water, saving costs and allowing daytime pumping.





> Energy efficiency for the Andalusian countryside



JUAN MANUEL VIZCAÍNO GARCÍA

Director of the Energy Division



At Magtel, we are firmly committed to applying our energy efficiency solutions to the agri-food sector, and to the agriculture in general, solutions that we have been developing for various production sectors since 2006.

Among the projects we have executed is one for the Fresno Irrigation Community in Huelva, which supplies water to the El Diamante reservoir, watering more than 550 hectares of crops through a 409 kW photovoltaic plant that feeds the Valdemaría pumping station. A project that, by incorporating two hybrid frequency inverters, allows pumping to be carried out during the day using exclusively solar energy.

The results have been excellent because, in fact, the Irrigation Community has noted an economic saving of 95 per cent since its implementation.

At our company we always use suppliers of the highest quality on our projects. In this installation, for example, the 765 photovoltaic modules used are from Longi, the world's leading manufacturer of monocrystalline solar panels. In this case, the model used was the LR5-72HBD-535M, with 535 Wp of power and one of the highest efficiencies on the market. For variable frequency drives for pumping, the SD700SP option was selected from Power Electronics, a company with recognised prestige in this field.

In this sense, projects were also implemented, such as the 2109 kWp photovoltaic plant for the El Fresno-Camino de Montemayor Irrigation Community, as well as the Lucena del Puerto plant (both in Huelva), an installation with a power of 700 kW.

Another example is the modernisation works of the Irrigation Community of the Nacimiento de Coín Llanos a Juntillas, a project that affects more than 1600 farmers in the area.

> Potential for improvement

Magtel has executed many projects in the agricultural and agri-food sector, from photovoltaic and thermal self-consumption solutions to optimising the use of self-produced energy. With the latter for irrigation communities, the potential for improvement shown to be enormous.

We cannot ignore the fact that photovoltaic power has reached full maturity. Today, its components offer guarantees of up to 25 or even 30 years and their efficiency has evolved tremendously. In parallel, this technology has become cheaper at a dizzying rate in recent years and is one of the safest and most sustainable options for electricity generation.

It should also be noted that these installations can be carried out both on land and in irrigation basins, using floating structures. Floating photovoltaic technology has historically found its niche in locations where there were problems with available land, for example in Japan, where this type of installation has been present since 2013 and brings with it, among other advantages, the reduction of water evaporation and eutrophication, which in turn counteracts the proliferation of algae and other invasive species.

Andalusia is a leading exporter of agri-food products and a benchmark for quality. Undoubtedly, this latest commitment by the sector is also positioning our community as a leader and model in innovation and sustainability. Sustainability from a social and environmental viewpoint, but also from the economic perspective and profitability.

TELECOM DIVISION

Over **33 years of experience** in this field



We work for the major operators, vendors and owners of telecommunication infrastructures in the country, accumulating more than 30 years of experience as a great asset for Magtel

With the wide range of services we provide, the company continues to play a major role in the technological development of municipalities of all existing population densities, through participation in major network deployment and maintenance projects in both fixed and mobile communications.

We are a driving force in connecting environments, homes and businesses, and a major player in the development and expansion of 5G.

Our principles are based on four fundamental pillars:

> Loyalty to our customers

> Technological knowledge

> Preventive and safety culture

> Commitment to quality and respect for the environment to connect to the world around us as a model of sustainable management and professional solvency

> Fixed network

- » Engineering, permits and legalisation
- » Deployment of FTTH-FTTN-FTTx-MAN-LD-HFC networks
- » Outside plant maintenance
- » Affected services

> 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

> I&M for clients

- » Installation and maintenance service for clients

> Railway installations

- » Communications
- » Signalling
- » Security
- » GSMR systems

> Special projects

- » Security installations
- » CCTV
- » Public address
- » Control and office automation

> Deployment of FTTH-FTTN-FFTx-MAN-LD-HFC networks

► Deployment of FTTH networks for Orange

Fibre-to-the-home network engineering and installation

Design and construction of 93,500 IU, mainly in low population density cities in Andalusia, Extremadura, Castile-La Mancha and Madrid.

The work consisted mainly of obtaining permits, design and registration of as-built plans, civil works for cable installation, fibre optic splicing and commissioning.

► Civil works project for Vodafone-ONO

Maintenance and deployment of HFC and FO networks

Extension, construction, conservation, site adaptation and implementation of network deployment projects in the fixed universe, within Vodafone's own infrastructure or that of third parties.

The scope of this project covers high-impact incidents occurring in the Vodafone network, and incidents of customers lack of service caused on the network, in Vodafone or third-party infrastructures.

Activity implemented in Andalusia and Extremadura.

We have 15 plus years working with the different companies that this operator has run (Supercable, Auna, ONO, Vodafone).

► Installation and civil works for fibre optic infrastructures

Civil works, installation, splicing and fibre optic measurements have also been conducted for clients such as Adif, Reintel, Cobra, Comsa, Lyn-tia, Gamma Solutions, Kapsch Trafficcom Transportation, etc.



> Outside plant maintenance

► For more than 350,000 Orange customers

Service and fault resolution in Orange's fibre optic network; extension of TCs due to saturation and maintenance of more than one million homes in Eastern Andalusia, Melilla and Madrid.

> Installation and maintenance service for clients

► Installation and maintenance (I+M) for Orange

Around 74.500 installations carried out

Installation of FTTH and ADSL to customers' homes, connection, testing and commissioning of telephone, internet and television installations.

Outside plant maintenance of the FTTH network was also undertaken.

These works were done in eastern Andalusia, Melilla and Madrid.



