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idom Annual Report 2017

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INNOVATION
EXCELLENCE
COMMITMENT

2017

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AND NOW, WHERE TO NEXT?

2016 has been, once again, a year of important development for IDOM.

As can be seen from the projects in which we have managed to participate, from a geographic perspective, and despite the turbulence, of all kinds, that has affected the world economy, we have been able to consolidate our presence in many markets of great Interest to us: Mexico, Colombia, Arab countries, Maghreb and many others.

From the perspective of technological development, our clients have put their trust in us to undertake technologically outstanding projects in fields such as the development of cities, the design of embedded elements in satellites, the world of nuclear power, new metro line projects, the manufacturing industry or power generation.

And from the perspective of team development, we are on a growth path in practically every place we operate.

IDOM turns 60 in 2017, and if we look back we can see that our company has progressed continuously throughout its history, taking an important qualitative and quantitative leap in the last 12 years, under the presidency of Fernando Querejeta.

We are a company with activity all over the world, a large first-rate management team, an enviable financial situation, and processes which are increasingly more efficient. 80% of our work is international, with contracts totaling more than EUR 350 million, and we can count on an extraordinarily well prepared team that already exceeds 3,000 people.

We have achieved all this during the years that, for the world in general and Spain in particular, have not been a boom time. We have been able to adapt to the needs of our clients, who in turn have appreciated this capacity to adapt.

I would like to thank Fernando Querejeta, on behalf of everyone, for his important contribution to the values of IDOM, the solid leadership that he has demonstrated as he has guided IDOM in the last decade and, on a personal level, all the support he has shown me and everything he has taught me over the years.

Now we have to continue the journey. Where to next? The answer lies is in our values and philosophy: customer service, the importance of our people, and their professional growth. These three elements are what explain the past and present of our company and they are the foundations on which we must build the future.

I am sure that under the leadership of our three Managing Directors, Alvaro Rey, Miguel Renobales and Nacho Rey and with the work and dedication of all, we will achieve whatever we propose.

Luis Rodríguez Llopis
President

Photo: Ignacio Rey (Managing Director), Luis Rodríguez Llopis (President), Miguel Renobales & Álvaro Rey (Managing Directors) outside the IDOM headquarters in Bilbao.

A NEW STAGE

Last October, I proposed the desirability of a change in the Company's presidency to the Board of IDOM and the Assembly of Partners. This process culminated on December 21, 2016, the day the partners of IDOM ratified the proposal of Luis Rodríguez Llopis as President. IDOM is now embarking on a new long-term stage with ambitious and exciting objectives.

After 50 years at IDOM where I have done everything: internship, junior engineer, specialist engineer, project manager and works supervisor, director of the IDOM office in Bilbao, managing director, and president, always in the front line, I now hand the baton over to Luis Rodríguez Llopis. He and his management team are the guarantee of success for the future.

The most satisfying aspect of my work in IDOM has been my professional and personal growth and the kindness and friendship of all my colleagues, to whom I am very grateful. I am also extremely grateful to all our clients, suppliers and friends from other companies with whom I have dealt with over the years. I have received much more from everyone than I have been able to give.

As I have said, I have spent my entire life in this company and my intention is to continue collaborating in everything that is useful for the company. As of January 1, 2017, I will assume the new responsibility of President of the Board of Partners. I will continue to participate in the Board of Directors of the company, I will attend all the commissions entrusted to me and remain available to all the people of IDOM for whatever they may need.

Warm regards,

Fernando Querejeta

South America

01

| **BRAZIL** CITY OF TRES LAGOAS | GARE PARK | WIND FARM COMPLEXES IN BAHIA | BRAZILIAN RAILWAYS | **CHILE** SANTIAGO METRO | ALAMEDA – PROVIDENCIA URBAN DESIGN | SANTIAGO – BATUCO TRAIN | VALPARAÍSO METRO | ACONCAGUA COGENERATION PLANT | PORT OF VALPARAÍSO | CHILE AIRPORT | **PERU** CUSCO, SUSTAINABLE HORIZON | ANCÓN INDUSTRIAL AND LOGISTICS PARK | LIMA AIRPORT | CONTROL OF WATER NETWORKS | TALARA REFINERY | **URUGUAY** SLUDGE DISPOSAL PLAN | **PARAGUAY** DISASTER RISK PROFILE |

BRAZIL

THE CITY OF TRES LAGOAS, A MODEL OF INCLUSIVE GROWTH

“We are leading the change in 5 regions of the country to sustainable models.”

Heloisa Barbeiro.
Project Manager

The city of Tres Lagoas, located in the Brazilian state of Mato Grosso do Sul, is known for being the largest industrial centre for the production of cellulose in the country. The region has access to the largest pool of underground fresh water in the world, the Guarani Aquifer, which extends below the surface of Argentina, Brazil, Paraguay and Uruguay.

Its strategic location near the Parana River has generated important economic growth in recent years as well as increasing its urban footprint. In this context of growth and environmental fragility, IDOM is collaborating with the Inter-American Development Bank and the Votorantim Institute, in the development of studies on the city of Tres Lagoas under the Emerging and Sustainable Cities Initiative. The challenge is to identify the best scenario of urban growth for the city, under a planned and compact model that guarantees the city’s sustainable socio-economic and environmental growth.

Tres Lagoas joins the other Brazilian cities for which IDOM has developed this type of study: Florianopolis, Joao Pessoa, Vitória and Palmas. IDOM is extending the firm’s presence in all five regions of the country.

PARQUE DA GARE IN PASSO FUNDO.

A PARK ON THE SITE OF AN OLD STATION

Passo Fundo is a city in southern Brazil, which has decided to recover spaces for people. In this context, IDOM has developed an innovative amenities and public spaces plan with the City of Passo Fundo and the IDB, designating the Parque da Gare (Station Park) as an area to be developed.

Created in the 1980s as part of the complex of an old railway station in the centre of Passo Fundo, it was in a state of neglect, however with the necessary attributes to invoke a transformation in the city.

IDOM has launched a comprehensive project of landscape regeneration and urban planning, maintaining some historical and natural aspects, and introducing new infrastructure to the park, such as the "Producer's Fair", a small family farmers market; the "Café da Gare", with a public information desk; a restroom and maintenance area and; finally, a multipurpose library space located in the lower part of the park, next to the lake and fully integrated into the design. These structures are integrated and connected to other uses of the park, such as the sports area, amphitheatre, and spaces for contemplation.

In the words of Ana Paula Wickert, deputy mayor of planning in Passo Fundo, "The work of IDOM along with the city council has transformed an abandoned space into the largest cultural and leisure centre in the region". After two years of work, the park was inaugurated in June 2016.

Photographs of the park by Marcelo Donadussi & Páu Iglesias.

IDOM HAS UNDERTAKEN A COMPLETE LANDSCAPE AND URBAN REVITALIZATION PROJECT.

BAHIA WIND FARM COMPLEX.

A NEW RECORD

In June 2016, Brazil broke a new record! On this occasion, it was for daily wind generation, an average of 4,392 MW, enough to supply 19 million residential consumers.

The country of Rio has made a clear commitment to renewable energies and is favouring investment in the sector. One of the main investors is Enel Green Power, which already has wind, solar and hydroelectric power plants in the country. In late 2016, the Italian multinational announced that it would be building new facilities in the following three years.

Thanks to a framework agreement signed with Enel in June 2015, in recent months, IDOM has developed the detailed engineering for the civil works (foundations, drainage, roads and platforms) of the wind parks of Morro do Chapéu Sul and Cristalândia, and the basic electrical engineering of the Morro do Chapéu Sul facility.

The announcement of new investment by Enel is good news for IDOM, as the framework agreement includes the basic and detailed engineering of wind parks in Brazil, both current and future.

ACTIVATING BRAZILIAN RAILWAYS.

COMMUNICATIONS MASTER PLAN

Brazil has one of the most important commuter rail companies in the world. Companhia Paulista de Trens Metropolitanos (CPTM), serving almost 3 million users daily on 6 commuter lines. CPTM operates a rail network of 260 km.

At present, operations of the network are based on outdated technologies; therefore, the company has proposed the renewal of these technologies, appointing IDOM to develop a comprehensive plan of the telecommunications systems.

