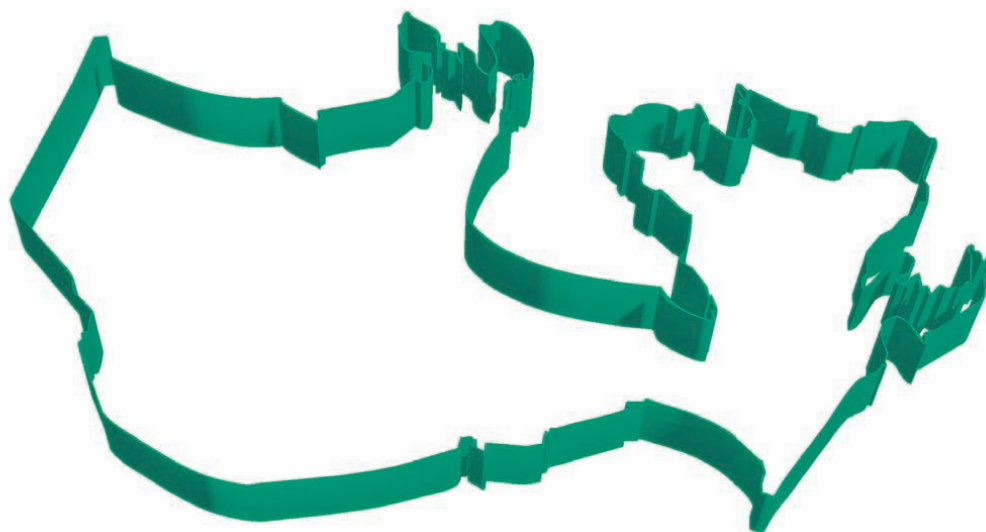




SUSTAINABLE GROWTH
CANADA



COMMITMENT

Hospitals
with a smaller
environmental
footprint

FOCUS

General
Meeting of
Shareholders
2016



THREE HUNDRED AND SIXTY DEGREES°



AUDIOVISUAL INNOVATION WITH 360° VIDEO

ACCIONA is using new 360° video formats to display the progress at its Chuquicamata underground project in Chile.

Attend the tunnel boring operation or tour inside the mine via interactive videos now available on our corporate **YouTube** channel.

Subscribe to our channel to discover the newest technologies!

[Youtube.com/accionacorp](https://www.youtube.com/accionacorp)



Solid foundations and adapting locally

The origins and history of a company define its culture. Our roots in the construction sector, under the tutelage of a brilliant engineer, marked the trajectory and spirit of ACCIONA. Our solid foundations, and the knowledge that every project has to adapt itself to the lay of the land, are the lifeblood of a versatile organization established on stable pillars and keystones, which underwrite everything it does on a daily basis.

That brilliant engineer continues to be the distinguishing feature of our organization, and continues to open doors to business. What we should do, how we should do it, is the key to ensuring that an infrastructure plan or project does what it is meant to do, with all the guarantees. The quality of our engineering is our hallmark and gives us the competitive advantage valued by our clients.

Our solidity as a company has been important in establishing us in the Canadian market, where we have also adapted to the lay of the land. Our solvency, only too clear as we take on complex concession and civil engineering projects and execute them, has opened up a path of growth and trust, exemplified by the huge Site C hydrological project.

Solid foundations and the ability to adapt are also welcome assets in the renewable energy field. Our conviction that renewables are the future — and the present — has meant our reliable technology and management competes side by side with fossil fuel energy to assure electricity supply. And all without polluting!

Energy efficiency in infrastructure comes into play at the Infanta Sofía Hospital and illustrates our capacity to offer services in critical sectors like healthcare. And drinking water. Guaranteeing quality supply, sustainably and at competitive costs, is a big achievement we have brought to each of our drinking water treatment plants — over 100 worldwide, all with very different features. Solid foundations, adapting to the lay of the land.

Get to know the lie of the land, the community in which we are setting up, maximize our impulse to develop, all the while measuring the impact we have, anchors us firmly to the places where we are present, so that we fuse into their reality. Mexico and South Africa represent a window through which we can observe our footprint and introduce a methodology to be copied elsewhere. This is how we capture reality, as in the technology, so that we can work on it. Because working on the reality, to improve it, is the spirit of our Sustainability Plans, always with two premises: solid foundations and adapting to the lay of the land.

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foundations
and adapting
locally*

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2016 GENERAL SHAREHOLDERS' MEETING

ACCIONA plans to invest at least 2 billion euros in renewables by 2020



ACCIONA Chairman José Manuel Entrecanales stated that the Company “is one of the best positioned global economic operators” to realize the agreements reached in the Paris Climate Change Conference. “We share the objectives of COP21 and our business plan envisages investments of more than 2 billion euros up to 2020,” he said during the General Meeting of Shareholders held in Alcobendas (Madrid) on 10 May.

“Renewables are already the fastest-growing form of electricity generation and show that they are increasingly competitive against conventional technologies.”

In his speech, the ACCIONA Chairman recalled that the nearly 200 signatory countries to the Paris agreements made a commitment to cooperate actively and immediately in de-carbonizing the economy. This will mean, among other things, “that Europe and Spain need to carry out an in-depth review of the

➔ *After reducing CO₂ emissions by 40% between 2010 and 2015, ACCIONA has launched a new Sustainability Master Plan*

legislative framework for renewable energy sources to ensure that conditions are suitably stable and attractive for investment to return to the sector.”

For José Manuel Entrecanales, “in very general terms, this would basically involve modifying the design of the market to allow the full participation of renewables in all services, renewing financial support systems to attract investment and, at the same time, avoiding measures that over-protect fossil fuel-based installations or distort competition,” needing “above all, as an across-the-board measure of proven efficiency, the creation of efficient mechanisms to allocate prices to CO₂ emissions.” In this context, “our global presence, and our geographical and technological diversification, puts us in a strong position to take advantage of the global investment explosion in renewables that began in 2015,” Mr Entrecanales said.

ACCIONA's Energy Division ended 2015 with 40% of its electricity generation outside Spain and a total accumulated capacity of 8,619 MW.

May's General Shareholders' Meeting was the first since the merger between ACCIONA Windpower and Nordex was completed. José Manuel Entrecanales expressed his satisfaction at the success of this operation, saying: “It has allowed us to lead the necessary consolidation of the industry, creating a global benchmark in the wind turbine sector.”

INFRASTRUCTURE DEFICIT

The ACCIONA Chairman highlighted the results achieved in the process of integration of the Construction, Concessions, Water and Services

businesses in the search for opportunities and synergies, with a major leap forward being made in international projection and contracting.

The division ended FY 2015 with a project portfolio of 6,722 million euros (+18%), of which 73% is international revenue.

As for Spain, the Chairman considered that, despite the general perception that new investments are not necessary, the country is suffering a “very worrying” deficit in infrastructure and he called for public-private cooperation in the financing and development of projects. “While we are reasonably well equipped with passenger transport infrastructure, there is a very worrying deficit in the fields of water, waste treatment, goods transport and social infrastructures... if we are to reach the level of countries like Germany, France, the United Kingdom or Italy,” he said.

In his opinion, “the regulatory environment will once again be a key factor in solving these needs, which is why we need to work together in a new framework that would be capable of attracting the private sector to provide the finance that cannot be covered unilaterally by the public sector.”

The Shareholders' Meeting approved the annual accounts and the Sustainability Report for 2015, as well as the re-election of two of its independent board members, Juan Carlos Garay Ibargaray and Belén Villalonga.

→ SUSTAINABILITY MASTER PLAN

The ACCIONA Chairman praised the successful conclusion of the 2010-2015 Sustainability Master Plan.

The company has already started work on the design of its new Sustainability Master Plan 2020 and has undertaken, within the framework of its participation in COP21, to be carbon neutral in 2016.

In 2015, ACCIONA invoiced 6,544 million euros and had a net profit of 207 million euros (+12%).

With these results, the Meeting approved the distribution of a dividend of 2.5 euros (gross) per stock (+25%).

Mr. Entrecanales pointed out that ACCIONA paid 958 million euros in taxes during the last financial year to different public administrations in the countries where it operates (+6%), almost five times its net profit. ■

ONLINE INFO

- All the tweets from the Meeting are on ACCIONA's Storify channel: storify.com/ACCIONA

// Our commitment to sustainability

Sustainability Master Plan 2010-2015

Six years ago, ACCIONA planned and structured its initiatives in a medium- and long-term roadmap that has helped the Company differentiate, become more competitive, contribute to sustainable development and consolidate its leadership in sustainable practices. It consisted of the Company's first Sustainability Master Plan, for the period 2010-2015, and this is the summary of its achievements:



INNOVATION

Firm support
for innovation
allocated in the
2010-2015 period

€ 876 M

Savings through
improvements
in operative
innovation
processes verified
by an independent
company

€ 86.8 M



ENVIRONMENT

We have **avoided** in 2010-2015

85.7 million
tCO₂

We have
reduced by

43.1%

our direct and indirect CO₂ emissions
(scopes 1 & 2) compared to 2010

We have **measured**
the greenhouse gas
emissions associated
with the activities

of our
28,000
suppliers



CORPORATE GOVERNANCE

New **crime prevention**
and **anti-corruption**
program

Creation of the **Compliance**
Department

Approval of
the Policies Book

reflecting the commitments and principles
for action applicable to the Company's
subsidiaries



STAKEHOLDERS

Consultations
with
customers of
our different
businesses

DERSA
TetraPak
CEMEX

Danone
SEDAPAL (Peru)
AYA (Costa Rica)
Enbridge (Canada)
Ministry of the
Environment (Gabon)

EDPR
Jerbaneverket - JBV (Norway)
Manaba Mineração (Brazil)
ONED (Morocco)
Aguas del Algarve (Portugal)
Michelin (Spain)

Since 2010, we
have performed

5 **materiality**
analyses



SOCIETY

Social impact management methodology being introduced in

47
projects

18
in countries
(in 2015)

Through the ACCIONA Microenergy Foundation, we facilitated access to a basic electricity service

for over
30,000
beneficiaries in Peru and Mexico

More than
2,400
participants

in different volunteering initiatives
(ACCIONA Volunteer Day and "Shall We Donate?" Campaigns, among others)



PEOPLE

Significant improvement
31.57%

in the workplace accident frequency rate compared to 2011

Percentage of variable remuneration linked to the achievement of sustainability objectives

97%
of directors

90%
of managers

of the structure and some technical and support staff



VALUE CIRCLE

In 2011 **Ethical Principles for Suppliers, Contractors and Collaborators** were published