> Railway installations

► Experts in rail infrastructure, communications and signalling

We are backed by 25 years of experience in projects executed throughout the national territory

Extensive experience in railway communications through the deployment of fibre optics, operation and maintenance of networks and communications on high-speed lines.

- > Road construction and maintenance
- > Assembly of turnouts
- > Track welding
- > Rail replacement
- > Construction of molehills
- > Approval for aluminothermic welding and stress relieving (special permit class C)
- > Infrastructure machinery operator's licence
- > Traffic Safety Rating (safety pilot)
- > Track welders, safety engineer drivers and infrastructure machinery operators all officially approved by ADIF

► Project for the installation of sensor cable on the Guadalmazán viaduct of the Cordoba-Malaga high-speed rail line

Civil works, installation of signalling, telecommunications, train protection and energy systems.

Project to develop innovative solutions in the field of inspection of bridges, viaducts and turnout devices in ADIF.

Initiative developed for the SENER-UPTECH JV.

► iBLAU construction project with CTC Arahal-Fuente Piedra

Civil works and assembly of telecommunications, train protection and energy signalling systems.

For CAF Signalling, and as an end customer ADIF.





> Connecting to the world around us



PABLO MUÑOZ MÁRQUEZ

Director of the Telecommunications Division



Since it began, Magtel has been one of the most prominent players in the deployment of fibre optics in our country, participating in the main public infrastructure projects, as well as those involving the provision of services to households through FTTH networks. This leadership in the deployment and maintenance of urban and interurban fibre networks is symbolised by the nearly 15,000 kilometres of networks installed for the country's major operators and the one million plus homes connected.

A deployment that we have achieved thanks to the continuous improvement of our technological model, with a focus on permanent innovation, sustainable growth and a group of professionals whose continuous training is essential for our services to have maximum efficiency.

It is our contribution to Spain's role as one of the countries with the largest fibre optic deployment in the world after the great effort made in recent years. In fact, in January 2022, almost 13 million Spanish households had FTTH fibre optic lines, with a large increase of 1.2 million in 2021 and a forecast for 2026 of 16 million. A process that is progressing at great speed and which places us at the top of the ranking of European countries in terms of broadband availability.

> Throughout 2022

Throughout the year, Magtel participated in major deployments of FTTH-FTTN-FTTx networks as well as in I&M services and plant maintenance with major telecommunications operators covering the national territory, providing our experience with the greatest versatility to contribute our technological expertise to our clients' needs.

At Magtel we have also worked on railway signalling and communications for major projects developed by ADIF, one of our traditional clients, placing us alongside other prestigious national and international tech companies, and we have taken on the challenge of 5G in the railway environment, with new projects to be developed throughout 2023.

> Market forecasts

In this context, reports estimate that by 2027 the number of households connected to fibre will reach 199 million in the EU and 309 million across Europe, with France (31.1 million), the UK (30.1 million) and Germany (26.9 million) leading the way.

This forecasting exercise highlights the ongoing digital transformation of European countries and FTTH is playing an important role in this digital inclusion. And that is where Magtel has set our next objective for growth and positioning as a relevant player in other European countries.

DIGITAL TRANS- FOR- MATION DIVISION

Solutions for a
digital world



> ICT infrastructures

- » Corporate networks
- » Data centres
- » Control centres
- » Control systems

> SMART Services

- » Re-engineering and automation of processes
- » Artificial intelligence and machine learning
- » Internet of Things
- » Energy efficiency

> Outsourcing

- » Project office
- » Audit
- » Technical assistance
- » Engineering
- » Administrative and commercial processes

We want to be a benchmark in the application of digital solutions for sustainable development, growing together with our clients and collaborating companies, improving their competitiveness by transforming their key business processes and the management of their auxiliary processes

2022 has been a turning point for the Digital Transformation business unit. Our objective is to achieve ambitious, profitable and sustained growth over the next five years, supported by the generation of new value offerings aligned with customer trends, and the motivation of our team.

Our service catalogue has been restructured into the following areas:

> Improvement of our clients' ICT infrastructures, especially in large corporate telecommunications network projects and data processing centres

> Smart services, incorporating knowledge obtained from the surroundings to provide efficient service. Within this area we highlight process re-engineering and automation services for both front - and back - office processes, IoT networks and services, and control systems and centres

> Technical assistance, project office and citizen services

We have an exciting challenge ahead of us to position the Digital Transformation Division in emerging sectors such as predictive maintenance, mission-critical IoT solutions and conversational robots.

> Technical assistance

► Multi-channel technical support services

We provide professional services for specialised multi-channel assistance for the operation of first and second level of service to users (civil servants, employees and/or citizens) of different administrations (local, provincial and autonomous community) from Seville and Cordoba.

Specifically, work has been carried out for the Sociedad Andaluza para el Desarrollo de las Telecomunicaciones SA (Sandetel) through 47 specialists in positions adapted for multi-channel user service.

It encompasses:

- > Advanced tax information and assistance services
- > General administrative information services of the Regional Government of Andalusia
- > 'Info Vivienda' for citizen assistance and information
- > 'Consumo Responde' for citizen assistance and information
- > Technical support service on the use of the electronic procedure platform
- > Assistance and functional support service for citizens' needs concerning the e-Government platform (electronic offices and virtual office)



> Corporate networks

► Operational support services for telecommunications of the Andalusian Regional Government

We have carried out the engineering and field operations support services for the Andalusian Regional Government's Corporate Telecommunications Network for the client Sandetel.

To this end, 33 specialists in telecommunication networks and services, security and information systems were involved.