This plan aims to define and detail the technological standards of all the telecommunications systems for the railway operations, including safety and new services for users.

Although progress of the project has slowed due to public events, the company is very committed and intends to complete the modernizing process in the coming years.

IDOM is currently undertaking the phase of defining the entire master plan, establishing the technologies to be adopted by the company. In parallel, new technical specifications have been developed for the new fixed communications network, a key element for the daily operations of the rail service.

THE SÃO PAULO METROPOLITAN TRAIN COMPANY, WITH ALMOST 3 MILLION DAILY USERS AND 6 SUBURBAN LINES, IS ONE OF THE MOST IMPORTANT METROPOLITAN TRANSPORTATION COMPANIES IN THE WORLD.

CHILE

ACTIVATING THE MOBILITY OF THIS ANDEAN COUNTRY

“IDOM has found its place in Chile, consolidating its position among the country’s leading engineering companies, year after year.”

Andrés Mackenna.
Director of the IDOM office in Santiago de Chile

Currently, nearly 200 IDOM professionals work in the Santiago office. Some of our main projects are concentrated in the infrastructure sector, following the signing of important contracts with the State Railways Company (EFE) and the Metro Passenger Transport Company of Santiago (Metro de Santiago), among others. Year after year, we are consolidating our position among the main engineering companies of the country.

Photo: Depot of the Santiago Metro.

METRO OF SANTIAGO.

AN INNOVATIVE METRO SYSTEM

In the Metropolitan Region of Santiago de Chile, where almost 7 million people live (more than 40% of the country's population), public transport is based on the Santiago Metro network, a system that operates on more than 100 km of track, along five lines, which are accessed through 108 stations. In order to better meet the daily demand of approximately 2.7 million passengers, Metro de Santiago is undertaking a major expansion, consisting of the construction and commissioning of two new lines, 6 and 3.

The investment, close to USD 2.8 billion, will increase the network by 37 kilometres of track and 28 new stations. Line 6 is scheduled to open in the third quarter of 2017 and line 3 at the end of 2018.

A TEAM OF MORE THAN 100 PROFESSIONALS OFFER INNOVATIVE SOLUTIONS TO A METROPOLITAN REGION WITH AROUND 7 MILLION PEOPLE.

Upper photo: Raúl Francisco Castro Duque, Bernardo López Moreno, Carlos Andrés Vivanco Jara & Osvaldo César Miranda Fernández.

With a team of more than 100 people, IDOM is responsible for the technical inspection of some of the most innovative elements, such as the renewal of the SCADA system for monitoring and controlling the energy consumption of the existing lines, without interrupting service. Or increasing security with a Platform Door System: a system of screens that prevents access to the tracks from the platforms with doors that are synchronized with the doors of the trains.

Our firm is also helping Santiago to achieve the dream of every "smart city": the automatic organization of rail traffic, with systems such as Unattended Train Operation (UTO), or Communications-Based Train Control (CBTC) with ground-train communication via radio.

URBAN DESIGN

“With the renovation of the Alameda-Providencia axis, we are improving public spaces, mobility and the heritage of the most emblematic avenue in Santiago de Chile“.

Photo: Carolina Simonetti, Lourdes Ruiz & Juan Cofre at the Alameda-Providencia axis in Santiago de Chile.

URBAN DESIGN OF THE ALAMEDA-PROVIDENCIA AXIS.

IDENTITY OF CHILE

Almost 12 km long, the Alameda-Providencia artery, apart from being the main avenue in the city of Santiago, is a point of reference and part of the identity of Chile. The avenue connects four very different neighbourhoods, while crossing the city centre, integrated into a civic, symbolic, functional and economic continuum.

Its origins date back to 1820 and since then it has undergone numerous renovations to respond to the expansion of the city, the arrival of road traffic, increase in urban density, etc. The most recent works were carried out in the 1990s.

IDOM, together with Lyon Bosh Architects, was the winner of the International Ideas Competition. Our firm developed an integral project that, in addition to increasing the efficiency of ground-level transport, intermodality, and passenger transfer, placed importance on the patrimonial aspects and uses of public space; thereby improving user quality of the artery.

One of the key elements of this integral renovation has been the design of a Bus Rapid Transit (BRT) corridor, a segregated route that will increase the capacity of ground-level transport for 25,000 passengers/hour/direction, where buses will operate at a commercial speed of 23 km/h with fare collection terminals along the route.

Given that the objective of the project is to benefit the users and operators, the design of the plan has counted on the participation of the citizens, municipal technical teams, and various State Institutions.

WITH ALMOST 12 KM, THE AVENUE, WHOSE ORIGINS DATE BACK TO 1820, FORMS PART OF THE IDENTITY OF THE ANDEAN CAPITAL.

Photo: first row from left to right, Lourdes Ruiz, Juan Armando Oropeza, Chiara Álava, María Elisa Aravena, Alejandro Serrano, María Carril. Second row left to right, Carlos Ayala, Miguel Martín, Rafael Zura, Cristian Roman, Francisco Manríquez, Javier Delgado, Carolina Simonetti. Third row left to right, Juan Cofre, Pablo Zuñiga, Álvaro Saez, Fernando Caroca, Nelson Tatter, Víctor Cruz.

Infographics courtesy of Lyon Bosch Martic - LBM.

"IDOM is actively participating in all stages of the most important projects of the current expansion plans of the Chilean rail network."

Francisco Pi
Chief Consultant Engineer
for the Santiago-Batuco train project

SANTIAGO DE CHILE: NORTH, SOUTH AND WEST, CONNECTED BY RAIL.

PROJECT MANAGEMENT
OF THE NEW SANTIAGO–BATUCO LINE

Given that rail is today, without question, the safest, fastest and most efficient mode of transport in suburban and metropolitan areas, the Chilean state railway (Empresa de Ferrocarriles del Estado - EFE) is undertaking an ambitious investment plan. The Santiago-Batuco rail project which serves the north of the capital is part of this plan.

This project complements the works already being carried out to improve the connection with the Southern zone - the Rancagua Express railway, whose commissioning is imminent - and the western area - the Alameda-Melipilla railway, at present in the final phase of the engineering design and the processing of environmental assessments. IDOM is working on the three projects, developing the Basic and Detail Engineering of the Rancagua Express and Alameda-Melipilla projects, and providing management consultancy services in the case of the Santiago-Batuco project.

THE STATE RAILWAYS COMPANY IS CARRYING OUT AN AMBITIOUS RAILWAY DEVELOPMENT PLAN TO IMPROVE CONNECTIVITY IN THE COUNTRY.

The Santiago–Batuco project is 27 km, has 7 stations and an operating frequency of 6 to 12 minutes (peak and off-peak) on the first section (12 km double track), located between the municipality of Quinta Normal and Las Industrias. On the second section (15 km single track), located between Las Industrias and Batuco, the frequency will be 24 and 60 minutes. In addition, the rail sidings will be improved with the inclusion of a parallel track alongside the passenger rail track.

Photo: Andrea Soledad Bahamonde, Óscar Ricardo Véliz & María del Pilar Monge strolling along the platforms of the Central Station in Santiago, Chile.

VALPARAÍSO METRO.

NEW VALENCIA STATION

Metro Valparaíso, the railway line that crosses the Valparaiso Region, is perhaps the oldest Metropolitan rail service still operating in the Southern Hemisphere. The 43-km corridor is partially underground and connects the cities of Valparaíso and Limache. The line has undergone several upgrades throughout its history, however in recent years the number of stations has remained at just 20.

At the midpoint of the line there is a section of 8 Km with no stops, however, given the growth in population in this area, there is now a demand for new stations. Metro Valparaíso has responded to this new situation with a decision to create, among others, the Valencia station in Quilpué. The original Valencia station, which was closed in 2005 was part of the Santiago–Valparaíso line.

To revive this old stop, Metro Valparaíso has decided to draw on the proven experience of IDOM and has appointed us to design and execute a new station. This is not just the remodelling of the existing structure; it is the creation of an entirely new station. We also have the added challenge of ensuring that the 24-hour rail service remains uninterrupted during construction.