Ethical clauses were included in calls for tender, orders and contracts

Self-evaluation questionnaires were sent to

14,001
suppliers

2,584
suppliers

were trained in sustainability
6 courses available



DISSEMINATION AND LEADERSHIP

WBCSD

ACCIONA Chairman re-elected for third term as **Executive Committee member**

Sustainable Energy for All

ACCIONA Chairman Advisory Board member

Participation in the creation of the

CEO Climate Leadership Group

in the framework of the 2015 World Economic Forum

Presence in

Global Compact LEAD and Caring for Climate Steering Committees

Prince of Wales's Corporate Leaders Group

Green Growth Platform & Spanish Green Growth Group (GECV)



ACCOUNTABILITY

Since **2012** we have presented an Annual Sustainability Report for approval by the General Shareholders' Meeting

We have prepared an Integrated Report

since **2013**

Present in the following sustainability indexes

Dow Jones Sustainability World Index
(for ninth year running)
Change of sector in 2013 – Electric Utilities industry

FTSE4Good

CDP Climate A List 2015; CDP 125 Iberia Climate Disclosure Leadership Index 2015; The Supplier Climate A list

MSCI Global Climate Index 2015



SUSTAINABILITY MASTER PLAN 2020

The new Plan is structured by strategic and operational objectives applied across the organization. These objectives are:

- SOCIETY
- CLIMATE CHANGE
- ENVIRONMENT
- CORPORATE GOVERNANCE
- PEOPLE
- VALUE CHAIN
- INNOVATION



ACCIONA Engineering reinvents itself for growth

Over the past five years, ACCIONA Engineering has undertaken projects in 60 countries and become one of the most prestigious companies in its sector. Now it plans to develop new activities — beyond the definition of classical engineering — and enter other markets to continue growing in future.

Luis Baz, Director of ACCIONA Engineering, is especially proud of the commitment of his team to their company when it needs them to go to some of the remotest and most inaccessible places on the planet. He remarks upon the great effort they make to be where the contract is. “Our people have an outstanding capacity to travel and move around to develop projects wherever they arise.” And the sacrifice is worth it, too. ACCIONA Engineering has undertaken projects in 60 countries in the past five years alone.

The company’s domestic and international experience has made it one of the sector leaders thanks to its presence in every region and specialization in certain areas — mainly transport infrastructure, maritime works and land engineering, among others — and expertise with multilateral credit organizations, indispensable for financing many projects.

It has also garnered prestige as an excellent travel companion! The company is the ideal partner for

taking on any engineering contract in the world. “These two elements — local presence and our expertise in several areas — allows us to work on a level with companies much bigger than ourselves and we have fostered the culture of working in consortia abroad and with international companies,” Mr Baz explained. He also highlights the excellent relations the company has developed with high-level French, British and Italian companies it works with regularly abroad. ►

➔ *The company’s domestic and international experience has made it one of the sector leaders thanks to a presence in every region and its specializations*

➔ *ACCIONA Engineering invoiced 35 million euros in 2015, which it says will rise to 38 million in 2016, and expects sustained growth for several further years*

► NORWAY MILESTONE

One of the company's biggest achievements in recent months was to win a contract with the Follo Line engineering project in Norway, most of which it has been awarded alone. "We have the sub-contract from a big Danish company, Cowi, but 95% of the contract exclusively concerns ACCIONA Engineering, working for a construction consortium of which the Group's construction arm is part," Mr Baz pointed out. ACCIONA Engineering has also developed a strategy here he believes should be reproduced in future. "It is a good template for the participation of ACCIONA Engineering in Group projects: present in the early stages, including business development and detecting opportunities, and from thereon in the preparation of the offer, resulting in the award of important projects," he added. This has to be done "without losing sight of two concepts that are our essence in offering our services to third parties or the Group: quality and always being price competitive, and flexibility in providing the service..."

The Norwegian project has had a big impact over the past year; on the one hand, because it has

increased the amount of business provided to the rest of the Group, and, on the other, for increasing volume in Europe. "Traditionally, between 15 and 20% of ACCIONA Engineering sales are services provided to the rest of the Group and around 80 to 85% for third parties. We want to maintain that," stated Mr Baz.

The moment has also arrived for the company to reinvent itself. ACCIONA Engineering invoiced 35 million euros in 2015, which it says will rise to 38 million in 2016, and expects sustained growth for several further years. How? By exploiting new business lines and markets. "We need to find and develop new activities, new business lines, with the aim of growing," said the ACCIONA Engineering Director. Consulting, project management, railway installation specialization, hydroelectric projects, social and environmental impact studies and the introduction of Building Information Modeling (BIM), will all be important new activities, among others.

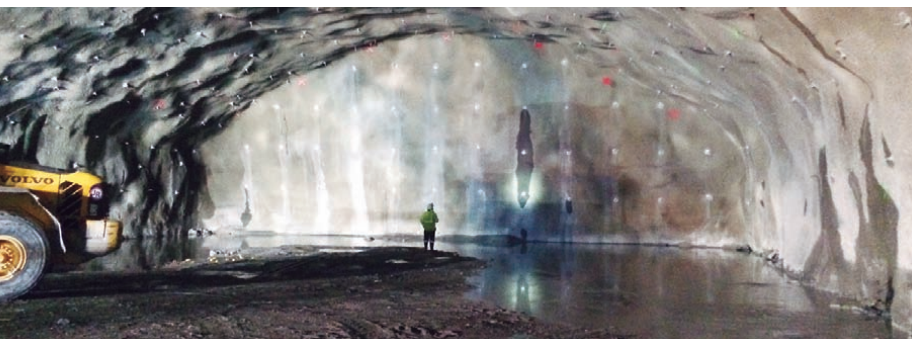
"Classical engineering or, as I would call it, 'from the catalogue', is increasingly price-driven, so we

have to develop new activities that aggregate value. As such, we are reinventing ourselves every day," he concludes.

EXPLORING NEW MARKETS

As well as developing new businesses, ACCIONA Engineering wants to explore markets for development. Forty percent of sales currently come from Latin America and 10-12% from Spain. "The aim this year is to reverse the trend and reduce our dependence on Latin America, increasing our percentage of business in Africa and Europe," Mr Baz explained.

The company now has an important presence in its regional centers in the world — Gabon, Romania and Qatar — and in specific countries such as Bolivia. In Costa Rica, in consortium with Ineco, it has just signed one of its most important recent contracts: the management of the Infrastructure Plan for the country, which will see it providing consulting services for the administrative, technical, legal and environmental management of the Transport Infrastructure Program (PIT) commissioned by the Costa Rican Government. The objective ►



The Follo Line project in Norway represents a milestone in the history of ACCIONA Engineering.

➔ As well as developing new businesses, ACCIONA Engineering wants to explore markets for development



Luis Baz

Director, ACCIONA Engineering

From El Salvador to Benin

An intrepid traveler who inherited his sense of adventure from his family, Luis Baz also loves to play rugby and other outdoor sports. A civil engineer from Madrid, he joined Iberinsa in 1993, the company merging with AEPO and eventually ending up as ACCIONA Engineering. After brief passage through the Madrid offices, where one job he worked on involved the replacement of steam turbine-generators at the Almaraz nuclear facility, Luis traveled abroad for 18 uninterrupted years, working on diverse projects such as the building of the Petronas Towers in Malaysia, the Fiumicino Airport expansion in Rome and a WWTP south of Milan. He then headed to El Salvador for 12 years, responsible for the launch of ACCIONA's engineering business in Latin America. Since August 2012, he is back in Madrid, leading a strategic area in ACCIONA.

You went to El Salvador, not the easiest of countries to work in...

Yes, and I was there 12 years. Personally speaking, it was a fantastic experience and I had no problem. My sons were born there. They are in Spain now but they still distinguish between Salvadorans and Spanish. I think it is very enriching for one's life. Countries as different as Malaysia, Italy and El Salvador also give you great flexibility and capacity to adapt.

Where would you most like to be?

Where I am at any moment. Is that pragmatic? I don't know. I feel that I am optimistic by nature and I'm good wherever I am. You have to take the positives and virtues of each place in all circumstances.

ACCIONA Engineering operates in many countries. Would you consider yourself to be a great traveler?

Yes, and not only for work. My parents infused me with the joy of traveling. We took pleasure as a family in traveling and seeing different realities, developed a kind of rootlessness in the best sense of the word. I would say traveling with the family is one of my main loves in life. The last trip we did together, in the Xmas holidays, was to Benin. It was not an obvious destination, but it's a peaceful place and we wanted to give our sons the new experience of a family traveling in a continent such as Africa.

➔ *"We took pleasure as a family in traveling and seeing different realities"*

As well as traveler, you are a sportsman.

I do a lot of sport, mainly long-distance — triathlon, fell running, cycling. I sincerely believe that, of the training I have received, languages and sports have best served my development. They have been character forming.

And you play rugby.

I did when I was young. In Spain, I played between the ages of 15 and 20, and then I went back to playing at 40 in El Salvador. I was with an Argentine and two French ex-players. We founded the Salvadoran Rugby Federation from scratch. They had never seen a rugby ball in El Salvador.

→ TACKLING CLIMATE CHANGE IN THE HORN OF AFRICA

ACCIONA Engineering recently led an international team of experts in preparing a Regional Climate Change Strategy for the IGAD (InterGovernmental Authority on Development) region — formed by several African countries including Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan and Uganda — which is being financed by the European Union for the 2016-2030 period.

The initiative to develop a regional strategy in the Horn of Africa is framed in the context of global concern over climate change, with the aim of uniting efforts to promote low carbon emissions and lasting development despite global warming in the region.

With this contract, ACCIONA Engineering has strengthened its international activity as a company that develops initiatives against climate change. The contract was performed by experts from the company and Prospect C&S, part of the Suez Lot6 Consortium working under the European Union Framework Agreement.



- is to modernize the road and port infrastructure of the country, as well as improving the project administration, auditing and assessment processes.

Several years ago, ACCIONA's engineering area won El Salvador's Territorial Development and Management Plan. "It was basically developing a national plan, not only for infrastructure, but on the legal level and for local and regional administration... and this had a 20-year horizon, which signified an very important level of planning for the country," Mr Baz recalled.

THE ROADS AREA

This positive experience helped ACCIONA Engineering win another important contract in El Salvador recently, for its special characteristics if not the value. It consists of a road for the Public Works Ministry, financed by the Millennium

Challenge Corporation (MCC), the US cooperation and development agency.