This project included services for:

- > Managing relations with official organisations
- > Telecommunications technical office
- > Supplier management
- > Service level and quality management
- > Engineering management
- > Management of the provision of services
- > Field support management
- > Workplace service management
- > Management of the Nerea Network
- > Streaming and P3S Gateway service management
- > Project office: Management and coordination, communications, technical assistance with OSH, provisions
- > Field interventions: technical support, layouts and inspections, service migration, technical assistance, breakdowns and incidents, maintenance at clients' offices
- > Wiring and installations
- > Logistics service
- > Warehouse management



> Corporate networks

► Development service of the Hispalnet network for the Seville City Council, its autonomous bodies and municipal companies of Seville

The operation and maintenance services of the Hispalnet network for the Seville City Council were executed through the joint venture created with Telefónica.

The Hispalnet network represents the base for the provision of services to citizens, municipal employees and visitors of all the services of the Seville City Council, its autonomous bodies and municipal companies. This network integrates all these services through the same physical infrastructure, supporting unified management. It also facilitates access to current applications and databases, allowing the development of common applications and databases for the municipal environment of Seville.



> Internet Of Things

► Cloud architecture for predictive maintenance applications

Technical assistance was provided for the design and implementation of an IoT platform to support predictive maintenance applications for the client AICIA. Two specialists were hired to this end in telecommunications networks and services, security and information systems.

Features meriting mention are that it is a solution based on a flexible, scalable and highly-secure distributed computing (fog computing) architecture based on Microsoft technology.

> 'An enormous effort is being made to position Andalusia as a tech leader and benchmark'



FERNANDO OLIVENCIA POLO

Director of Digital Transformation Division

Once again this year on 17 May and since 1969, we celebrate World Telecommunication and Information Society Day, whose purpose is to raise the population's awareness of the possibilities offered by the use of the internet and other information and communication technologies (ICTs) and their contribution to society and economic growth, and to remind people that we have a long way to go to bridge the digital divide.

This day commemorates the creation of the International Telecommunication Union, the leading international standardisation body in the sector, as well as the signing of the first far-reaching international telegraph convention on 17 May 1865.

Actually, until 2006, this day was exclusively focused on telecommunications, and it was at the World Summit on the Information Society in 2006 at which the United Nations General Assembly was asked to declare 17 May also as World Information Society Day.

What is clear is that communications and information technologies go hand in hand. Telecommunications allow information to be exchanged at a distance, information that is obtained, stored and processed by means of information technologies.

Information and communication technologies have led to the consolidation of a new digital culture worldwide, which is characterised by:

- > The presence of constant change in a volatile, uncertain, complex and ambiguous environment. Global social behaviour with mass, real-time interactions.

- > The fostering of collaboration and collective intelligence in open innovation environments but, in parallel, the bolstering of individuals by establishing a personal brand. And, above all, because of the expectation of free services and the end of customer loyalty.

The digitalisation of society is unstoppable: economic transactions, social relations, digital twins... This represents a real industrial revolution that is known by different names depending on the sector of activity: Industry 4.0, Smart Cities, e-Government and Digital Transformation.

This digital culture is leading to a transformation of organisations, whose business architecture is evolving, both from the demand for digital reinvention resulting from changing customer expectations and the availability of pervasive interconnectivity, and from the new outcomes made possible by digital technologies.

According to a report by the European Telecommunications Network Operators' Association (ETNO), there is a major threat that this process will slow down. Large tech companies are not contributing fairly to the roll-out of the telecommunications networks over which they provide their services, and this weakens Europe's ability to achieve the ambitious connectivity targets set.

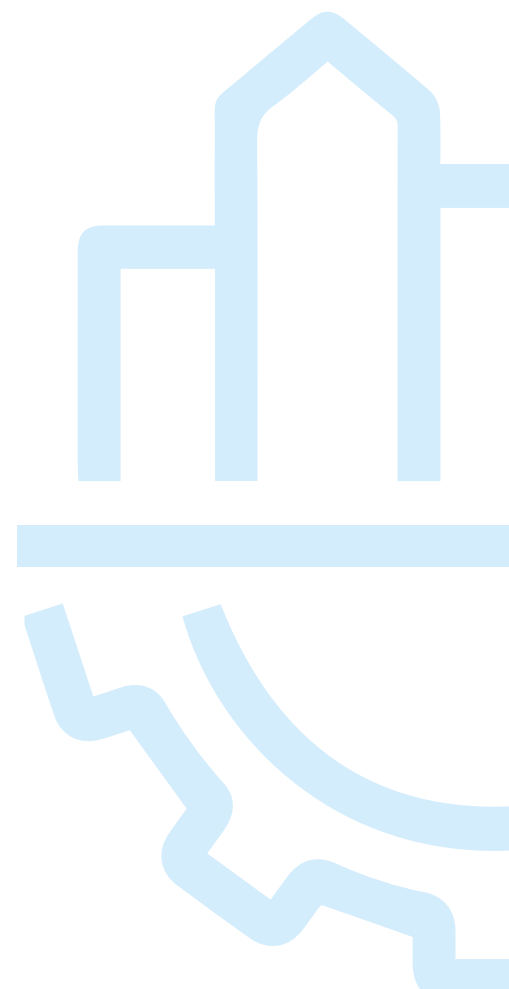
It is estimated that with proper management of this relationship a GDP growth would be reached of 72 million euros, more than 840,000 new jobs would be created, and the carbon footprint would be significantly reduced.

We encourage our political representatives to defend a fair balance between the interests of telecom operators and OTT (Over the Top) technology companies in order to continue progressing along the same lines for at least another 53 years.



INFRA- STRUCT- URE DIVISION

Sustainable
construction



Broadly speaking, our objectives would be to increase the volume of work and the consequent growth;

to undertake works of greater magnitude and importance, to diversify the types of works we execute, and to become established in the area of buildings

Adding value to the company by meeting the construction needs of both the client and the group companies sustainably is part of our raison d'être.