Beyond resolving this question and working to a tight budget and deadline, IDOM has also explored the use of construction solutions which are respectful to the unique local traditional construction techniques, while introducing various concepts of sustainability into the design of the building.

Upper photo: Natalia Martín & María Blanco Bermejo.

COGENERATION PLANT OF ACONCAGUA.

A FLAGSHIP PROJECT
OF THE CONCÓN REFINERY

In 2014, the National Petroleum Company (ENAP), a Chilean state company whose core business is the extraction, refining and commercialization of hydrocarbons and their derivatives, incorporated a new line of business, Gas and Energy, with the aim of promoting the use of natural gas as a source of clean energy within the national electricity grid.

Simultaneously with the opening of the new business line, a flagship project was launched: the 77 MWe Aconcagua Cogeneration Plant, located in the Concón Refinery (Region of Valparaíso), with an approximate budget of $200 million.

If the project is successful for ENAP, it is possible that a second twin power train will be installed, doubling the power of the facility.

As a differentiating element of the project, the interconnection rack should be highlighted. The plant feeds steam to the refinery through a 16" diameter collector which is no less than 2.1 km in length. The complexity of the design of the rack, whose layout runs through the refinery and areas of public concurrence, has been equivalent to that of the plant itself.

In 2015, ENAP awarded the project as an EPC scheme to the Spanish company Duro Felguera (DF) which, continuing with the trust deposited in IDOM during several similar projects, awarded our Firm the Basic and Detail Engineering of this project.

Upper photo: Rubén Cid Méndez.

PORT OF VALPARAISO.

NEW COMPETITIVENESS MODEL

All ports around the world compete to capture the largest number of exporting and importing companies. And the competitiveness of a port depends not only on its size, i.e. the capacity of its infrastructure, but also other varied factors such as its "info-structure", logistics efficiency, service or the capacity of its staff, among others.

Ports are therefore very interested in having a tool that, taking into account all these factors, allows them to measure their competitiveness, to both identify areas for improvement and make comparisons with other competing ports.

This tool, the "Competitiveness Model" is precisely an area in which IDOM has international experience and expertise. In association with the port of Barcelona, IDOM has proposed this model to the port of Valparaiso, an infrastructure that handles 1 Million TEUs per year.

After five months of work, our firm has achieved what was expected; a model to measure and monitor the port's competitiveness through a global indicator, comparing its competitiveness with its main competitor ports in Chile and other port systems of neighbouring countries such as Peru.

Photo: José Ángel Calvo, Lluís Miró & Cristian Andrés Valdés.

AIRPORT OF CHILE.

LANDSCAPING, AUXILIARY FACILITIES AND ARCHITECTURE

The Arturo Merino Benitez International Airport is about to complete the remodelling works of the existing terminal, the construction of a new international terminal, a parking facility, other auxiliary buildings, a water treatment plant, and a power and energy plant.

All this has been possible thanks to the more than one hundred professionals from IDOM that have been working on this project since April 2015, taking charge of the design of the services, the external networks, modification of the services and roads, landscaping (external works), and the architectural design of a series of auxiliary buildings (fire protection, police station, transport centre, and security points).

The landscape design is worth noting, as it affects the entire extension project, seeking to turn the airport into a friendly place, incorporating green spaces to direct the flow of passengers, dominated by the covers of the new parking buildings.

The project was officially presented to the Chilean Ministry of Works (MOP) in January 2016, meeting the tight schedule of just 10 months from inception, and permitting the works of the construction joint venture CJV (Vinci Construction and ASTALDI) to commence.

IDOM is currently finalizing the latest requested modifications and including the comments received from the MOP. The project is expected to be finalized in autumn 2017.

THE LANDSCAPING DESIGN SEEKS TO ACHIEVE A DIVERSITY OF STIMULUS THROUGH CHANGING COLOURS AND TEXTURES.

PERU

CUSCO, SUSTAINABLE SOCIO-ECONOMIC AND ENVIRONMENTAL GROWTH

The Peruvian city of Cusco is one of the main tourist centres of South America because of its important cultural, archaeological and architectural heritage. This city of just under half a million inhabitants, receives more than 3 million tourists a year. The economic activity generated by tourism tends to occupy the scarce land available in the flat areas of the city, pushing the population with fewer resources to the sloped lands, giving rise to numerous informal settlements without basic infrastructure and amenities. In addition, areas of archaeological protection and agricultural lands have been occupied and in many cases, these are areas exposed to landslides or flooding.

To remedy this situation, IDOM is collaborating with the Inter-American Development Bank (IDB), within the Emerging and Sustainable Cities Program (ESC), defining growth scenarios with a 2050 time horizon, and drafting recommendations in five themes: Land Use and Urban Planning; Housing and urban inequality; Mobility and Transport; Protection and enhancement of natural resources; Modern and efficient management; Territorial governance.

Photo: Iñigo Aizpuru (IDOM), Alessandra Richter (IDB) & Waldo Urquiza (IDOM) in Cusco.

INDUSTRIAL & LOGISTICS PARK OF ANCÓN.

BOOSTING COMPETITIVENESS AND INTELLIGENT GROWTH

Within the framework of the National Productive Diversification Program (PNDP), the Peruvian Government wants to support and promote a change in the country's productive matrix with the creation of new economic growth engines and the strengthening of existing ones. Its purpose is to improve productivity and national competitiveness through the promotion and development of specific infrastructure such as industrial and logistics parks.

IDOM has been commissioned by the national authorities to elaborate the Conceptual Master Plan and Business Plan of the Ancón Industrial Park (PIA), which involves the creation of one of the main industrial parks in Peru. The PIA will act as a competitive catalyst in the economy and developing it will transform the immediate urban environment - Ancon and Santa Rosa - and the Metropolitan Lima-Callao area.

The aim is to implement a new productive area model, which is attractive to industry and anchor companies, highlighting the strategic position of the park and the advantages of direct access to the road transport networks and the high-capacity railway that will connect to the Port of Callao, Jorge Chavez Airport, and the rest of the country.

Spread over more than 1,300 hectares, the park is planned for industrial uses for MSMEs, industrial firms and services including a Technology Park with research and/or teaching centres; a Logistics Area with a Dry Port connected directly to the Port of Callao, a Truck Centre; Urban Amenity Areas (education, health, trade and recreation), as well as world-class urban services (desalination plant, wastewater treatment plant, substations, etc.).

The concept of the industrial park incorporates criteria of functionality and eco-sustainability that are reflected in a territorial and urban bioclimatic design in terms of the buildings and public spaces and energy efficiency and water cycle management measures - a scarce element in the area.

LIMA AIRPORT.

A LARGER AND MORE DYNAMIC AIRPORT FOR PERU

The Jorge Chavez International Airport (LIM) has become one of the most important airports in South America, in terms of both passenger traffic and freight, the latter being of great importance for the economic development of the country.

Given the continued growth of the flow of goods at the airport during the last ten years, the group of companies Andino Investment Holding has decided to create a new cargo centre.

The project, known as Limahub, involves the construction, operations and maintenance of a new cargo terminal, adjacent to the existing grounds of the Jorge Chavez International Airport.

To finance this initiative, the developer has applied to the Inter-American Investment Corporation, part of the American Development Bank, for a loan of $12 million. The Corporation has appointed IDOM as an independent technical consultant to assess certain aspects of the project.

In the analysis conducted by our firm, we have identified and assessed the main risks that may affect the project, in terms of impact and likelihood of occurrence, with particular attention to the capacity to meet the repayment terms of the Inter-American Investment Corporation.

LIMA CONVENTION CENTRE

Thanks to this facility, Peru is now a centre of attraction for world events.