The project will "incorporate a focus on road design", said Mr Baz, "not an easy thing to establish". Clients increasingly ask us for things that are not strictly linked to engineering and 'the calculation of a beam'... We need the capacity to adapt to these requirements. We have been able to adapt to this necessity and have responded brilliantly. One challenge was to determine whether the needs of a road, in a country like El Salvador, are any different for men than they are for women!"

Another important recent contract concerns the social and environmental impact study for a new desalination plant in Gaza (Palestine), with financing from the European Union. The company will also soon be bidding for several hydroelectric projects — either from

the viewpoint of classical engineering or the performance of social and environmental impact studies — in countries as diverse as Tanzania and Nepal. "Being in many countries can be seen in two ways: we are widely dispersed, or we have a great capacity for travel. I prefer to think in terms of the latter," enthused Mr Baz, a vocational traveler who wants to take ACCIONA Engineering to where the business is — without worrying about the miles it has to cover. ■

ONLINE INFO

■ www.accion-engineering.com



ACCIONA'S COMMITMENT TO SUSTAINABILITY MAKES THE DIFFERENCE IN THE HOSPITALS IT MANAGES

Infanta Sofía Public Hospital cuts its environmental footprint by half

ACCIONA Concessions currently manages six hospitals with a total of 3,829 beds and 874,000 m² of floor space.

ACCIONA, as a concessions company that manages non-care services for the Infanta Sofía Public Hospital in San Sebastián de los Reyes, Madrid, has introduced environmental footprint reduction measures that have allowed the hospital to cut CO₂ emissions by almost half in five years. The center now requires 36% less energy and 20% less water as a

result. This effort has been accredited with BREEAM® certification, which verifies both buildings and their sustainable management. Infanta Sofía qualified as “excellent” in the building management category and “very good” for the building itself.

The hospital, under ACCIONA's sustainability regime, has introduced pioneering systems to Madrid's public hospital network

to improve energy efficiency, while maintaining and even stepping up the quality of service. These initiatives include the installation of monitoring mechanisms to allow energy demand from the building to be analyzed in real time, so that variations in electricity and natural gas consumption can be detected and immediate action protocols established to correct deviations. ►

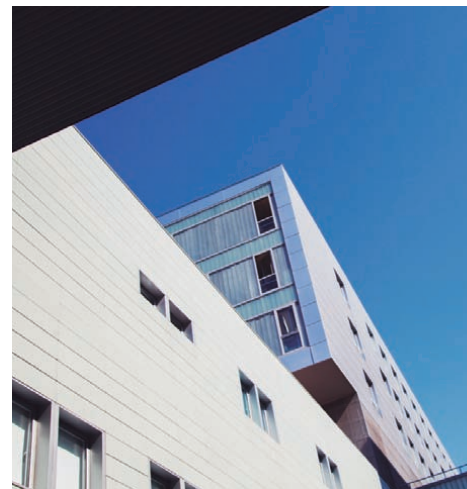
Commitment

- Thanks to this system, the use of efficient equipment, and adaptation of the air conditioning to outside and indoor temperature sensors, has seen natural gas consumption fall by 48% and electricity use 15%.

Additionally, 100% of the electrical energy consumed by the center is of renewable origin. As a result, in five years, and despite an

increase in patients, CO₂ emissions have halved.

Water management has also improved, with consumption falling in the same period by nearly 20%, due to savings measures for laundry and tap and cistern control, and awareness-raising campaigns have been conducted for personnel and patients.




// ACCIONA, which manages the public facility under a concession regime, has halved CO₂ emissions and cut water use by 20% in five years

// All electricity consumed by the hospital is of renewable origin and supplied by ACCIONA

// The measures were awarded BREEAM® certification for excellence in sustainable environmental management





➔ *Infanta Sofía Hospital, under ACCIONA's sustainability management, has introduced pioneering systems to Madrid's public hospital network to improve energy efficiency*

ONLINE INFO

■ www.accionainfraestructura.com



CONSTANT IMPROVEMENT

ACCIONA managers at Infanta Sofía submitted the center's installations and operations to the independent analysis of BREEAM® for the first time in 2013, obtaining "very good" for sustainable management and "good" in the evaluation of the building, constructed by ACCIONA.

Based on the certification entity's report, additional energy efficiency and environmental management measures were introduced this year. Newly analyzed and assessed, the center has now been awarded "excellent" in the management category and "very good" in building evaluation.

This analysis provided a roadmap for improving sustainability of the center, while it has managed to reduce operational costs and improve environmental performance and comfort.

In the words of José Luis García Matamoros, Director de Operaciones for the Technical, Quality and Environment departments of

SCHN, the medical partner in the concession, "the certification exercise was an incentive for incorporating new processes and equipment with the aim of improving the relationship between the hospital and its environment. Together we have deepened our social commitment to respecting the environment. BREEAM® is the ideal test for measuring our quality and tackling new challenges to be more efficient and sustainable".

Infanta Sofía Hospital is the only hospital center in Spain with BREEAM® sustainability certification. Internationally, ACCIONA has the highest rating of over 500 hospital centers to apply for this certification.

BREEAM® (Building Research Establishment Environmental Assessment Methodology) is an assessment and certification method that has been used for the sustainability of buildings for 20 years. Over 245,000 buildings have gained the certification in more than 70 countries. ■

Pioneers in balancing the grid with wind power

ACCIONA has become the first company worldwide to supply extra wind power to balance the electricity system when covering for technical constraints on transmission lines.

The fact that wind or solar radiation can vary at any moment, and therefore complicate forecasts of future available energy, has meant these technologies have for decades been seen as a problem in balancing the electricity system.

This view does not conform to reality, however, and ACCIONA recently reached a landmark by becoming the first company worldwide to provide adjustment services to the grid, by increasing wind power generation alone.

Such services are essential to the proper functioning of the grid, since electricity cannot be stored on a massive scale and, thus, all energy has to be produced the moment it is consumed. Any decoupling between offer and demand can, if it is not corrected on time, endanger the quality of the electricity supply.

Renewable technologies can now participate, as of 10 February, in this kind of service via the system

adjustment services managed by the System Operator — in this case, REE in Spain. The generating companies offer capacity or backup power that can be revised upward or downward — i.e., increasing or reducing existing output — to be managed the following day by the operator.

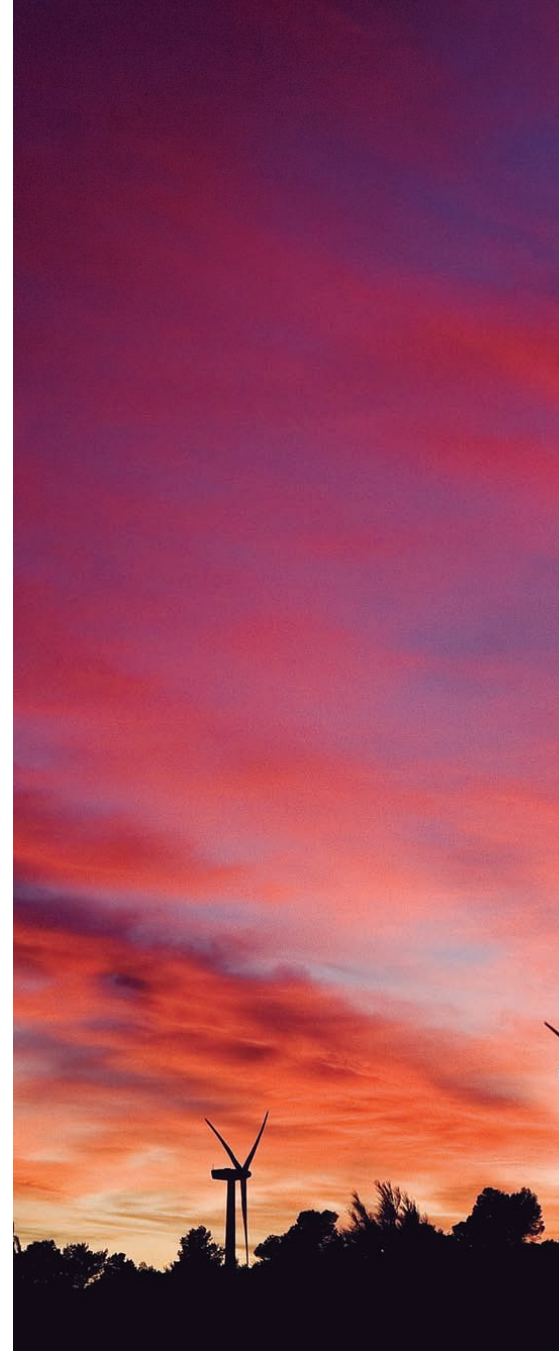
Historic day

In this context, on 28 February this year, an important landmark was reached in the management of the Spanish electricity system. ACCIONA participated in it as the first company to offer balancing services exclusively based on wind energy capacity, requested by REE to solve technical restrictions in transmission lines by providing additional power generation.

Instead of the usual situation, where wind farms are required by the operator to limit their production, the opposite, a more complex scenario, came into play: within minutes, a series of wind

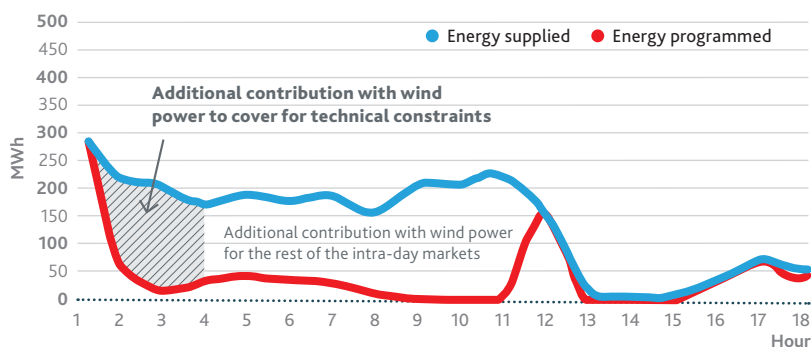
farms managed by ACCIONA were told by REE to increase their generation capacity by a total of over 150 megawatts (MW).

This was possible due to the technical capacity of the subsidiary, ACCIONA Green Energy Developments, which interacts with the market, and the ACCIONA Renewable Energy Control Center (CECOER), which remotely controlled the operation in constant coordination with REE. ►





→ **ACCIONA'S CONTRIBUTION TO THE ADJUSTMENT SERVICES OF THE SPANISH ELECTRICITY SYSTEM ON 28.02.2016**



ACCIONA achieved a milestone when it was called upon to contribute wind power to balance the electricity system.

Between 01.30 and 04.00 on 28 February, ACCIONA contributed 150 MW of wind power to cover the system's technical constraints.