The maintenance, construction and the overhauling of supply and sewer networks were all undertaking.

Also urban development projects and the modernisation of irrigation networks and buildings from the residential, institutional and industrial point of view, and actions in the field of mining.

> Hydraulic infrastructures

- » Renewal of supply and sewerage networks
- » Overhaul of pipelines
- » Comprehensive water cycle
- » Breakdown repairs and network maintenance
- » Renewal of meters and installation of new service connections
- » Water treatment
- » Irrigation
- » Desalination

> Civil works

- » Linear transport infrastructures
- » Urban development works
- » Waste management and recovery
- » Industrial works
- » Large infrastructures
- » Mining
 - ▶ Soundings and exploration
 - ▶ Process plant
 - ▶ Water treatment plant

> Building

- » New residential construction
- » Industrial
- » Public services
- » Restoration of historic buildings
- » Complete remodelling

> Continuation of the improvement of the facilities at the Guadalmellato Dam (Cordoba)

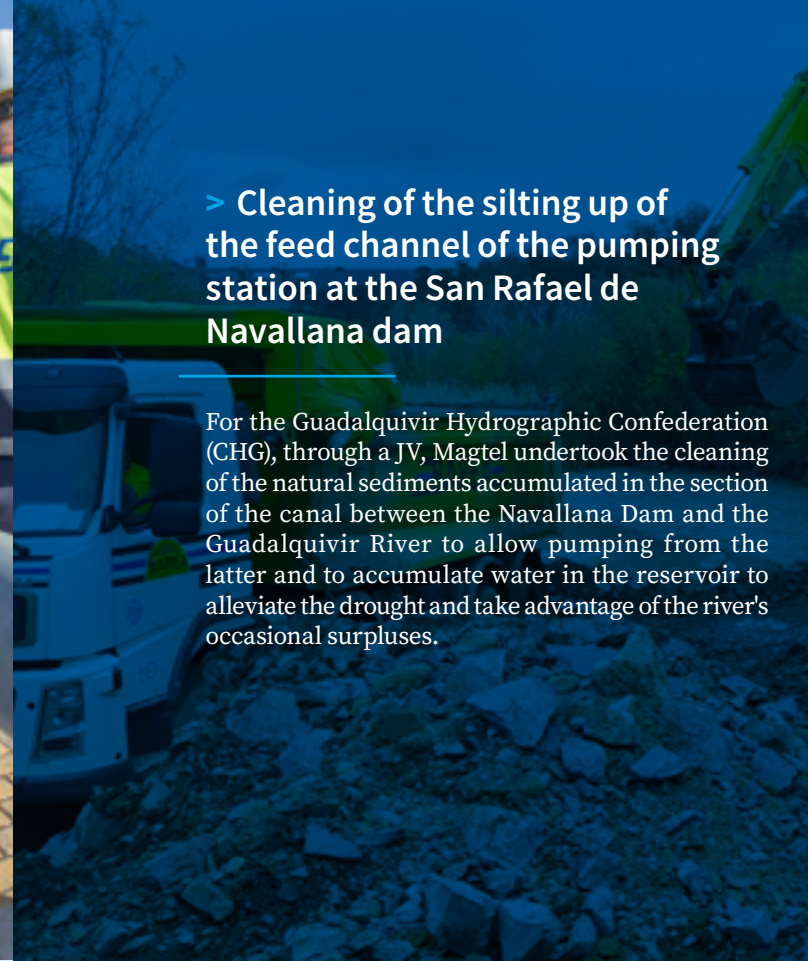
Covering both lighting and safety, to facilitate the work and actions to be performed in the galleries inside the dam: protection with handrails, stairs and bars installed in open areas, as well as improved lighting and electrical installations, adapting the work to energy efficiency criteria.

The work was executed for the Guadalquivir Hydrographic Confederation (CHG).



> Cleaning of the silting up of the feed channel of the pumping station at the San Rafael de Navallana dam

For the Guadalquivir Hydrographic Confederation (CHG), through a JV, Magtel undertook the cleaning of the natural sediments accumulated in the section of the canal between the Navallana Dam and the Guadalquivir River to allow pumping from the latter and to accumulate water in the reservoir to alleviate the drought and take advantage of the river's occasional surpluses.



> Continuation of the improvement and restoration of the Villa del Río bridge over the Guadalquivir on the A-3101 road (Cordoba)

Construction of a temporary bridge of driven metal piles to divert traffic, next to the main bridge that is the object of the project. The improvement and restoration consists of increasing the width to allow two-way traffic to pass simultaneously and eliminating the current load limitation, while upholding the original aesthetics.



> Maintenance of networks of Empresa Municipal de Aguas de Cordoba (Emacsa):

Repair and renovation of the supply and sewerage networks in the city of Cordoba, adapting both infrastructures to the needs of the population and improving the service, as well as reducing the number of breakdowns.

Thus, among other actions, the maintenance of ornamental fountains and drinking fountains was done; repairs such as the fountain in Plaza Andalucía; the upgrading of the supply and sewerage networks in different areas of the city, the execution of new water connections for new constructions related to the expansion of the city, etc.

> Renovation of the supply network in the Las Quemadas Industrial Estate

Almost 4 km of supply pipes on several streets and more than 100 residential connections, replacing old fibre cement pipes with ductile cast iron.

> Renovation of the supply network in the Cerro Muriano neighbourhood (phase 3)

In order to improve the existing network, using the bursting technique in undeveloped areas and open-pit renovation in the remaining sections.

> Overhaul of the Trassierra road supply network

It also includes Portugal Street. Old asbestos cement pipes were replaced with new ductile cast-iron pipes.