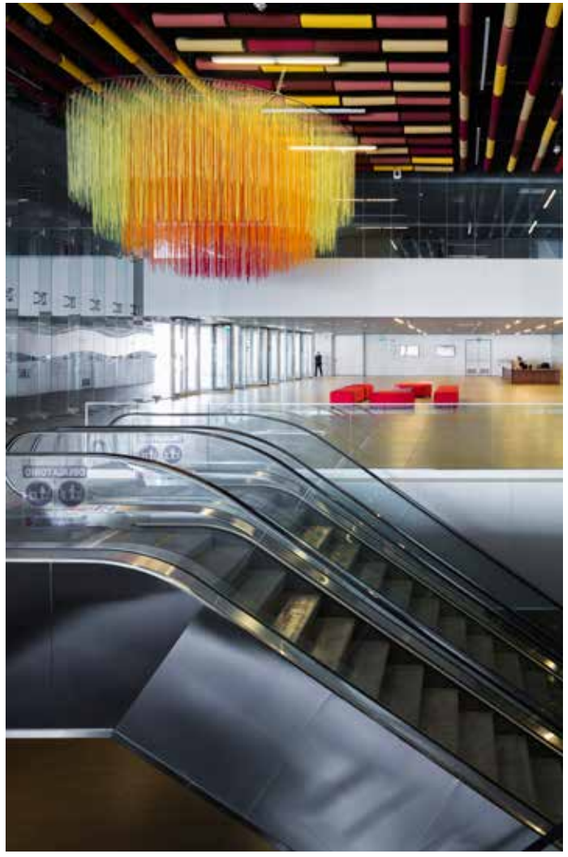
THE EPICENTRE OF GLOBAL EVENTS

The Lima Convention Centre, designed by IDOM, is meeting the expectations of its promoters: to position Peru as the epicentre of global events.

In April, for example, the World Gastronomic Tourism Forum was held there, a meeting to promote the importance of gastronomy as a driving force for tourism, and in which leaders and experts of international gastronomy and tourism participated.

Photo: World leaders at the meeting held at the Convention Centre in November 2016.

Photo, © The Straits Times



The Asia-Pacific Economic Cooperation Forum, an integration summit was held in November, and was attended by the then US President Barack Obama, the Prime Minister of Australia, Malcolm Turnbull and the President of Peru, Pedro Pablo Kuczynski, and the Prime Minister of Japan, Shinzo Abe, among others.

The Convention Center, located at a neuralgic point of the city of Lima, next to the National Museum and National Library, was inaugurated in October 2015, has capacity to accommodate around 10,000 people. The centre has 18 rooms, 4 basements levels and a 4-storey auditorium.

MONITORING SUPPLY & SANITATION NETWORKS.

AUTOMATION PROCESS

The continuous growth of the city of Lima implies an accelerated deployment of its supply and sanitation networks capable of providing potable water and wastewater collection to a population of more than 9 million inhabitants.

SEDAPAL, a public company of Peru, assisted by IDOM, is undertaking an ambitious modernization project to automate the supply and sanitation networks.

The implementation of state-of-the-art Supervisory Control and Data Acquisition (SCADA) systems, high-capacity radio and fiber-optic communications network, expansion of remote tele-control stations, High Availability Control and Operation Centres, and an organization structured to achieve the strategic objectives of the company, will convert SEDAPAL into a company of reference in the efficient exploitation of a natural resource, as scarce and valuable as water.

Upper photo: Ángel Silveiro, Xabi Elustondo, Alejandro Mariñelarena, Juan José Bermejo, Oscar Bella, Javier Lasfuentes, Lorenzo Gracia & Wilfred Olivares at the headquarters of SEDAPAL in Peru.

THE REFINERY OF TALARA.

MODERNIZING AND EXTENDING THE FACILITY

Peru is immersed in the country's most important energy project in recent years: the modernization and expansion of the Talara Refinery. In addition to increasing production and expanding the range of products, the project seeks to generate cleaner fuels, as well as introduce greener processes and waste.

In this important investment, IDOM is acting as the Owner's Engineer (Project Manager Consultant – PMC) in consortium with two other engineering firms: Tiger Engineering and Nippon Koei.

The works commenced in 2014, and in 2016 reached maximum intensity so far, with 3,500 persons on-site. While as of 2015, 11% of the works were completed, in 2016 this increased to 44% without reducing the pre-established levels of personal safety and environmental control.

In addition, the detailed engineering is in the final stages, and the manufacture and shipping of the main equipment from diverse places such as Italy, USA, Germany, Spain, China or Korea is progressing rapidly.

The objectives of the project are being fulfilled, and the key has been the level of coordination, and perfect integration of the Project Manager. The facility is expected to be commissioned in June 2019.

Image courtesy of Petroperú.

SLUDGE MANAGEMENT PLAN FOR URUGUAY.

STRATEGIC PLAN FOR THE MANAGEMENT OF AN ABUNDANT RESIDUE

One of basic infrastructures required by any country are water treatment plants and sanitation facilities. These plants and facilities generate large quantities of waste (sludge) which needs to be managed in a planned and safe manner, both to optimize operational costs and to avoid harmful environmental impact.

This brings us to the question of what to do with this sludge. This is precisely the question facing the Administration of Uruguay, as a country undergoing a process of expanding and improving public water utilities. The solution required the support of a consultant with expert experience in three different areas: water management, waste planning and, specifically, sludge schemes.

It is precisely because IDOM has important project references in these areas - amongst others, the sludge plans of Aragon, Asturias and Galicia – that the firm has been commissioned to carry out the strategic plan for the management of the sludge from the water treatment plants and wastewater treatment plants throughout the country.

So far, our Firm had worked in Uruguay in sectors such as architecture, civil and industrial engineering and logistics and innovation consulting. With this project, financed with multilateral funds from the International Bank for Reconstruction and Development (IBRD), we are increasing the range of services and our presence in "the country of happiness".

DISASTER RISK PROFILE OF PARAGUAY.

PREVENTION OF FIRES, DROUGHTS AND FLOODING

Latin America and the Caribbean are regions frequently hit by destructive natural phenomena such as hurricanes, earthquakes, floods, droughts and landslides. But how can you control something so random and unpredictable? To measure the risk of natural disasters in a country, the Inter-American Development Bank (IDB) applies a methodology called a "Disaster Risk Profile Report". This methodology permits the probable maximum losses and annual average losses per sector to be estimated.

Since 2009 and to date, this methodology has been applied to 11 IDB member countries (Belize, Bolivia, El Salvador, Guatemala, Honduras, Jamaica, Dominican Republic, Trinidad and Tobago, Guyana, Venezuela and Peru). Completing this list, IDOM has participated in the realization of the Disaster Risk Profile of Paraguay, in consortium with the Institute of Environmental Hydraulics of the University of Cantabria. Paraguay thus joins the growing group of countries that already have elements that enable them to improve their disaster risk management processes.

"IDOM IS A LEADER IN THE DEVELOPMENT OF IMPORTANT INFRASTRUCTURE IN SOUTH AMERICA SUCH AS METROS, HOSPITALS & AIRPORTS"

David Prósper.
Doctor of Industrial Engineering, MBA.
Director of Business Development, Architecture and Building.

OTHER

PROJECTS

BRAZIL

Sao Paulo monorail Line 17 (Gold) stations and yard for Companhia do Metropolitano do São Paulo.
Construction project.

Emerging and Sustainable Cities Program in the City of Tres Lagoas, for the Inter-American Development Bank. Mitigation of risks associated with climate change, vulnerability and risk analysis, urban growth scenarios and definition of the actions for the Action Plan.

Second float glass line with a capacity of 850 t/day and 20,000 m2 warehouse extension for AGC.
Basic and detailed engineering, procurement specifications and construction supervision.

CHILE

Basic and Detail Engineering of the civil works and railway systems for the integral improvement of the railway infrastructure, Section: Santiago-Melipilla for the State Railroad Company.
Basic and detailed engineering.

Technical Inspection Service (TIS) of the overpasses and underpasses of the integral improvement of the Infrastructure Project, Section: Santiago - Rancagua, of the Rancagua Express project for the State Railroad Company.
Technical inspection of works.

Emerging and Sustainable Cities Program in Puerto Montt-Puerto Varas, for the Undersecretary of Regional Development of the Ministry of the Interior of Chile. Mitigation of risks associated with climate change, vulnerability and risk analysis, and urban growth scenarios.

Gonzalo Tello.
Senior Architect.
Business Development: Transportation, Architecture and Building.

PERU

Improvement of rail transportation on the Tacna-Arica section for the Agency for the Promotion of Private Investment (Proinversión).
Profile level study.