ACCIONA Energy Renewable Energy Control Center (CECOER).

► ACCIONA to provide other adjustment services

As well as the service to resolve technical constraints, ACCIONA has also been accredited by REE for the provision of other system adjustment services, such as tertiary regulation and deviation management for wind power capacity of 999 MW (out of a nominal total of 4,735 MW in which ACCIONA currently participates in Spain).

Further down the line, the Company plans to set up other programming units based on wind power and to use other renewable technologies (outside of hydro power, which is already used for these services).

As well as ensuring a greater penetration in the grid, the

participation of renewable energies in system adjustment services will increase the level of competition in the markets, which will have a positive effect on the electricity price paid by consumers.

Electricity programming, against the clock

The electricity system has to keep a constant balance between generation and consumption to preserve the security and quality of the supply. The operator of the system — in Spain, REE — programs the operation of power plants from data provided by the market operator (OMIE), the system operation processes and demand forecasts managed by REE. Then it gives timely instructions for

production to be adjusted to real-time consumption.

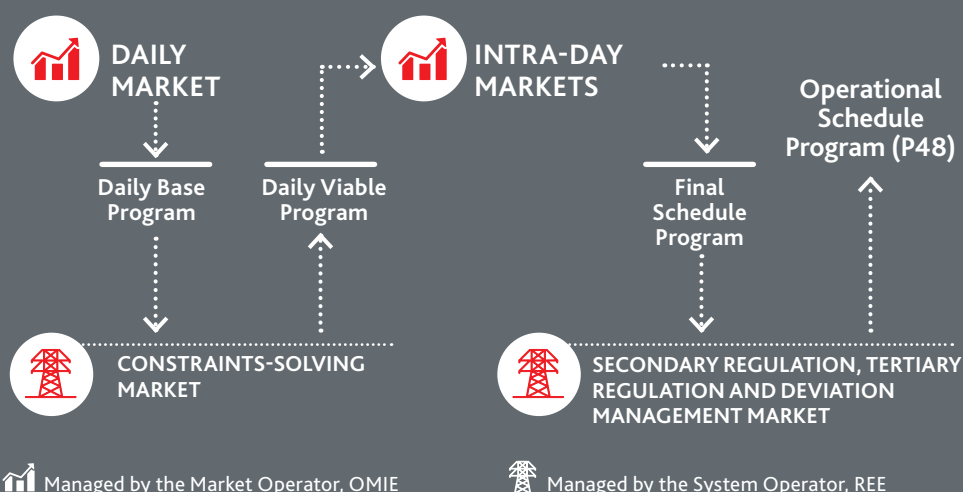
This process is carried out every day and against the clock — through highly regulated and complex procedures — such that the forecasting of programmed production and consumption is adjusted the closer the operation gets to real time. These are the main steps in the process:

➔ **Daily market (12h00).** Production agents and sellers of electricity transmit their offers by computer for each hour of the following day. Following the marginal model adopted by the EU, the sale and purchase offers are matched, starting with the cheapest, until



PROGRAMMING THE ELECTRICITY SYSTEM IN SPAIN

→ Schematic featuring the most important stages of the process of programming electricity system operations for the day following the daily market



existing demand is met, at which the price is fixed for all the energy managed in this hour.

→ **Daily Base Program.** This is the result of the daily market, incorporating the energy corresponding to bilateral contracts (outside the market).

→ **Constraints-Solving Markets.** Through these, the daily base program is adapted to the requirements of the electricity system.

→ **Daily Viable Program.** The result of the previous process, a technically viable program for system operation for each hour of the next day.

→ **Intra-Day Markets.** Buyers and sellers can readjust, during six daily sessions, their contract commitments up to around four

hours prior to consumption.

→ **Final Schedule Program.**

Programming established by REE after the intra-day market sessions.

→ **Secondary Regulation Market.**

Provides a band of available capacity to be later used automatically and in real time by REE.

→ **Tertiary Regulation Market.**

Repositions the secondary regulation energy used.

→ **Deviation Management Market.**

Established to resolve the differences between generation and consumption of over 300 MWh that can appear following the close of each intra-day market session.

→ **Operational Schedule Program**

(P48). The final result of the process. Through it, REE establishes the forecast for each hour, which is

published 15 minutes before each hour changes.

From this final forecast, as the system is operated, REE issues instructions to generators so that they increase or reduce production (adjustment services or real-time regulation) in order to maintain the balance of the system at any moment. ■

ONLINE INFO

■ www.acciona-energia.com

ACCIONA Canada: Building a model for sustainable growth

ACCIONA was awarded its first Canadian project in 2002, with the Deep Lake Water Cooling System project in Toronto. Canada continues to be a core market for ACCIONA, leading the way with infrastructure development, energy management and services.

In December 2015, ACCIONA signed a contract to build a concrete and earth dam for the 1100 MW Site C hydroelectric power project in the province of British Columbia — one of the country's largest infrastructure projects — while in February 2016, ACCIONA was awarded the contract for a drinking water treatment plant and water storage facility in the City of Saint John, New Brunswick. These milestones mark 15 years of successful infrastructure delivery in the country.



A30 Express Highway, Montreal, QC.

Canadian Country Director

Darren Sokoloski

Darren Sokoloski was born in Peace River, Alberta — not far from the site of the new dam. He's lived in Canada all his life, holds a Bachelor of Mechanical Engineering from the University of Victoria, and an MBA from Queens' University and Cornell University. As Country Director and President of ACCIONA Infrastructure Canada, his role is to guide the Canadian business unit forward toward a sustainable, profitable future.

What originally made you go into engineering?

I was a failed musician! I studied jazz guitar for a few years, then came to the realization that I was nowhere near good enough to make a living from it. I had lots of aptitude in the maths and sciences, so I went into mechanical engineering. I was particularly fascinated with anything to do with energy, so I started my career developing fuel-cell based technology and launching high-tech start-up businesses. After a number of years in the fuel cell business, I decided to change my career and become more business focused. I completed a joint Canada/USA-based MBA program with Queen's and Cornell universities. I subsequently began exploring project finance and private equity and entered the P3 infrastructure sector where I've stayed for the last nine years, before joining ACCIONA two years ago.

Your experience in infrastructure financing and delivery has given you a solid understanding of the Canadian market. What opportunities do you see for ACCIONA in Canada?

Like many countries, Canada has a huge infrastructure gap; the country is investing to build new infrastructure but also to improve the infrastructure that we have. The construction sector in Canada has grown faster than the economy for the last 10 years and accounts for 7% to 8% of our circa \$2 trillion economy. This growth is underlined by the new federal government's commitment to make infrastructure investment one of its top priorities. Additionally, the P3 procurement model has become well-established in Canada and is broadening in its application. ►



► **So what does ACCIONA have to do to be successful in Canada? What are the challenges?**

What's really important, and one of the most difficult things to achieve, is a stable human resource foundation. Our business does best when we have a lot of really good people who are motivated and working towards a common objective. To achieve this, we need to create a base of business, consistently available or repeating, that allows us to retain people on a long-term basis and to develop younger talent. A stable base of smaller projects, with shorter sales cycles and lower levels of risk, creates a foundation not just for revenue and cash flow, but most importantly, for people.

The second challenge is delivering our business in the context of the domestic market. ACCIONA brings a lot of technical expertise and experience in different aspects of civil infrastructure and energy. However, delivering this expertise into the local market requires a host of other skills and relationships that are best acquired by building a strong team of people who come from the local market.

“We’re looking to create a model for sustainable growth and to change the way we do business in the process”

ACCIONA has just signed two major contracts in Canada. One is to build a hydroelectric dam for the Site C Clean Energy project in the province of British Columbia. What is the significance of this project?

Site C is a fantastic opportunity for us, not just nationally but globally. It is not very often that the opportunity arises to build a world-class hydroelectric facility. This project will allow the company to train new people in how these projects are built; to refresh our collective global experience and credentials. At the country level the project is equally

beneficial. It's an eight-year project, providing stable work for a good period of time. It's also a project that we're going to self-perform: the size and duration of the project allow us to buy equipment and hire staff to run that equipment on a significant scale. Building up our capacity to self-perform work is an important tool for being successful across the rest of our construction business. I'd say Site C is a cornerstone of our business foundation going forward.

The Safe Clean Drinking Water Project in St. John, New Brunswick is not as big, but it's equally important...

This is the first water project that we've won in Canada. The contract is to build a 75 MLPD water treatment plant and upgrade associated reservoir and transmission works. It's a P3 with a 30-year operating period and associated equity investment requirement. We have a very strong offering in the water space, where we can design, build, operate, and guarantee performance.

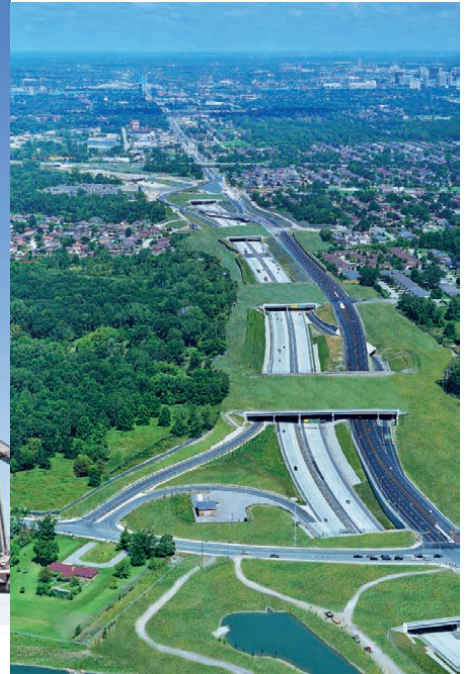
The Services unit has also just renewed one of its contracts at the Royal Jubilee Hospital in Victoria, B.C.

In addition to P3 and conventional construction projects in Canada, there are also great opportunities to expand our services business. Our initial services opportunity came through a P3 hospital project, the Royal Jubilee Hospital. The services team did such a good job providing the soft facility management (soft FM) services in the new tower we built, the Patient Care Center, that the healthcare authority invited them to bid for the rest of the existing hospital campus, and they won the contract. Currently ACCIONA provides a full scope of soft FM services for a 100,000 m² hospital campus, consisting of 785 beds over 15 buildings. The services team is also investigating opportunities outside the healthcare sector; as an example, they recently secured a new soft FM contract, in the commercial sector, with the provincial transit authority. High-quality and value added services is an area where we have solid experience and where segments of the Canadian market are under-served. I see further growth in the services sector as another key component of our business in Canada.

A30 Express Highway, Montreal, QC.



The Rt. Hon. Herb Gray Parkway, Windsor ON.