> Overhaul of the sewerage collector in Calle San Juan Bautista de La Salle

Modernisation with trenchless technology by UV shooting and curing (414 metres DN500; 125 metres DN400).

> Overhaul of the sewerage collector on Calle Doña Berenguela

Reconditioning with trenchless technology via UV shooting and curing (552 metres 500/1000 ovoid; 83 metres 400/500 overflow; 32 metres DN300 collector), and 40 ml open-pit renovation in PVC Sanecor DN400 SN8.

> Maintenance of networks in the Encinares de Alcolea housing development

The infrastructure maintenance of the plots was carried out. The entire wastewater and water supply circuit, tank, pumping, etc. An electrical conduit and various civil works are also being executed.



Magtel



> Network maintenance of Empresa Metropolitana de Abastecimiento y Saneamiento de Aguas de Sevilla (Emasesa):

► Connections for Emasesa in Seville, Alcalá de Guadaira, Mairena del Alcor and Dos Hermanas

For more than 1500 users. They included supply, sewerage connections, re-establishment and disconnection of supplies.

► Execution works for the operation of Emasesa's meters and complementary works in Seville and 11 other towns

Installation, replacement and inspection of water meters and remote reading installations, supply inspections, detection and elimination of fraud, as well as official verifications by means of portable standard meters.

► Hydraulic improvement in the La Pilarica in Gines housing complex (Seville)

Replacement of sewerage and water supply networks with house connections on Narciso Mora Cano, La Pilarica, Manuel Causse Sales and Antonio Rubio Herrera streets in the municipality of Gines (Seville). Work implemented for Aljarafesa and the Gines Town Council.



> Urban development projects:

► Comprehensive remodelling of Calle Badajoz in Fuengirola (Malaga) and redevelopment of the Plaza de la Axarquía in Torre del Mar (Malaga) for its pedestrianisation

Consisting of:

> The renovation of water networks (separate networks), telecommunications and electrical grid (improvement of networks, underground instead of overhead), and paving

> For the Plaza de la Axarquía in the municipality of Vélez Málaga, an ornamental fountain was built, as well as underground containers, LED lighting and street furniture

► Redevelopment of neighbourhoods in Punta Umbría (Huelva)

Executed by the Magtel & Bifesa JV, the project was implemented for the Provincial Council of Huelva, the urban adaptation and redevelopment of degraded neighbourhoods in Punta Umbría with sanitation, street lighting, resurfacing, street furniture, playground equipment, bio-healthy games and sports courts.

► Urban development of the Aldea del Cano Industrial Estate (Cáceres)

Done for the Regional Government of Extremadura through the Magtel-TDS Ingeniería JV, consisting of the execution of supply networks, sewerage, medium-voltage electricity supply with overhead braiding, transformation centre and low voltage, street lighting, installation of a compact treatment plant, paving of pavements and roads, as well as the execution of a drive under the A66 dual carriageway.

► Redevelopment of La Florida (Seville)

Replacement of sewerage networks, piping and installation of lighting, traffic lights, paving and landscaping in La Florida, Menéndez Pelayo and Luis Montoto streets.

During the excavations, the remains of a Roman aqueduct were discovered and protected in coordination with the Regional Ministry of Culture.



> Services for activity in the Pyrite Belt

Support was provided for the processing, coordination of subcontractors and works and engineering for the pumping, treatment and discharge of accumulated water.

These projects will lead to the authorisation of discharges and the emptying of the mines, key milestones in their viability.

> Exploration drilling campaign for core extraction in the Tharsis Mine and La Zarza Mine (Huelva)

Work was done to adapt the mine, including the improvement of tracks, talus, berms and safety.

Wireline drilling was also done, with the recovery of mineral cores, and complementary ancillary works such as the construction of basins.

> Mining project engineering

Support was provided for the processing, coordination of subcontractors and engineering works for the execution of pumping, treatment and later discharge of accumulated water.

These projects will lead to the authorisation of discharges, as well as the emptying of the mines, which are key milestones in the viability of the mines.

Another highlight of the project is the search for energy solutions to achieve a self-sustainable mine.





> Building projects

► Construction of a residential complex with 88 subsidised housing units in Huerta de Santa Isabel

The building, seven storeys high, was built on plot 3.3 of the PP PAU O-3 for the Cordoba PGOU (General Plan for Urban Zoning). In addition to the 88 homes, 101 parking spaces, 88 storage rooms and one commercial space were built. The plot has a surface area of 4,655.41 m².

► Completion of 166 subsidised housing units and commercial premises in Ciudad Jardín de Poniente (Cordoba)

Work continued on the construction of 166 subsidised housing units (VPO), with storage rooms, 197 parking spaces, shops and offices, swimming pools and paddle tennis courts in the northwest district of Cordoba, specifically in block 23 of the PP.O-1 sector of the Cordoba PGOU.

Promoted by the cooperative El Arcángel San Gabriel, the project was executed as 6 independent buildings, each three storeys high.

► Construction of a new food market and municipal car park in Bujalance (Cordoba)

The earthworks and foundations for the construction of the new structure of this municipal building were executed for the Bujalance Town Hall.