Emerging and Sustainable Cities Program in Cusco, for the Inter-American Development Bank. Mitigation of risks associated with climate change, vulnerability and risk analysis, urban growth scenarios and recommendations on urban planning, housing, mobility, natural resources, and Territorial governance.

Ancón industrial and logistics park for UNOPS.
Strengthening of the industrial network, generation of economic competitiveness and improvement of industrial and communication infrastructure.

"THE BRAZILIAN NUCLEAR SECTOR IS CLEARLY EXPANDING AND IDOM IS POSITIONING ITSELF BY COLLABORATING WITH THE NAVY AND THE ANGRA NPP."

Óscar Larrosa. MSc. Industrial Engineer. Director of the IDOM Nuclear Services.

Aida Fernández. Environment Technician.

South & Central America

02

| **ECUADOR** SUSTAINABLE DEVELOPMENT | **COLOMBIA** SANITATION PLANS | TEQUENDAMA INTERNATIONAL CENTRE | REDUCTION OF GREENHOUSE GAS SECTORAL EMISSIONS | VALLEDUPAR, SUSTAINABLE AND SOLIDARY-BASED FUTURE | METRO OF MEDELLIN | INNOVATION STRATEGIES | CERREJÓN RAILROAD | **HONDURAS** TRANSFORMATION OF THE CHOLUTECA RIVER | **PANAMA** URBAN DEVELOPMENT | **GUATEMALA** RIEL METRO | **NICARAGUA** NICARAGUA RIVER BASIN PLAN | CLIMATE CHANGE |

ECUADOR

SUSTAINABLE DEVELOPMENT

IDOM PARTICIPATED IN THE UN CONFERENCE ON HOUSING AND SUSTAINABLE URBAN DEVELOPMENT

"We have proposed the need to transpose the urban growth of the planet towards models that guarantee sustainability to the United Nations."

The United Nations Habitat III Conference on Housing and Sustainable Urban Development was held in Quito, Ecuador. The conference was a platform to discuss the main growth trends in the world's cities, in order to design and implement a global strategy to guide the process of urban development in the next two decades.

This objective will be achieved by implementing a New Urban Agenda, an instrument that will help to establish global standards for sustainable urban development, rethinking how cities are constructed, managed and lived in, as well as strengthening shared commitment at all levels of Government, civil society and the private sector.

This conference, held every 20 years (Istanbul 1996, Vancouver 1976), has had over 30,000 participants, including representatives of UN member states, and other relevant stakeholders such as regional and local governments, international institutions, multilateral agencies, professionals and researchers, the private sector and the civil society.

IDOM was present in this third edition, and presented the firm's important experience in the development of cities through socio-economic and environmentally sustainable growth. The event has reinforced our close relationship with clients such as the Inter-American Development Bank (IDB), FINDETER (Colombia), Banobras (Mexico), the Mayors and representatives of various cities in Latin America (Panama, Chile, Peru...), Africa (Angola, Ghana...), and allowed the firm to establish new relations with cities in Argentina, Ecuador, the Middle East and Asia.

Photo: Marc Potard, Urban Planning Architect, specialist in urban and territorial development.

COLOMBIA

COMMITTED TO DEVELOPMENT

One of the many actions included in the Sanitation and Disposal Management Plan for the Aburrá Valley is the implementation of the Southern Interceptor, which will complete the sanitation network in the southern part of the valley.

The Interceptor is designed to collect current and future discharges from the municipalities of Caldas and La Estrella. At present, this wastewater is directly discharged into the Medellin River. Therefore, this work will greatly improve the environmental conditions of the Medellin River and its surroundings as it enters the city.

The first part of the design is conceptual, evaluating diverse design alternatives, both routes and trench technology. Noteworthy is the complexity of the territory, with the presence of housing, different existing and future infrastructure, and the environmental value of the Medellin River, which will be crossed by the Interceptor at several points.

Photo: Panoramic view of Medellin

"We are supporting the country in its commitment to various sectors of the economy, providing our professional services and strengthening the proximity to our clients."

Edwin Rojas.
Director of the offices of Colombia.

THE TEQUENDAMA INTERNATIONAL CENTRE.

URBAN AND REAL ESTATE RENOVATION

Since July 2016, IDOM has been developing technical consultancy work for the National Development Finance Agency (FDN) of Colombia. The work includes a technical pre-feasibility study and the preparation of the advanced basic technical studies of the urban renewal real-estate project of the International Centre Tequendama (CIT) in the heart of Bogota.

The Tequendama International Centre, a hotel and business complex has been declared to be of National Cultural Interest in Colombia. The complex has four buildings, which were built between the 1950s and 1980s and the corresponding public spaces. The heights of the buildings vary between 10 and 33 floors, in addition to parking basements and combine uses ranging from shops and offices to residential apartment-hotels.

The tasks being developed by IDOM, within a period of 6 months, range from the analysis of the current state of the complex from an architectural, structural perspective; to the presentation of proposals to refurbish and adapt the buildings to the current regulations, both seismic and relative to facilities. All this without losing sight of the patrimonial character of the buildings that make up the complex.

Photograph by Yair L. Mesa.

REDUCTION OF SECTORIAL EMISSIONS OF GREENHOUSE GASES.

INFORMAL SETTLEMENTS AND LOGISTICS

Nationally Appropriate Mitigation Actions (NAMA) are a set of measures to achieve a transformational change in a sector in developing countries, including the reduction of greenhouse gas emissions, which is implemented on a voluntary basis.

Colombia is one of the countries that has opted to include NAMAs in its climate and sustainability policy, integrating them into its national climate strategy.

The IDOM team on Climate Change has provided support for this objective through the development of two NAMAs: one on informal settlements (slums) and the other on industrial logistics.

The first called "NAMA Hábitat" had the objective of reducing emissions from housing, mobility/ transport, and the waste management of low resourced neighbourhoods, all in all, about 20% of homes in Colombia.

The Industrial Logistics NAMA seeks to reduce emissions from transport, storage and other logistics processes across the country.

Both are part of the Colombian Low Carbon Resilient Development Program (LCRD) and are being funded primarily by the United States Agency for International Development (USAID).

The NAMAs are projects of high social interest and are just some of the services offered by IDOM in the field of climate change mitigation.

VALLEDUPAR, A MORE SUSTAINABLE AND CARING FUTURE.

REPOSITIONING THE FOCUS OF URBAN DEVELOPMENT IN THE ACHIEVEMENT OF SOCIOECONOMIC WELL-BEING

Valledupar is an important agro-industrial and cattle region of Colombia, whose population has multiplied by 100 in the last seventy years. 85% of people live in an urban area that has grown in a disorderly way and that needs to be re-thought taking a comprehensive, participatory and long-term approach.

Fortunately, IDOM can provide solutions, as we have carried out resilient planning work in cities in Colombia, such as Pasto, Villavicencio and Santa Marta, and in the rest of South America in recent years.

In collaboration with the Colombian Development Bank (FINDETER), and within the framework of Emerging and Sustainable Cities Program (ESC) of the Inter-American Development Bank (IDB), our firm is developing a consensus model with the participation of an infinity of public and private institutions, which will include the majority of the citizen's interests.

IDOM is presenting possible actions to be undertaken in the medium (2030) and long-term (2050) horizons, based on studies of urban growth, natural hazards and mitigation of climate change.

The aim is that the new generations of Valledupar will live without any type of exclusions while at the same time safeguarding the legacy of its jungles, its landscape and its multiethnic population.

Photo: Belen Rodríguez & Victor Alberto Ramírez.

IDOM HAS CARRIED OUT NUMEROUS RESILIENT PLANNING PROJECTS IN COLOMBIA AND SOUTH AMERICA IN RECENT YEARS.

METRO OF MEDELLIN.

PROGRAM FOR THE
APPROPRIATION OF INNOVATION

The Medellin Metro is a benchmark in the field of mobility, in the city and in the country. Once again, the metro has been a pioneer in the management of innovation in the public sector, and is committed to strengthening itself internally to promote the appropriation of innovation as a key tool for its growth and sustainability, with the help of IDOM.