ACCIONA SERVICE PROVIDES A FULL
SCOPE OF SOFT FM SERVICES FOR:



*100,000 m²
hospital campus,*



*Consisting of over
785 beds*



15 buildings

ONLINE INFO

■ www.accionaca.ca
■ [@accionaca](https://twitter.com/accionaca)

What do you find most rewarding in your work as Country Director?

I enjoy the entrepreneurial aspect of what we're doing. The opportunity to create growth and change the way we do business, while working with a diverse group of committed people globally, is what both keeps me awake at night and motivates me to get up again in the morning.

When you're not at work, where might we find you?

I have two young children and, living in Vancouver, we have ample opportunities to go skiing and do outdoor things. I'm also a late-blooming amateur boxer. So far the highlight of my boxing career has been joining other like-minded pugilists in a charitable event called "White Collar Fight Night". We're a group of not-so-young professional types who invite our office mates down to watch us test our skills in the ring; while it's not the best quality of boxing you will ever see, the benefit of attending is that all the proceeds go to charity. ■



Site C Clean Energy Project
Fort St. John, BC.



South East Stoney Trail
Calgary, AB.



Walterdale Bridge
Edmonton, AB.

WALTERDALE BRIDGE REPLACEMENT PROJECT

EDMONTON, AB

ACCIONA recently successfully completed the critical skidding, navigation and installation of the 950-ton central arch necessary for the Walterdale Bridge Replacement Project. The central arch was floated into place and lifted 15 meters up in order to be connected with the two arch sections already resting on the berms. The new 230m bridge span features a signature arch structure serving as a gateway to the downtown core. The bridge allows for a greater flow of vehicles and pedestrian traffic across the North Saskatchewan River.

RT. HON. HERB GRAY PARKWAY WINDSOR, ON

The Herb Gray Parkway in Windsor, Ontario, achieved substantial completion in November 2015. It provides a much-needed route for heavy truck traffic to bypass secondary streets, not only improving quality of life for the city's residents but also allowing for more efficient international trade between Canada and the United States. Also in 2015, ACCIONA opened the Stoney Trail / Nosehill Interchange in Alberta.

SITE C CLEAN ENERGY PROJECT SAINT JOHN, BC

In December 2015, ACCIONA signed a contract to build the concrete foundations and earthen dam for a 1100 MW hydroelectric dam for BC Hydro, the province's electric power utility. The contract has a total value of CA\$1.8 billion (€1.18 billion), of which ACCIONA's participation is 37.5%. This is one of the largest infrastructure projects in Canada and is a component of the complete Site C Clean Energy Project, estimated to cost over CA\$8 billion (€5.27 billion).

ROYAL JUBILEE HOSPITAL (RJH) CAMPUS

VICTORIA, BC

We are renewing our contracts with Vancouver Island Health Authority and ISL Health until 2021. These two agreements include the provision of EVS and related services to the entire Royal Jubilee Campus which encompasses more than 100,000 m² over 15 buildings and 785 beds. ACCIONA provides a full scope of housekeeping and related services, including the servicing of Operating Rooms, Outpatient Clinics, Renal Units and critical care areas such as Intensive Care, Cardiac Care and Surgical Day Care areas.

ACCIONA ENERGY

BUILDING A CLEAN ENERGY FUTURE

ACCIONA was one of the first companies to enter Canada's renewable energy market and our expertise has helped supply Canada with clean energy across the country. Our Chin Chute and Magrath Wind Farms both began operating in Alberta in 2003. In 2007 and 2011, we expanded our track record into eastern Canada with the 76 MW Ripley Wind Farm in Ontario and the 45 MW Lamèque Wind Farm in New Brunswick. These four wind farms produce enough emission-free energy to power more than 60,000 Canadian homes.

ACCIONA's track record of building and operating wind farms helped the company win its largest project in Canada, the 102 MW South Canoe Wind Farm in Nova Scotia. Completed in 2015, South Canoe was ACCIONA's first turnkey contract to supply wind turbines and provide engineering, construction and operations services for a third-party customer.

Nova Scotia awarded the South Canoe project to a consortium of local companies who needed a partner with the experience and capabilities to make the project a reality. ACCIONA was able to apply its global experience to solve construction and operations challenges such as the project's remote location and harsh winters. "ACCIONA was able to deliver what the South Canoe project team asked for: a complete solution including highly-reliable, high-capacity wind turbines, construction services and operations and maintenance," says Ilya Hartmann, CEO of ACCIONA Energy North America.

The South Canoe project began generating electricity in 2015. By working together with local businesses and the community, ACCIONA made the project a success, supporting clean energy goals in Nova Scotia and across the country.

→ A BROAD PORTFOLIO

// MAGRATH WIND FARM, LETHBRIDGE, AB 30 MW

// LAMÈQUE WIND FARM, LAMÈQUE, NB 45 MW

// SOUTH CANOE WIND FARM, NOVA SCOTIA, 102 MW

// CHIN CHUTE WIND FARM, TABER, AB 30 MW

// RIPLEY WIND FARM, RIPLEY, ON 76 MW

*The Magrath Wind Farm
near Lethbridge, Alberta.*



Water for drinking

ACCIONA has built more than 100 drinking water treatment plants worldwide that guarantee clean water for 30 million people.

For ACCIONA Agua, serving people is our priority, and since our early beginnings we have always brought innovative solutions to problems of drinking water supply throughout the world. The company has shown this at the 100-plus drinking water treatment plants (DWTPs) it has built on five continents, which have a total capacity of over 7.5 million m³ and supply nearly 30 million people. In 2015 alone, ACCIONA Agua treated 197 hm³ of drinking water in places as far away from Spain as Mundaring

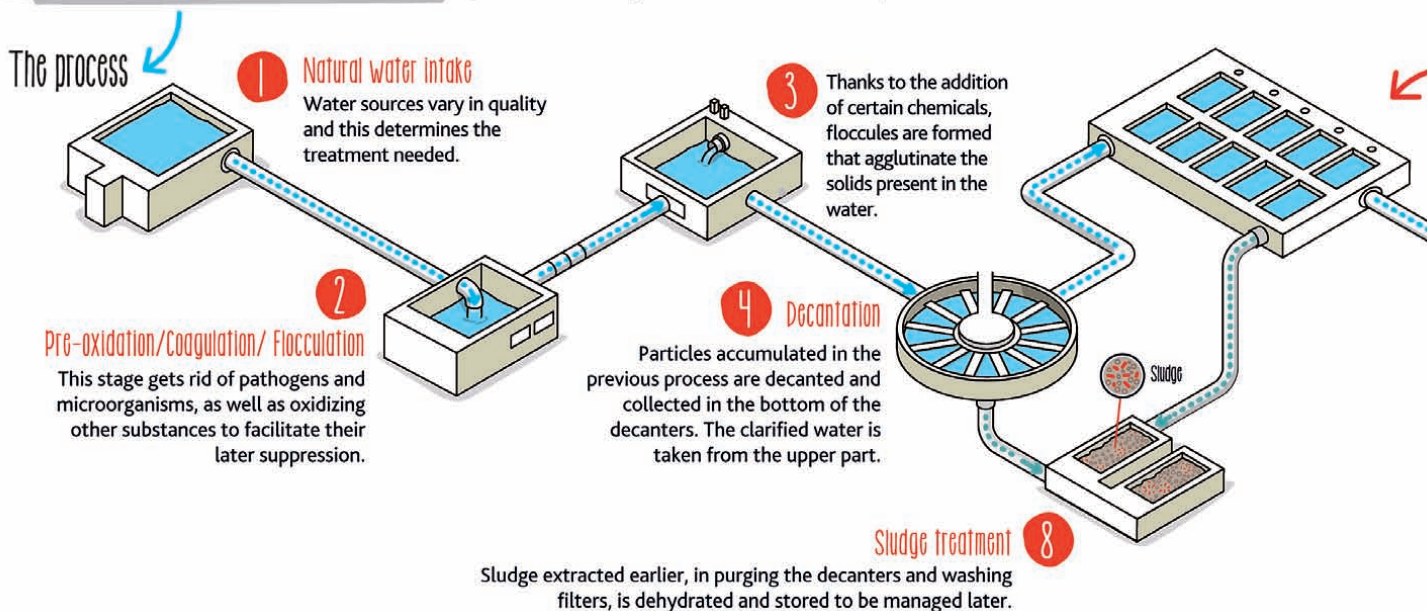
in Western Australia. Such a plant, which supplies drinking water to 100,000 people, and future facilities at Oum Mazza in Morocco and Saint John in Canada, demonstrate the ability of ACCIONA Agua to build facilities in different countries with diverse climates. The key to success is combining our engineers' know how with experience accumulated over the years. All this has seen ACCIONA Agua become one of the top companies in designing and constructing this type of water treatment plant.

ACCIONA AGUA HAS BUILT DWTPS IN 25 COUNTRIES ON 5 CONTINENTS:

CANADA // DOMINICAN REPUBLIC // NICARAGUA // COLOMBIA // PUERTO RICO // VENEZUELA // PORTUGAL // SPAIN // ITALY // IRAQ // EGYPT // MOROCCO // CHINA // INDONESIA // AUSTRALIA

Drinking water purification process

Purification is the process for treating naturally occurring water to make it fit for human consumption. This is done in Drinking Water Treatment Plants, or DWTPs.



→ NEW WATER PURIFICATION TECHNOLOGIES

Reverse osmosis for purifying water

Increasing irrigation of crops that, until relatively few years ago, were always just rain fed, such as vines and olives, and a growing population and changes in the ways potable water is consumed, have all led to a greater use of water resources than in the past. This is the case in the area supplied by the Martos DWTP in Jaén, southern Spain.