► Execution of phase four of the 'clean point' and municipal warehouse in Dos Hermanas (Seville)

The following works were implemented:

- > Restructuring of main offices and workshops
- > Foundation work for the auxiliary metal structure
- > Installation of metal structures (workshop and warehouse partitions)
- > Paintings and coatings for main and secondary workshops and offices
- > Installation work of fire fighting devices



> Restoration projects

► Restoration and enhancement of La Pérgola del Paseo Alfonso XIII in Palma del Río (Cordoba)

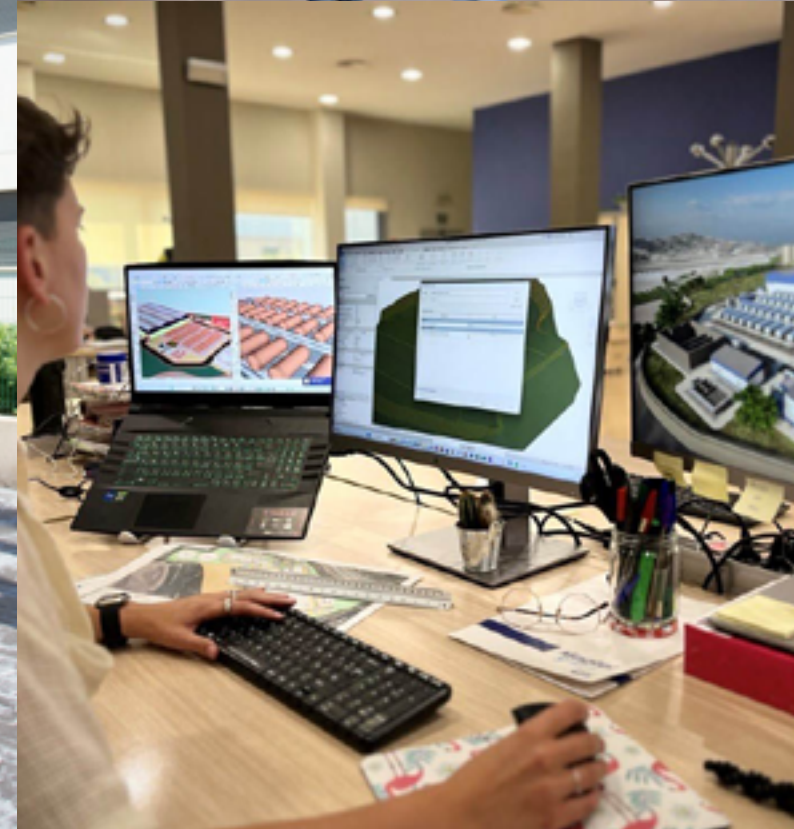
Demolition of the roof and walls of La Pérgola building, and masonry and painting work.

La Pérgola is a building in the Palma del Río fairgrounds which caught fire, damaging its roof and walls. The aim of this work was to clean up and remove all the elements affected by the fire, as well as some masonry and painting work.

► Renovation and enhancement of the facilities of the municipal animal shelter in Marbella (Malaga)

Comprehensive remodelling of the facility done for the Marbella Town Hall, rearranging the uses of the plot, overhauling three existing buildings and also executing the project for six new buildings, two guard booths and two warehouses using modular construction.

This work will provide the facility with new services such as operating theatres, staff lounges, a shop and offices.



> 'We want to be leaders in Andalusia, guaranteeing sustainability at all times'



PIETRO TUCCI

Director of the Infrastructure Division

Magtel's commitment is stimulating and well represented by the objectives that appear in the Strategic Plan: Excellence, Commitment, Leadership, Innovation and Trust. These concepts have been fully taken on by all company employees, which will undoubtedly lead to the achievement of these ambitious goals.

Today, our group of companies is a benchmark in the business world and our presence in the infrastructure sector is already significant. We can consider 2022 a very positive year, as the division executed works worth EUR 23.6 million with a result of some EUR 1 million.

The most significant projects include: the completion of the 166 homes in the Ciudad Jardín de Poniente development and the 56 homes in the Atalaya de la Albaida development; the start of the 88 homes in the Residencial Santa Isabel development, all in the city of Cordoba. Reference should also be made to the start of other singular projects such as the clean point, the animal shelter and the new Abastos Market with the corresponding town councils of Dos Hermanas, Marbella and Bujalance.

This represents the consolidation of Magtel in the building sector, which, with the experience acquired, can undoubtedly be considered a major player in this sector.

In the field of civil works, it is worth highlighting the company's presence in the refurbishment of the Villa del Río Bridge, the modernisation of the Coín Irrigation Community facilities and the impressive drilling campaign in the Tharsis and La Zarza mines, both owned by the Magtel Group.

Finally, the significant presence in maintenance works with the water companies Emacsa and Emasesa.

By 2023, we intend to consolidate the challenges of previous years and acquire an even more significant presence in the market in general, by forging new alliances with major national companies and participating in larger and even more iconic projects.

We must take advantage of the large investments that are planned for these years, which are necessary for the proper development of the country and our community, to position ourselves where we deserve to be. We want to be leaders in Andalusia, but without losing sight of balanced growth and its corresponding profitability. All this without forgetting what is one of Magtel's greatest commitments in all its actions: the constant use of the essential means to guarantee sustainability at all times. I hope that we will put all our enthusiasm into the work that awaits us this year.

R&D&I DIVISION

The **added value**
of our **projects**



2022 was characterised by drafting the Division's Strategic Plan that will set the organisational, technical and financial strategies until 2027

In line with this, innovative solutions were refocused, taking into account the 'Horizon 3' projects of the company's business divisions and the rest of the Magtel Group's related companies. In this sense, the ideas that have been presented to regional, national and European calls for aid have been diversified, with propositions in the field of solar thermal technology with supercritical CO₂, green hydrogen, solar panels, ICTs in critical infrastructures for defence and in the agricultural sector in the scope of smart irrigation.

Highlights include the award in competitive competition of two projects in the Missions 2022 call, for which a significant number of the best technology companies in Spain submitted proposals, specifically the AD-GRHID project (on the green hydrogen value chain and microgrids) and the SUNRISE PV project (photovoltaic), and the award in a dual national and regional call (civil and defence) of the CRITICALFOG project (critical infrastructures).