THE OBJECTIVE IS TO GUARANTEE FINANCIAL, SOCIAL AND ENVIRONMENTAL SUSTAINABILITY, THROUGH BOLD AND INNOVATIVE SOLUTIONS.

This integral program has initiated the process of appropriation of innovation throughout the company, through different workshops, group activities, creation of a platform to share information, support in the definition of its innovation policy and incentives plan to motivate the participation of all workers, as well as the identification of an open innovation model that allows interaction with all agents of the innovation ecosystem.

The ultimate goal is to help achieve the Mega of the organization: To be the most audacious, dynamic and humane company in the development of mobility solutions and in the transformation of sustainable territories in Latin America, guaranteeing financial, social and environmental sustainability.

In the right hand photo: Liliana Delgado, Laura Herrera, Daniela Maldonado & Paola Vargas, in Medellín.

IN 2013, MEDELLIN WAS RECOGNIZED AS "THE MOST INNOVATIVE CITY IN THE WORLD".

INNOVATION STRATEGIES.

INTELLIGENT SPECIALIZATION STRATEGY FOR MEDELLIN AND THE VALLEY OF ABURRÁ.

The Medellin City Hall, the Medellin Chamber of Commerce for Antioquia, the Metropolitan Area of the Aburrá Valley and the Business/State University Committee, are leading the project to design an Intelligent Specialization Strategy (EEI) for Medellin and the Aburrá Valley. Working alongside IDOM, the project leaders and key quadruple helix agents in the region, the Areas of Specialization are being identified and prioritized based on the capabilities, potential and enabling technologies available in the region. In addition, the niches, initiatives, programs and projects that will consolidate the Action Plan will be defined. Medellin will be the second city in the country to have an IEE, after the City of Bogotá, who also called on IDOM to guide its development process.

INNOVATION SYSTEMS IN BARRANQUILLA.

Colciencias (Department of Science, Technology and Innovation) and the Chamber of Commerce of Barranquilla are developing a program to design strategies and management systems for innovation in 15 companies of the Department of Atlántico, with the help of IDOM in a temporary union with the Autonomous University of the Caribbean. These companies include some of the largest in the region such as: Gralco (food sector, tuna), Coolechera (food sector, dairy products), the Clinical Laboratory General Clinic of the North (health sector) and Heraldo (Communications sector, regional newspaper).

CENTRE FOR THE DEVELOPMENT OF NEW BUSINESSES IN INTELLIGENT ENVIRONMENTS.

The Medellin Chamber of Commerce for Antioquia, together with the ICT Cluster, entrusted IDOM with the design of the concept of a New Business Development Centre in Intelligent Environments, which aims to enable companies in the region to develop, with greater ease and quality, projects related to digital transformation and the creation of new business models based on the great advances of ICTs.

"We generate value for organizations and territories through innovation and change processes."

Sandra Sinde, Specialist in Innovation in Medellin.

WE ARE IMPROVING THE MANAGEMENT AND OPERATION OF THE CERREJÓN RAILWAY LINE, BY MODERNIZING THE EXISTING SIGNALING SYSTEMS.

CERREJON RAILWAY.

IMPROVING SIGNALING SYSTEMS

The Cerrejón coal mining operation, has a single track railroad that connects the 150 km that separate Bolivar Port from the mine, allowing both the transportation of ore and the movement of supplies necessary for the operation of the mine.

The objective of the consultancy services developed by IDOM is to propose 4 viable solutions to improve the management and operation of the line, by modernizing the current signalling systems and Traffic ControL Centre (TCC).

The proposed new solutions must integrate the existing elements that are providing functionalities or those that have been upgraded recently with the level of safety required.

In addition to improving the signalling installations, the management model has been modified, so that it is carried out in a much more integrated and efficient way, adding new specific applications that facilitate the maintenance of the line.

The entire signalling system will be automated, minimizing the risk of the human factor in decision-making. With all this, the system to be installed will be much more reliable and robust, permitting operation with better security conditions and an optimization of the costs.

Photo: Ekaitz Mugica & Juan Carlos Martín.

HONDURAS

TEGUCIGALPA, TRANSFORMING THE RIVER TO TRANSFORM THE CITY.

AN UNPRECEDENTED URBAN INTERVENTION IN HONDURAS

The population of Tegucigalpa, currently over 1 million people, has grown rapidly; escalating the problems arising from the lack of infrastructure, the aging built heritage, and vulnerability to climate change, especially in relation to the rivers that cross the city.

The relationship of the city with its rivers is marked by frequent flooding, occasional extreme events (such as Hurricane Mitch), water pollution, improvised landfill on the banks of the waterways and, neglect of the vegetation.

In relation to one of these waterways, the Choluteca River, IDOM is developing an urban environmental plan. This is a strategy for smart urban transformation, which is capable of simultaneously resolving many challenges, reducing the risks faced by the city, its people, activities and businesses, reorienting the city-river relationship and making the Choluteca River a source of opportunities.

It is hoped that the success of the proposed series of actions will serve as an example of resilience and good practices with the potential to be replicated in other cities. The Inter-American Development Bank (IDB) has appointed IDOM to develop this work as our firm had previously (2014) undertaken studies on the climatic change and urban development of the cities of Tegucigalpa and Comayagüela applying the ICES methodology and identifying the environment of the Choluteca River as one of the scenarios for priority action.

PANAMA

URBAN DEVELOPMENT LEADING TO INCREASED WELL-BEING

Photo: Panama City

Thanks to its geo-strategic position and the achievement of major engineering projects (expansion of the canal, construction of the metro network, creation of metropolitan corridors ...), Panama City has reinforced itself as the main financial centre of the region. However, this rapid growth and the housing boom in the Panamanian capital has led to urban development without planning, mainly isolated developments. In this context, the sub-district of San Francisco, the main financial and commercial centre of the city, is being planned as the desired growth while shaping the urban silhouette.

The Mayor of Panama has entrusted IDOM with the mission of providing support for the design and implementation of the Partial Plan of Spatial Planning of the San Francisco sub-district. This is an opportunity to change the urban paradigm of the city, focusing on planning from an integral perspective, unifying private development, and providing the inhabitants with increased quality of life, under the criteria of socio-economic and environmental sustainability, providing urban services and world-class facilities.

An important component of this project is the level of participation, social communication and inter-institutional coordination, as the ultimate success of the project lies in the consensus of the agents involved and residents of the sub-district, considering the multiple realities of those who live in this valuable space.

GUATEMALA

METRO RIEL IN THE CAPITAL.

THE URBAN RAILWAY DREAM

When the railroad connecting the Pacific Ocean with the Atlantic opened in 1904, it was said that Guatemala had entered modernity. However, little by little, the infrastructure became obsolete and some 20 years ago all activity ceased.

The Government of Guatemala, looking to recover the dream of modernity, is now developing urban rail for passenger on part of the old railway line. The railway will run for 21 km and will have 20 stations, crossing the capital, Guatemala City, on its north-south axis.

IDOM is supporting the project team (PRONACOM, ANADIE and FEGUA), in coordination with the Municipality of Guatemala, to make the development of "Metro Rail" feasible. This light-rail system will be complementary to the existing transportation systems in the Metropolitan Area of the capital.

In addition to achieving substantial savings in travel time, the project, an estimated $700 million investment, aims to improve the quality of the public transport service.

Road connections will also be included to decongest the entrances to the city with the construction of two new bridges over the El Frutal and Las Vacas Rivers.

The studies will include a solid proposal for implementation, and will include information on the technical, economic, financial, environmental and legal aspects necessary to immediatly progress to the contracting of the project through the Public Private Partnership model of Guatemala.

THE 21 KM RAILWAY WILL CROSS THE CAPITAL OF THE COUNTRY, THE CITY OF GUATEMALA, FROM NORTH TO SOUTH.

RIVER BASINS PLAN.

THE HYDROELECTRIC POTENTIAL OF THE COCOS & GRANDE MATAGALPA RIVERS

With the help of various international organizations, the Government of Nicaragua is developing an ambitious plan to increase the capacity of the national network of electricity generation and distribution, using renewable energy sources, including hydropower.