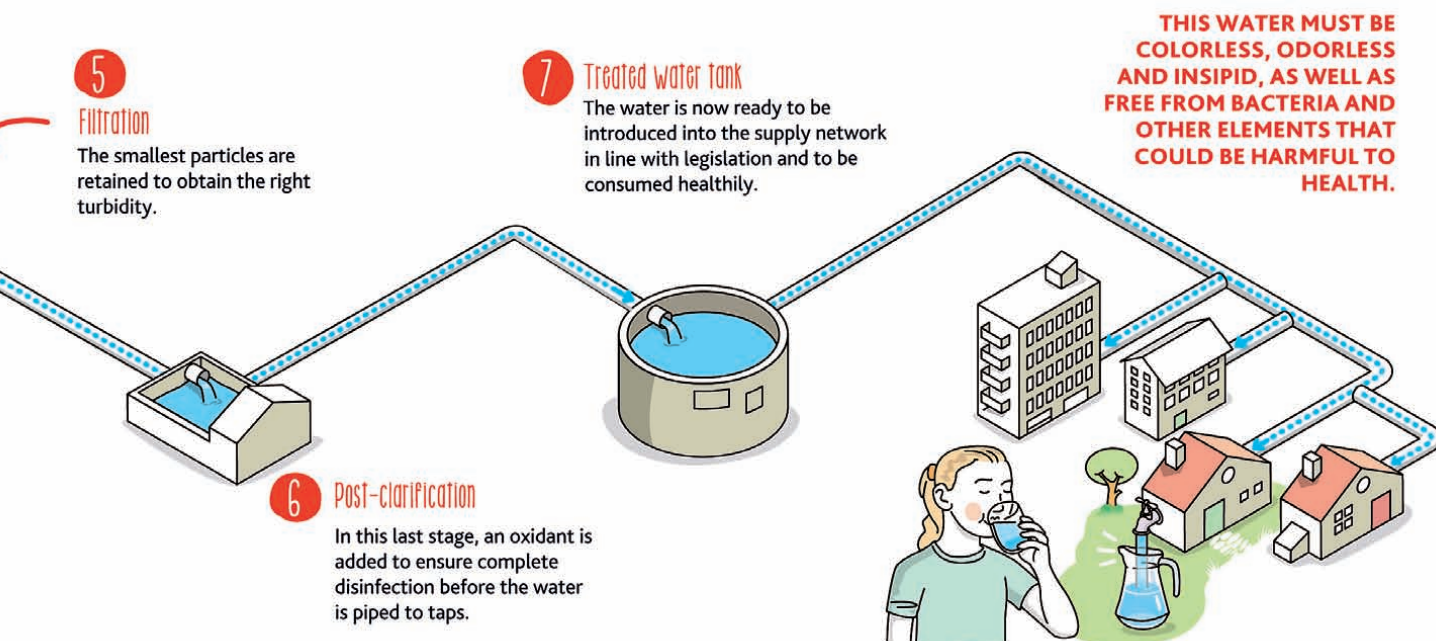
The capacity of the original plant built in 2003 has had to be increased by sourcing from Viboras reservoir in Casillas municipality, for which an intake and pipe network to the DWTP had to be built.

This reservoir is unique in that some of its basin lies over gypsum deposits. As such, saline streams feed into the reservoir with a high concentration of sulfates and chlorine.

To use this water from the reservoir in the DWTP at Martos, it was necessary to install reverse osmosis membranes, normally used in desalination, to improve the quality of the reservoir water to that stipulated by legislation governing the quality of water fit for human consumption.

The new arrangement ensures sufficient supply to municipalities dependent on the DWTP and which had been suffering water shortages due to over-reliance on the historic mineral springs in the area.

Following the use of the reverse osmosis system, and the mixing of this desalinated water with supply from the Martos springs, a higher quality drinking water has been produced than was available before, since the mineral water from the springs also carried a high salt content.





O&M Manager for
conventional plants

José Miguel Belloso

PROFILE

José Miguel Belloso is an industrial technical engineer, specialist in mechanical engineering, who graduated from the University of Navarre. He also acquired an MBA in sustainable economics from EOI, the Spanish industrial management school. Before joining ACCIONA Agua, where he worked 15 years, he was a management and supply engineer for the community of Mairaga in a public company dedicated to the management of water supply, sewage treatment and solid urban waste management in the central district of the Navarre region.

If you told José Miguel Belloso that, by the end of his career, he would manage drinking water treatment plants in all corners of the earth, he wouldn't have believed you. This 44-year-old Navarran, a native of Tafalla, has spent the best part of his working life dedicated to ensuring people receive their water; not any old water, but water in optimum condition and vital for good health. Manager of Operations and Maintenance for ACCIONA Agua's conventional water treatment plants, he has over 20 years' experience in the field. His work in the O&M department varies from operations, maintenance and service contract management to the preparation of commercial offers, works management for sewage and drinking water treatment plants, and customer relations, among other things. Almost all the water drunk in the north of Spain, for example, depends on José Miguel and his team. And fate decreed that he would also be managing not only plants in Navarre or Biscay, but the Mundaring DWTP in Australia and, soon, another in Saint John, Canada.

What are your main roles?

Generally, my post at ACCIONA Agua involves managing the different Operations and Maintenance contracts, not only for drinking water plants but also the department's sewage plants. I would describe it as managing little companies, each one of the contracts in itself representing a business, involving anything from customer relations to staff.

What does drinking water treatment consist of?

The purification of water for human consumption is a physical and chemical process and the so-called conventional treatment plants are normally designed in the following way: the capture part, where raw water is received from the reservoir or river, etc., is where we add chemical reaction agents such as

coagulants and flocculants to help suspended particles form floccules, which, due to their weight, can be eliminated in the next stage, which is decantation. The final stage consists of sand filters and is the so-called purification treatment. By adding chlorine to this filtered water, we comply with the regulations for supplying drinking water to the population.

trial sector, since production stoppages for water outages can cost companies millions.

From the health standpoint, supplying potable water in line with the legislation in force minimizes risk of disease and viruses that can be transmitted from drinking it. To sum up, a drinking water treatment plant is a guarantee of our wellbeing, and we often forget it's a luxury in many developing countries.

➔ *“A drinking water treatment plant is a guarantee of our wellbeing, and we often forget it's a luxury in many developing countries”*

What function does a DWTP have?

It is indicative of our society, as I see it. It happens to us all that we travel abroad on holiday and they tell us not to drink the tap water. Developed societies are used to regarding the provision of drinking water as automatic and beyond argument, the treatment systems and distribution networks guaranteeing supply at any given moment. The society in which we live has made water supply a right, but we quickly forget that, not so long ago, many localities in our countries suffered restrictions in summer. On the other hand, we have to remember that potable water is not only for drinking, but a continuous supply is very important to the indus-

What do you need to head a DWTP?

Having known a few DWTP managers over the years, I would say that, as well as the obvious technical competence, the head of a DWTP needs to be aware of the importance and responsibility of the role. The responsibility for a basic supply of the required quality lies in their hands.

Which ACCIONA Agua DWTPs are you responsible for?

Presently in the department, we operate and maintain a total of 20 DWTPs, from the biggest in Mundaring (Western Australia), with a capacity of 2m³/s, to the smallest at 5 liters/second.

Different technologies have been applied to purification and desalination. Is Spain an advanced country as far as water treatment is concerned?

Spain, and ACCIONA Agua as the exponent of its water treatment industry, are state of the art in three fields: desalination, drinking water purification and sewage treatment. More specifically, in my opinion we do not have to look further than the recent awards we have won in far-away, technologically advanced countries like Australia and Canada, to see that we are at the vanguard of this technology.

What does ACCIONA Agua bring to the design and construction of DWTPs compared to other companies in the sector? Why do our international customers choose us?

International customers come to ACCIONA Agua as a technological company, but also because we offer an integrated solution. We have great knowledge and long experience in all areas of the process, from design to construction, commissioning and operations, without forgetting R&D and innovation. The latter is what makes the difference. We innovate to differentiate ourselves from the competition and optimize all our processes and results. ■

ONLINE INFO

■ www.accion-a-agua.com

ACCIONA develops a methodology for measuring the socioeconomic footprint of its activity

In collaboration with consultants EY, ACCIONA has analyzed the impact of its renewable energies activity in Mexico and South Africa.



Eurus wind farm in Oaxaca, the first installed by ACCIONA Energy in Mexico.












ACCIONA's wind farms will contribute US\$ 1.18bn to Mexico's GDP over their lifetime.

ACCIONA, collaborating with consulting firm EY, has developed a methodology for measuring the socioeconomic footprint of its activity in the markets where it operates. The theoretical development of the methodology was accompanied by the performance of two first studies, measuring the contribution

of ACCIONA Energy's activity in the renewable sector in Mexico and South Africa, which have allowed us to complete, test and correct the model to ensure its validity.

The project, entitled *ACCIONA: a business strategy with social value*, forms part of the Sustainability Master Plan and was borne out of a concern and need

The socioeconomic footprint of ACCIONA Energy in Mexico










	Contribution to Mexican GDP of 858 MW installed by ACCIONA	US\$ 1.18 billion during the life cycle of the installations (26.5 years)
	Contribution to Mexican GDP per MW (wind) installed by ACCIONA	US\$ 1.38 million during the life cycle (26.5 years): - US\$ 0.908m direct effect - US\$ 0.338m indirect effect - US\$ 0.134m induced effect
	Contribution to job creation* from 858 MW installed by ACCIONA	1,748 stable jobs during the life cycle (26.5 years): - 1,166 direct - 356 indirect - 226 induced
	Contribution to job creation per MW (wind) installed by ACCIONA	54 employee-years**: - 30 employee-years during 1.5 years (turbines, development and construction of the facility) - 24 employee-years during 25 years (operation and maintenance)
	Contribution to energy security and independence	2,174 GWh (wind) produced by ACCIONA in 2014: - Savings of US\$ 20.5m on natural gas imports
	Promotion of community development projects	US\$ 836,625 invested since 2010 - 16,500 people benefiting
	Emissions avoided by wind generation by ACCIONA in 2014 (2,714 GWh)	- 1.1m tonnes of CO ₂ , equivalent to emissions per capita of 245,000 inhabitants - US\$ 43m avoided in leviable climate change costs - 2,400 tonnes of NOx - 3,200 tonnes of SOx - Health costs avoided: US\$ 3m
	Water consumption avoided by ACCIONA wind generation in 2014	- 1.7 million m ³ - Equivalent to consumption of 13,000 Mexicans
	Use of land for ACCIONA projects	- 100ha net increase in reforested area - With an estimate value of US\$ 79,000

***Direct effect**: corresponds to ACCIONA Energy activity (without accounting for the intermediate inputs needed to manufacture the equipment and excluding own employees). **Indirect effect**: measures adjustments to production levels of all sectors in response to the demands for the products ACCIONA needs to develop its activities. **Induced effect**: shows the effect of the increase of the purchasing capacity of consumers, resulting in an additional effect on final demand.

** Job creation must be understood using the employee-years unit, which corresponds to an estimate of the number of employees at Full-Time Equivalent (FTE) during one year. For example:

- An individual working on the construction phase of a wind farm during 6 months will represent 0.5 employee-years.
- An individual working on the operation and maintenance phase during 25 years will represent 25 employee-years.