Finally, the implementation of the last phase of the Life Green Sewer, Tec-Med and SIES 2022 projects has continued.

> Energy

- » Hydrogen
- » Solar thermal energy
- » Photovoltaic
- » Energy storage and electricity
- » Microgrids

> ICT

- » Industry 4.0
- » IoT
- » Monitoring systems
- » Predictive maintenance
- » Blockchain
- » Artificial intelligence

> Environment and infrastructure

- » Water treatment
- » Waste management and recovery
- » Desalination
- » Smart irrigation

> Companies and technology centres:



> Universities:



> Co-financing entities:



> Sunrise PV

Magtel's R&D&I Division will lead the Sunrise PV project to promote the new generation of photovoltaic technologies to reduce energy costs through circular strategies. The consortium is made up of eight companies: Magtel, Cegasa, CEN Solutions, Isfoc, Mondragon, Mugape, Soltec and Técnicas Reunidas.

This initiative, which will run until 2025, proposes solutions and innovations in the different phases of the value chain (solar panels, trackers and support structures, power converters, photovoltaic inverters, storage, plant operation and maintenance), focusing research on three points.

The first of these refers to new materials and manufacturing processes for photovoltaic modules and the rest of the components, achieving greater conversion efficiency and reduced manufacturing costs. The second issue concerns new operation and maintenance processes for a more durable, efficient and reliable use of PV systems.

Finally, research covers new processes for the recovery and reuse of critical materials and components in the solar photovoltaic value chain to increase their usefulness and improve the environmental impact of the technology.

These three lines of action converge in a final objective, which is to optimise the production of renewable energy - of photovoltaic origin - with a reduction in the energy and economic cost of the technology (improvement of the LCOE), as well as to make significant progress in the efficiency, flexibility and management of photovoltaic plants, in an environment of environmental, economic and social sustainability.

The Centre for the Development of Industrial Technology (CDTI), part of the Ministry of Economy, Industry and Innovation, awarded Magtel the Sunrise PV project, as part of Mission 1 'Strengthening technological capabilities for safe and sustainable energy autonomy (fusion, hydrogen and renewables)', within the framework of the Missions 2022 call for proposals.

This initiative, which focuses on the optimisation of energy production and costs, its integration into electricity grids, as well as the environmental impact of photovoltaic plants, was awarded an incentive of 4.2 million euros out of a total budget of 6.5 million euros.



> Ad-Grhid

Magtel is leading the Ad-Grhid project, which focuses on research and development into new hydrogen-related products and systems.

Magtel's R&D&I Division is leading the Ad-Grhid project awarded by the CDTI, also within Mission 1 'Strengthening technological capabilities for safe and sustainable energy autonomy (fusion, hydrogen and renewables)', in the Missions 2022 call for proposals.

This initiative covers an important part of the hydrogen value chain, aimed at researching and developing new products and systems. The project was awarded an incentive of EUR 3.3 million out of a total budget of EUR 4.8 million. The source was the Recovery and Resilience Fund under the Next Generation EU instrument.

In addition to Magtel, Ad-Grhid is made up of a consortium of seven other companies: Ingelectus, Eléctrica de Villanueva de Córdoba, H2B2 Electrolysis Technologies, Nasika, Premo, Protio Power and Tequinson Servicios.

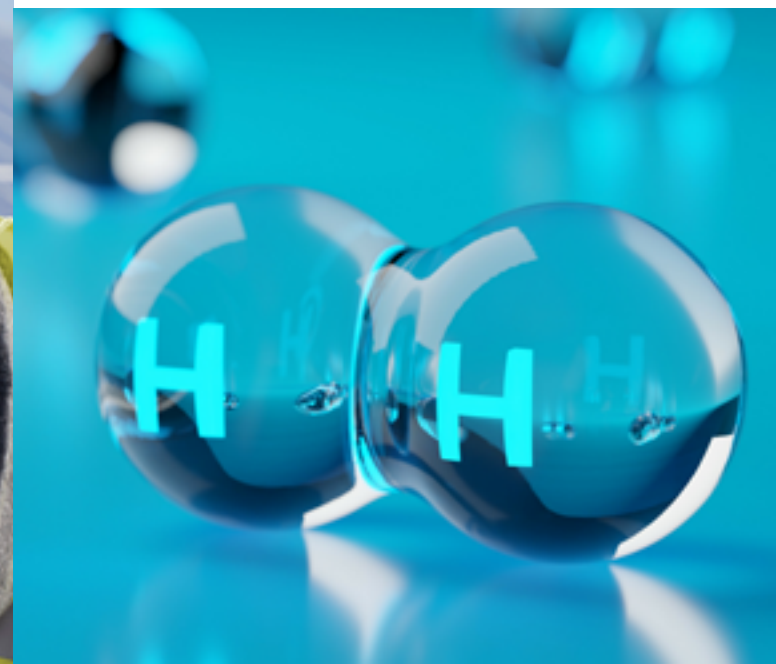
The project, which will delve deeper into industrial research, is supported by the University of Cordoba and Loyola University, as well as the AICIA, AIMPLAS and IREC technology centres. Thus, a research ecosystem is being created that will enable us to respond to the ambitious challenges that lie ahead, including smart grids, through the management and engineering of integrated distribution networks with hybrid AC/DC microgrids; power electronics; the development of electrolyzers and fuel cells; and hydrogen storage.



Images courtesy of the University of Cordoba

The objectives of the project include improving the energy density of storage, decreasing the capital cost of solid oxide electrolyzers, increasing energy efficiency, and the supply continuity of microgrid services to distribution grids through renewable energy.