The country has great hydroelectric potential with river basins that could meet a significant proportion of the energy demand with reliable high quality supply. The first step is to quantify this potential.

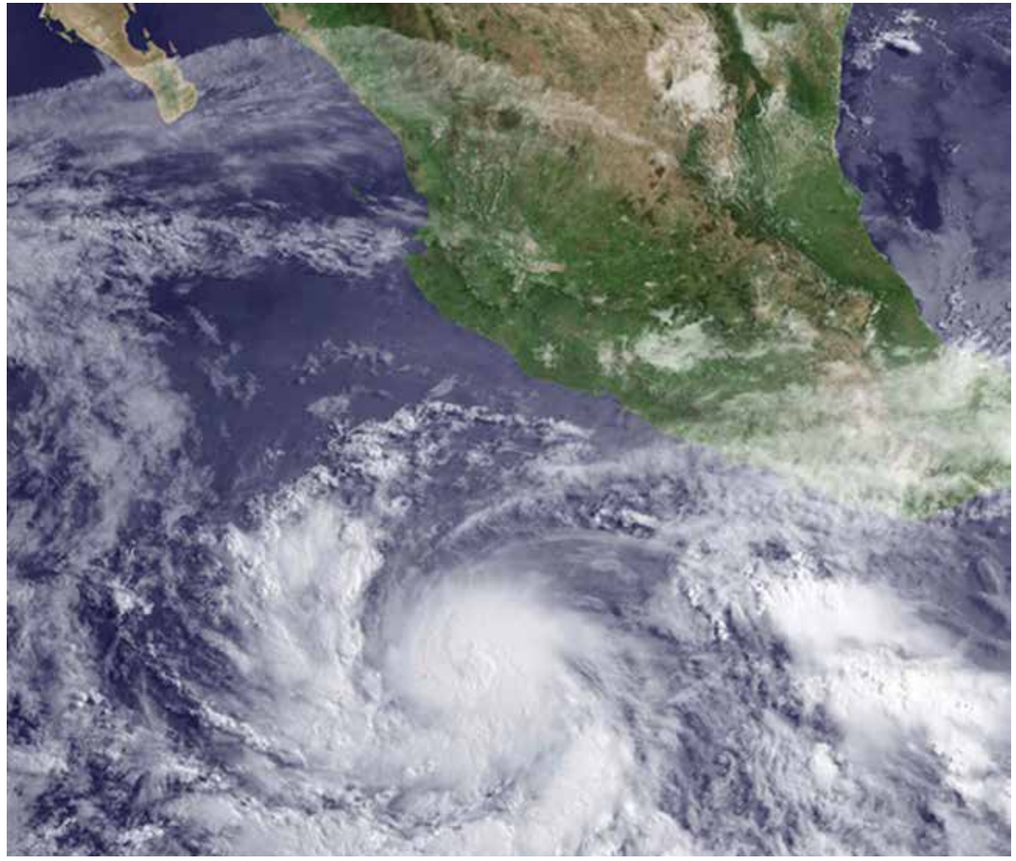
Therefore, in consortium with the German firm MVV, IDOM is conducting an analysis of the two basins of the country with greater capacity: the Coco River and the Rio Grande de Matagalpa.

In the first phase, already completed, a relatively large number of potential sites for the location of hydroelectricity power stations were preselected.

In the second phase, under development, these sites are being analysed in greater detail to pre-feasibility level, that is, pre-design, economic and financial analysis and socio-economic evaluation.

From this study, the list of sites will be reduced and the more suitable sites will be selected for a more detailed study. The objective is to implement the projects that will most benefit for the country's development.

THE OBJECTIVE OF THE PROJECT IS TO ENHANCE THE NATIONAL NETWORK OF ELECTRICAL GENERATION THROUGH RENEWABLE ENERGY SOURCES.



CLIMATE CHANGE.

IMPACT ON THE ROAD NETWORK OF NICARAGUA

Climate studies have shown that the extreme weather events being faced by Central America will be more frequent and with greater intensity in the future. In Nicaragua, the road network is especially vulnerable to extreme weather events due to the precarious state of the infrastructure, and which will increased because of climate change.

An international consortium led by IDOM is undertaking a bilateral cooperation project "Developing the capacity of the transport sector to adapt to climate change", financed by the Nordic Development Fund (FND). The objective of the project is to assist the Ministry of Transport and Infrastructure to integrate the adaption of climate change into the planning and design of road infrastructure in the country.

Mitigation and adaptation to climate change has become a priority line of action for the governments of America, and as such, they are requesting, and obtaining, increased international funding.

For many years now, IDOM has had a specific multidisciplinary team specializing in climate change.

"WITH THE KNOWLEDGE ACQUIRED IN SPAIN AND PORTUGAL, WE ARE CURRENTLY DEVELOPING HOSPITAL PROJECTS UNDER THE PUBLIC-PRIVATE ASSOCIATION MODEL IN LATIN AMERICA"

Rui Maia.
Senior Architect.
Business Development: Health, Architecture and Building.

OTHER

PROJECTS

COLOMBIA

Hydraulic modelling of the sewerage network of the Aburrá Valley for the Water Management of EPM (Empresas Públicas de Medellín). Modelling.

Emerging and Sustainable Cities Program in Valledupar, for the Inter-American Development Bank. Study of greenhouse gases, analysis of natural hazards, considering the effects of climate change and urban development.

Development of border control centres for the National Planning Department of Colombia (DNP). Consulting services to identify possible logistics activities.

ECUADOR

Development, construction and implementation of the Cadastral SIG, District Data Infrastructure (DDI) and District Indicators System (DIS) in Quito. Systems, Geosystems and Cadastre.

Agro-industrial Park of Ecuador for the United Nations Development Program for the Development and Prefecture of the Province of El Oro. Territorial Vocation Plan and Strategic Master Plan.

HONDURAS

Sanitation and Drainage of the city of Tegucigalpa (Honduras) for the Inter-American Development Bank (IDB). Prefeasibility Study.

Environmental Urban Plan of the Choluteca River in Tegucigalpa for the Inter-American Development Bank. Environmental recovery of the river and its environment, urban revitalization strategy, connectivity strategy and urban quality, governance and management plan.

"THE ECONOMIC DEVELOPMENT OF LATIN AMERICAN COUNTRIES IS LINKED TO THE IMPROVEMENT OF THEIR TRANSPORT INFRASTRUCTURE, AS WELL AS INCREASING THE EFFICIENCY OF PORTS AND BORDER CROSSINGS."

Javier Erice. MSc. Industrial Engineer. CPIM. PMP.
Director of Logistics and Ports.

DOMINICAN REPUBLIC

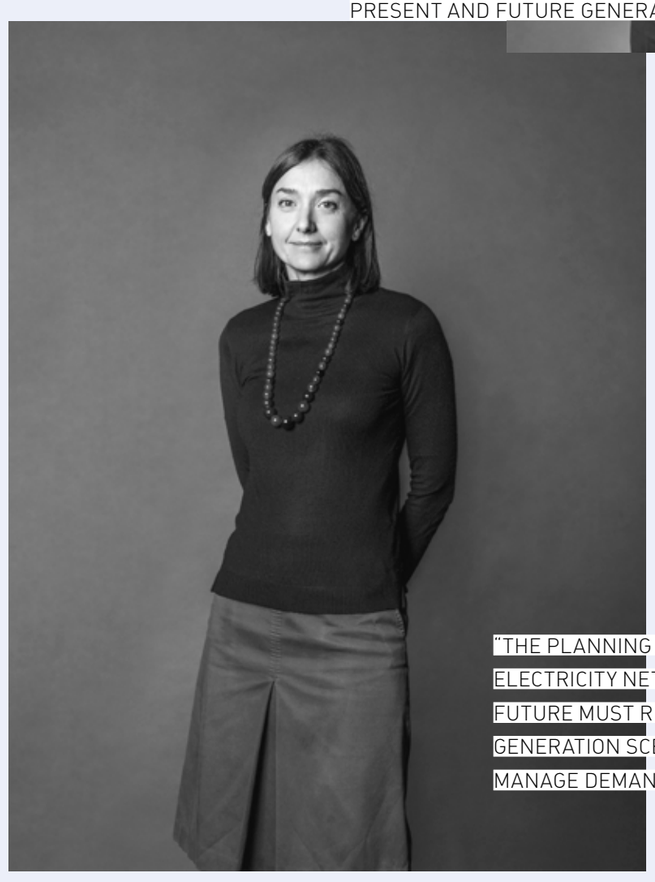
Business model for telecommunications services using fiber optics for the Dominican Electric Transmission Company (DETS).
Consultancy services.