The socioeconomic footprint of ACCIONA Energy in South Africa

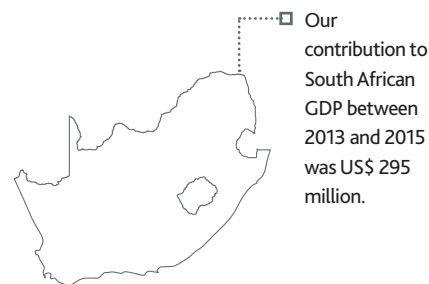
	Contribution to South African GDP of 212 MW installed by ACCIONA	US\$ 295 million between 2013 and 2015
	Contribution to South African GDP per MW (wind) installed by ACCIONA	US\$ 1.5 million during the life cycle (26.5 years): - US\$ 0.619m directly - US\$ 0.505m in supply chain - US\$ 0.378m in other sectors
	Contribution to South African GDP per MW (photovoltaic) installed by ACCIONA	US\$ 1.76 million during the life cycle (26.3 years): - US\$ 0.706m direct effect - US\$ 0.607m indirect effect - US\$ 0.448m induced effect
	Contribution to job creation* from 212 MW installed by ACCIONA	9,647 employee-years (2013-2015): - 4,074 direct - 3,094 indirect - 2,479 induced
	Contribution to job creation per MW (wind) installed by ACCIONA	45 employee-years: - 26 employee-years during 1.5 years (turbines, development and construction of the facility) - 19 employee-years during 25 years (operation and maintenance)
	Contribution to job creation per MW (photovoltaic) installed by ACCIONA	54 employee-years**: - 41 employee-years during 1.3 years (equipment, development and construction) - 13 employee-years during 25 years (operation and maintenance)
	Promotion of community development projects	- Fulfillment of Broad-Based Black Economic Empowerment requirements - Promotion of self-employed status - School breakfasts for over 3,000 children
	Emissions avoided by renewable generation by ACCIONA in 2015 (437 GWh)	- 0.4m tonnes of CO ₂ , with US\$ 15m avoided in leviable climate change costs - 1,150 tonnes of NO _x - 2,500 tonnes of SO _x - Health costs avoided: US\$ +2m
	Water consumption avoided by ACCIONA wind generation in 2015	- 0.8 million m ³

* **Direct effect:** corresponds to ACCIONA Energy activity (without accounting for the intermediate inputs needed to manufacture the equipment and excluding own employees). **Indirect effect:** measures adjustments to production levels of all sectors in response to the demands for the products ACCIONA needs to develop its activities. **Induced effect:** shows the effect of the increase of the purchasing capacity of consumers, resulting in an additional effect on final demand.

** Job creation must be understood using the employee-years unit, which corresponds to an estimate of the number of employees at Full-Time Equivalent (FTE) during one year. For example:

- An individual working on the construction phase of a wind farm during 6 months will represent 0.5 employee-years.
- An individual working on the operation and maintenance phase during 25 years will represent 25 employee-years.

➔ *The research measures the effects of contribution to GDP, job creation and other social and environmental factors, such as community development investment and emissions reduction*



Sishen photovoltaic plant in South Africa, commissioned at the end of 2014.

- for quantifying reliably the contribution of the Company to economic growth, social progress and environmental equilibrium in the regions in which it is present. It contains a tool that quantifies in real terms the complete contribution of the Company and thus closes the circle of ACCIONA's involvement in the communities in which it operates.

The launch of this methodology began with the study of the impact of the renewable energy business (wind and photovoltaic) in two strategic countries: Mexico and South Africa. It will be extended

progressively to other markets and activities with the ultimate goal of having a complete picture of ACCIONA's socioeconomic impact, broken down by country, division, business and project.

The objective for 2016 is for the Energy business to measure its socioeconomic footprint in two additional countries, and to adapt the methodology to the Infrastructure division by conducting a pilot project.

The methodology provides figures on the direct, indirect and induced impact on GDP and employment per MW of wind

or photovoltaic capacity and, by extension, the overall impact of the MW installed by ACCIONA.

It also provides insights into other variables such as the contribution to energy security and independence, the value of community action projects, avoided emissions of CO₂ and other gases that are harmful to the environment, avoided water consumption, and land use. ■

ONLINE INFO

■ www.slideshare.net/acciona

From the physical to the digital with **REALITY CAPTURE**

ACCIONA Service plunges into the possibilities of the digital world, 'capturing reality' thanks to an innovative technology that has potential for the real estate, tourism and industrial sectors.

ACCIONA is integrating captured reality applications into its services portfolio, offering the possibility to digitize a wide range of spaces in buildings, industrial installations, technical facilities, museums, hotels and the like. The new software, marketed by ACCIONA Service, opens a wide range of possibilities to industrial sectors, real estate concerns, tourism and facility management, and offers big advantages in engineering, operation and maintenance, training and occupational risk prevention, as well as commercial fields.

Reality Capture is different from other similar techniques for creating three-dimensional models, in which digital models of space or property are generated from data obtained by a series of 360° video, photo and infrared sensor technologies. During the capture process, a faithfully dimensioned digital 3D model of a space is automatically generated and available in the cloud within 48 hours. This can be used for making immersive virtual tours, taking measurements, analyzing spatial distributions, planning reforms or maintenance, identifying alternatives for optimizing operational costs, monitoring works, etc. These are just a few examples of the possibilities offered





*360° image of the Victorio Macho Museum.
Royal Foundation of Toledo.*

by the transformation of the physical to the digital that the Company is introducing for the first time with Reality Capture by ACCIONA.

A new 3D digital model can also be generated using the Building Information Modeling (BIM) software applied to buildings and infrastructures, which allows As-Built plans of captured locations to be obtained at a highly competitive price. Access to building plans is a valuable tool for obtaining exact, detailed information of real spaces and their configuration, since in many cases there are significant differences from design plans and the latter are not always immediately available. This tool is therefore becoming a valuable resource in engineering, industrial installation, collaborative architecture, asset management, maintenance, etc. The model can also be hooked up to external management systems such as CAFM, GAMO and BMS, among others.

At the operational level, work can be performed faster and with greater flexibility using the technology. Virtual tours of places can be taken via a web platform and through virtual reality devices, allowing the experience in a captured environment to be enjoyed in a more immersive way, giving ►

REALITY

CAPTURE

VIRTUAL REALITY

BIM MODEL & AS-BUILT PLANS



- the sensation of being physically present in the place.

By helping avoid a physical visit to a building or installation, captured reality has great potential as a tool for selling projects or buildings, and will be very attractive to engineers, consultants, real estate companies, museums, hotels and shopping malls, etc., all of which can use it to display their projects in a much more realistic way.

Another field where it is very useful is in the prevention of workplace accidents, and several clients have shown interest in this technology for the evaluation of evacuation routes and emergency exits.

The innovative technology will also change the way in which training is carried out, since it can be conducted in virtual spaces identical to reality, permitting workers to view equipment, motors

or installations as if they were actually on site, and to learn and test their knowledge of facilities.

The Corporate Innovation Department introduced this technology in ACCIONA during 2015, capturing various facilities in Russia, the Middle East and Spain. It was transferred to ACCIONA Service at the beginning of 2016, incorporated into its business activities and a new technological service has been created for customers.



Trasmediterranea's Milenium Dos vessel.

◀ NAVIGATING BETWEEN TWO WORLDS

Walking around the inside a ship is no longer an experience reserved for the privileged few. With Reality Capture technology, the interior of Trasmediterranea's high-speed catamaran, *Milenium Dos*, was shot taking 360° panoramic photos capturing its geometry, enabling anyone to take a virtual tour of the ship, stroll through the restaurant areas, up to the captain's bridge, or the passenger and car decks. A truly immersive experience is possible using virtual reality devices, giving the sensation of being physically present anywhere aboard the vessel.

→ ADVANTAGES

- Shows the interior of buildings using 3D models and 360° photography without going anywhere.
- Creates a model that can be accessed via the web and virtual reality devices.
- Has a tool for the planning and visualization of building alterations.
- Produces 3D and BIM models for operation and maintenance services.
- Is quick and responsive when carrying out work.
- Represents an innovative technology with great marketing power.
- Can be visualized in virtual reality systems.



Captured Reality Video:
<http://acciona.sa/YT75300kp7J>

This new service is the fruit of synergies between different businesses in the ACCIONA Group: engineers from ACCIONA Engineering and ACCIONA S.A. innovation department, as well as ACCIONA Service, are involved in developing it. ACCIONA Service has expanded the catalogue of services it offers to its clients and Reality Capture is already available to interested companies or individuals.

Success stories

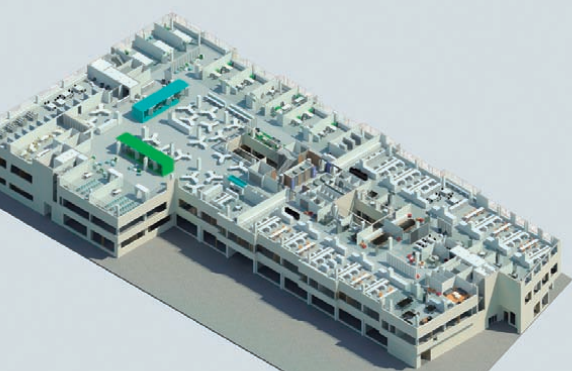
ACCIONA Service has performed captured reality works for customers within the ACCIONA Group. It captured Trasmediterranea's high-speed *Milenium Dos* catamaran and Tenacia and Fortuni ferries. For ACCIONA Inmobiliaria (Real Estate), a building situated in Madrid's Albarracín Street was captured to offer potential clients the possibility of remote prospective visits, as well as for simulating

ONLINE INFO

- More information at <http://acciona.sa/uAaj300yNTO>
- Request a demo by emailing to: realitycapture@acciona.com

possible furniture arrangements in spaces in the building.

For ACCIONA Agua, sewage and desalination plants were captured, and for ACCIONA Energy various facilities such as the wind turbine assembly plant at Barasoain, the wind turbine blade factory at Lumbier, and the biomass plant at Sangüesa. Likewise, work has been performed for external clients with excellent results, such as at the Victorio Macho Museum, belonging to the Royal Foundation of Toledo. The technology faithfully reproduced the entire interior of the museum and the resulting model will allow users to take a virtual 3D tour of its facilities and spaces, allowing them to discover a new attractive and innovative way of viewing the complete artistic legacy and learning about the life of the Palencian sculptor. ■



Albarracín Building, ACCIONA Inmobiliaria (Real Estate).