Research is encouraged for the development of high added value products of Spanish origin, which could be important in the transition towards a future with greater circularity in the use of materials and carbon-neutral energy consumption.



AD-GRHID

> Investing in research and development as a key link for creating long-term value for tech-based companies



JOSÉ LUIS ARANDA HIDALGO
Director of the R&D&i Division



Investments in research and development are important for companies, and even more so for technology-based companies.

Society is increasingly demanding, intelligent and committed to sustainability and the environment and, as a consequence, demands that companies offer products and services that, in order to integrate these premises, must necessarily be innovative.

This applies to all sectors, where developments are accelerating, and to all companies, whether they are margin-based, volume-based or a mix of both.

The amount to be invested in R&D&I must be even greater in those companies that want to base their growth on the margin, as they must present differentiated products to this ultra-demanding society, with high added value, committed to the environment, and in record time. These investments allow companies to be flexible and able to continuously evolve their products and services to adapt to frequent changes in demand.

But, how much to invest? It is assumed that investment should be high in those companies based on research and development, and at which the return on investment of each product developed could be estimated and quantified, for example, a drug resulting from discoveries in the laboratories of a pharmaceutical company. This exercise is not so easy in many other companies, which, although they define themselves as technological because of their areas of activity, many of their products are not the result of their internal research, but of their suppliers. At these companies, which are not based on in-house research, the qualitative part must be taken into account, which is difficult to estimate in numbers, where the positioning and brand image that can be generated by a pilot R&D&I project can be key to contributing to margin growth, developing a new service or product, or even adding a new

business area, diversifying the company, making it more resilient to continuous change and improving its chances of survival in an increasingly competitive market.

Estimating the qualitative value and the quantitative part to be capitalised in the future by commercial businesses as a consequence of R&D investment is extremely complex and uncertain, as success is not assured, and the return is long term. As a result, companies are often too conservative or reluctant to invest in R&D&I.

And, what to invest in? Depending on whether a company's foundations are R&D or not, it must invest to a greater or lesser extent in materials, but there is no doubt that, in both types of tech-based companies, the key investment is in the people with the talent to create and transfer knowledge within the organisation. This knowledge is acquired through complex R&D&I projects, which only highly qualified professionals are capable of leading.

There is clearly a close relationship between the image of companies and the increase in their investment in R&D, and while, years ago, investment in innovation and development was something extraordinary with which they sought to improve and strengthen their position in the market, today it is essential to remain competitive. Those organisations that manage to keep a constant growth rhythm are those that adapt to change, anticipate the future and are prepared for each new challenge that comes their way. They are organisations that do not improvise because they are currently launching the ideas that germinated years ago in their research.



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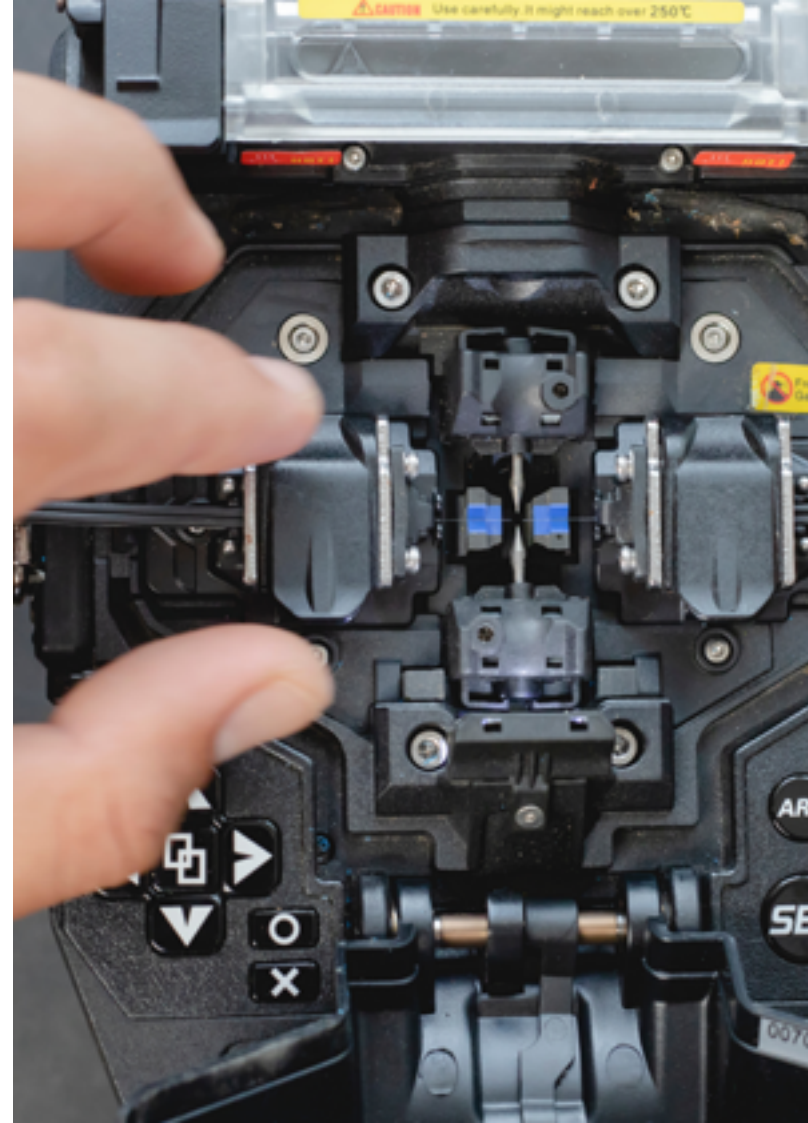
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