◀ ACCIONA REAL ESTATE OPENS ITS DOORS TO A DIGITAL FUTURE

ACCIONA Inmobiliaría, the Company's real estate arm, owns a building in Madrid's Albarracín Street, which offers rented space, including for commercial activities. Using captured reality, potential clients can remotely visit all the floors of the building, a total surface area of 17,546 m², through the automatically generated 3D digital model, discovering the real dimensions of the building and carrying out facility management through a model generated using BIM, as well as analyzing alternatives for exploiting space and trying out different configurations using virtual reality equipment.



APD debuts in Kuwait with museums on history and nature

The Remembrance and Habitat museums, with combined exhibition space of over 3,400 m², are to be found in Kuwait's Al-Shaheed Park. ACCIONA Producciones y Diseño (APD) is responsible for their technical development and museography.

ONLINE INFO

■ www.accionapd.com
■ @accionapd

APD performed the technical development and museography for the Remembrance and Habitat museums, the company's first projects in Kuwait. These display the history of the country, as well as its natural resources and ecosystems, through over 3,400 m² of permanent exhibition. APD, following a design by the US company Ralph Appelbaum Associates (RAA), used technological innovations for the museums to produce interactive and didactic environments where state-of-the-art audiovisual resources, such as large-format screens, immersive

video and hyper-realistic recreation, can flourish.

A trip through time

The Remembrance Museum, with an exhibition surface area of 900 m², shows the decisive moments in the history of Kuwait and pays homage to the country's heroes and martyrs in a journey through the main battles that define the nation. For this, APD used four large interactive sculptures, created from different materials, which symbolize the four most important battles in Kuwait history and integrate audiovisual elements.





→ CONSOLIDATED PRESENCE IN THE MIDDLE EAST

APD has increased its activity notably in recent years with several projects:

In Qatar, these include:

- the recently inaugurated Doha Heritage Museum Houses, and
- various exhibitions for the Orientalist Museum and Museum of Islamic Art.

In Oman:

- museography for the National Museum.



The main audiovisual elements are:

- Our Land Map: an interactive circular table with a 4m-diameter LED screen, on which a map of the region is projected for visitors to interact with and discover key battle sites.
- Our Identity Wall: a video wall comprising 24, 32-inch monitors that reflect the values of the Kuwait people throughout their history, using archive images and animation.

A look at nature

The Habitat Museum seeks to incentivize the visitors with respect to nature, displaying the wealth and diversity of Kuwait's habitats. On entering, visitors receive a Seed Ticket — which contains an real, incrusted seed from one of Kuwait's indigenous plants — containing a chip that allows them to obtain information related to one of 18

seed types, and to interact with a range of multimedia equipment, personalizing the visit. Resources used here include the:

- Migration Corridor: hyper-realistic recreations of Kuwait's fauna and flora, complemented by interactive designs displaying scenes of the life of birds in their natural habitats.
- Landforms Tables: four interactive tables, with a total surface area of 54 m², showing the topography of the country.
- Terraria Table: methacrylate bubbles recreating small ecosystems, home to the most important plants in Kuwait.
- Forces Theater: a 26m-long surround audiovisual projection with spectacular panoramas depicting the country's natural landscapes. ■

Remembrance Museum (Kuwait).

News roundup

- The Russian authorities inaugurated the Boris Yeltsin Presidential Center, the museography and technical development of which were trusted to ACCIONA Producciones y Diseño. APD employed the most innovative exhibition techniques, integrating state-of-the-art technologies.



- ACCIONA Energy began building a 93 MW wind farm in Texas. The project, awarded by the developer Pioneer Green Energy, will comprise 31 AW3000 wind turbines and begin operating in Q4 of 2016.
- The Victorio Macho Museum in Toledo is one of the first institutions to try out ACCIONA's Reality Capture technology. The museum, which houses the work of sculptor Victorio Macho, will have the innovative technology installed by ACCIONA Service, giving visitors an exact three-dimensional replica of its features.



- The Moroccan King, Mohamed VI, presided over the inauguration of the NOORo 1 solar plant, part of the NOORo solar complex in Ouarzazate, which, when completed, will be the biggest on earth. ACCIONA, TSK and SENER form the EPC consortium for the modern, high-efficiency power facility. It will supply 500 GWh of solar energy per year, enough to meet the demand from 135,000 homes and avoiding the emission of over 140,000 t/year of CO₂.
- ACCIONA Agua won the design, construction and commissioning of two new Wastewater Treatment Plants (WWTPs) at Kutahya and Akşehir in Turkey. The Kutahya plant will be able to reach 100,000 m³/d, expandable to 120,000 m³/d in a second phase.
- ACCIONA's commitment to reducing CO₂ emissions was recognized by its inclusion in the CDP Supplier Climate A List, made by only 2% of those companies assessed worldwide. The index accredits the excellence of the Company as a supplier of products and services based on low-carbon-emission business models.

JANUARY

- ACCIONA Airport Services won one of two handling licenses for Düsseldorf Airport, allowing it to offer check-in, boarding, lost-and-found, ramp, operational and cargo services for seven years. Düsseldorf is the third largest airport in Germany, with an annual volume of over 20 million passengers.



- ACCIONA won two 2015 Project Finance International Awards. Toowoomba highway in Queensland, Australia, worth AU\$ 1.6 billion, was awarded Asia Pacific Road Deal of the Year; and Sydney Light Rail, worth AU\$ 2.1 billion, won Asia Pacific PPP Deal of the Year. Both projects are being developed in consortium.

FEBRUARY

- The Autonomous Government of Esmeraldas Canton in Ecuador awarded an ACCIONA-led consortium the construction, extension and improvement of the water capture and purification structures in Esmeraldas for 27m euros. The project, a turnkey contract, includes a Drinking Water Treatment Plant and electricity substation.

- ACCIONA Energy was awarded the long-term supply of 585.7 gigawatt-hours (GWh) of electricity of renewable origin to the wholesale market in Mexico. The award will result in a 168 MW wind farm in Tamaulipas state, which will enter into operation in 2018 and be able to meet the demand from around 350,000 homes.
- The Ineco-ACCIONA Engineering consortium signed a contract with the Costa Rican Ministry of Public Works and Transport to provide consulting services for the administrative, technical, legal and environmental management of the country's Infrastructure and Transport Program. The aim of the program is to modernize road and port infrastructure, as well as improve project administration, auditing and evaluation processes.



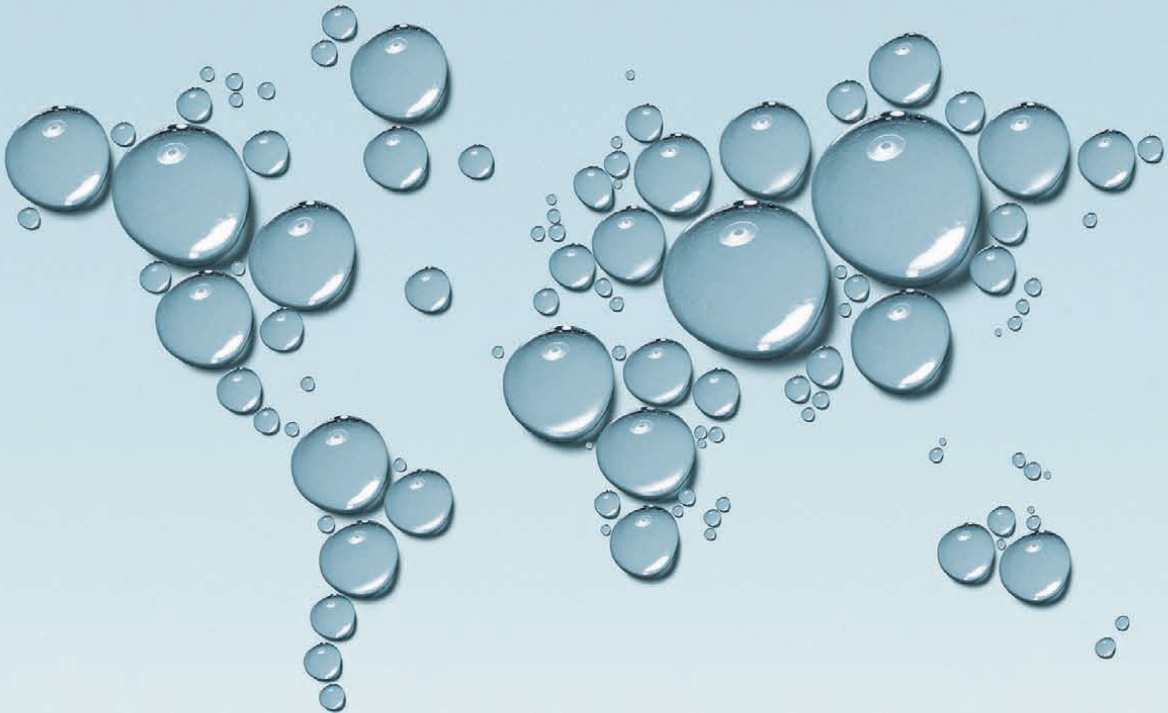
- ACCIONA Energy, through its marketing subsidiary ACCIONA Green Energy Developments, will supply 100% renewable origin electricity to the Reina Sofía Art Museum in Madrid. As such, the Company strengthens its leadership as an energy supplier to the art exhibition sector in Spain and adds the Reina Sofía to a long list of museum and cultural institutions with which it is working.

MARCH

- ACCIONA ENERGY inaugurated Bokpoort Solar Thermal Plant in Northern Cape, South Africa, developed by the Saudi group ACWA Power under a turnkey EPC contract. The new plant is already operating and has a nominal capacity of 55 MW.
- ACCIONA received the "R&D&I Applied to Sport" award from the Madrid Sports Press Association (APDM) in recognition of the ACCIONA 100% EcoPowered project. The car is the first and only vehicle to compete in the world's toughest motor race, the Dakar Rally, without emitting CO₂.

APRIL

- Following authorization of the operation by the competent bodies, ACCIONA Windpower and Nordex completed their merger to create a world wind energy leader, in a transaction worth 785 million euros. Joint sales of both companies amounted to 3.4 billion euros in 2015 and they had a combined workforce of 4,800 employees.
- ACCIONA Agua was chosen as Best Desalination Company 2015 by the magazine Global Water Intelligence. GWI, a reference in the sector, recognized ACCIONA Agua's achievements in 2015 in the desalination market, especially its presence in the Middle East.



EVERY DROP COUNTS IN CHANGING THE WORLD

ACCIONA Agua is present at every stage of the water management cycle. We work ceaselessly to ensure the responsible use of water, improving each of our services all of the time, from capture and purification to return to nature.

We handle a resource that is essential to us all. Every citizen of the planet needs, and has the right to enjoy, water.

Water. Vital to life. Vital to human progress