PANAMA

Territorial Planning Partial Plan for the Town Hall of San Francisco, for the Mayor of Panama. Design and implementation of the plan, inter-institutional coordination and participation process.

"THE CORRECT MANAGEMENT AND USE OF WASTE CAN BE A SOURCE OF EMPLOYMENT AND, WITHOUT DOUBT, AN OPPORTUNITY FOR ECONOMIC DEVELOPMENT, WHILE MEETING THE ENVIRONMENTAL NEEDS OF THE PRESENT AND FUTURE GENERATIONS."

Jesús Fernández. MSc. Civil Engineer.
Project Manager / Environment.



"THE PLANNING AND DESIGN OF THE ELECTRICITY NETWORKS OF THE FUTURE MUST RESPOND TO A NEW GENERATION SCENARIO AND ACTIVELY MANAGE DEMAND."

Silvia Meléndez. MSc. Industrial Engineer. Responsible for equipment/structures.

North America

03

| **U.S.A.** SUSTAINABLE AND COMPETITIVE CITIES | MERCEDES BENZ PLANT | HAWAII SOLAR TELESCOPE | MSE TELESCOPE OF HAWAII | **MEXICO** INFRASTRUCTURE PLANNING | SPECIAL ECONOMIC AREAS | CITY MODEL | COMPETITIVENESS AND INNOVATION | ARCHITECTURE AND BUILDING | RENEWABLE ENERGY | INDUSTRIAL SECTOR | BAJA CALIFORNIA III COMBINED CYCLE POWER PLANT | MONTERREY COMBINED CYCLE POWER PLANT | MONTERREY STEELWORKS |

UNITED STATES

IDOM, AN EXPERT IN SUSTAINABLE & COMPETITIVE CITIES

Cities are the key elements for the sustainable development of a region, which is why IDOM experts are working to identify different urban growth options that will make them truly resilient.

Through the Emerging and Sustainable Cities Program (ESC), the Inter-American Development Bank (IDB), based in Washington, is promoting the development of cities in Latin America and the Caribbean (LAC) experiencing rapid population and urban growth, in a physical environment which is vulnerable to the risks of climate change.

Within the initiative, IDOM is designing the models of sustainable and resilient cities, with the capacity to adapt and overcome natural risks. The models consider urban growth scenarios (2030 and 2050) for cities, which are more compact and liveable, favouring eco-mobility, the local economy and job creation. IDOM has taken a technological and pioneering approach to the work, providing the different municipalities with a set of tools to structure projects, to improve their environmental, urban and fiscal sustainability.

IDOM is the leading Consultant in this type of studies and initiatives in the Latin American and Caribbean Region and has projects in more than 30 cities, including major cities such as Panama, Asunción and Tegucigalpa.

Photo: María Álvarez Mingorance & Daniel Rubio in Washington.

THE MERCEDES-BENZ PLANT IN THE UNITED STATES.

ONE OF THE MOST MODERN AUTOMOTIVE PLANTS IN THE COUNTRY

Mercedes-Benz has decided to build a full production plant in Ladson, near Charleston, South Carolina, to manufacture its Sprinter, Vito and Class V vans locally. The new plant will occupy 80 hectares and involves the construction, in the first phase, of more than 130,000 m^2 of production facilities and offices, as well as installations for the generation of cooling water, hot water for painting, 35 MW electrical installation, welding process cooling, welding gases, compressed air, HVAC, smoke extraction, fire, gas and potable water.

THE NEW FACILITY WILL OCCUPY MORE THAN 80 HECTARES.

Mercedes-Benz has appointed IDOM to provide the technical assistance for the project with the objective of preparing the schematic design, tender documentation for the works, assistance in the contracting process, and monitoring of the works. Undoubtedly, a key factor in the appointment of IDOM has been the experience accumulated over 25 years collaborating in projects in the plant of Vitoria-Gasteiz. This plant has served as a reference for the design of the new American plant.

"The Mercedes-Benz Project has reinforced IDOM as a provider of professional services for automotive plants in the global market."

Diego González Fernández.
Project Manager

Photo: Natalia Sagasti Martínez de Zuazo & Mª Eugenia Gauna Angulo at the Mercedes Benz factory in Vitoria, Spain.

"THIS WILL BE THE WORLD'S LARGEST SOLAR TELESCOPE AND WILL HAVE UNPRECEDENTED CAPABILITIES TO OBSERVE THE SUN IN DETAIL."

Gaizka Murga.
Project Manager.

SOLAR TELESCOPE IN HAWAII.

FINALIZING THE ASSEMBLY WORKS OF THE DOME. AN IMPORTANT MILESTONE FOR THE DKIST TELESCOPE

The Daniel K. Inouye Solar Telescope (DKIST), formerly Advanced Technology Solar Telescope (ATST), is a large domed solar telescope facility with a 4 meter wide primary mirror that is under construction by the National Solar Observatory on top of the Haleakala volcano on the Pacific island of Maui. In December 2013, while still under construction, the telescope was officially named after the late Daniel K. Inouye, the last US Senator from Hawaii. On completion in around 2018, it will be the world's largest solar telescope.

IDOM performed the Preliminary and Final Design of the DKIST Enclosure, under a contract with the Association of Universities for Research in Astronomy (AURA), in close collaboration with the DKIST Project Team. After a successful Final Design Review held at Bilbao in 2012, the Fabrication and Factory Assembly & Testing phases for the dome was launched. Most of the systems of the DKIST Enclosure, including all the structure, mechanisms, cladding and control system, were assembled at the factory and comprehensively tested to verify that the system complied with and exceeded the requested performances.

After the performance verification, the dome was packaged in about sixty standard containers and three oversized loads and transported to Maui (Hawai'i) and assembled in the Haleakala High Altitude Observatory.

The assembly process which included intermediate mechanism start-up milestones concluded successfully in June 2016. Once the Assembly was completed the Site Acceptance Tests (SAT) started.

IN CONTRAST TO CONVENTIONAL DOMES, THE DESIGN OF IDOM NOT ONLY PROTECTS THE TELESCOPE, BUT IT POSITIONS ITS OPENING WITH MILLIMETRIC ACCURACY.

THE DKIST IS MANAGED BY THE NATIONAL SOLAR OBSERVATORY (NSO), WHICH IS OPERATED BY THE ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY, INC. (AURA) UNDER A COOPERATIVE AGREEMENT WITH THE NATIONAL SCIENCE FOUNDATION (NSF).

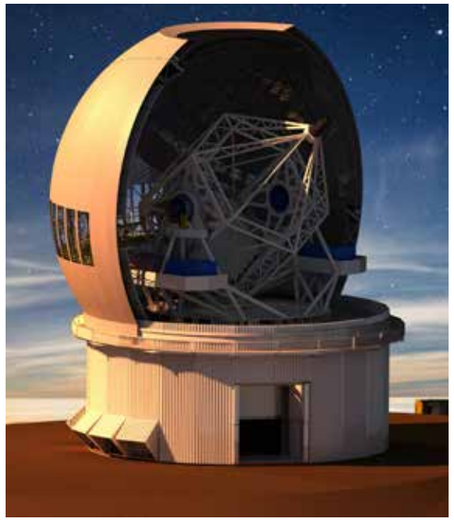


Image courtesy of the MSE - CFHT Corporation.

MSE TELESCOPE IN HAWAII.

DESIGN OF A NEW TELESCOPE STUCTURE

The Maunakea Spectroscopic Explorer (MSE) Project will transform the CFHT 3.6m optical telescope into a 10m class dedicated multiobject spectroscopic facility, with an ability to simultaneously measure thousands of objects with a spectral resolution range spanning 2,500 to 40,000. The project is currently in design phase, with full science operations nominally resuming in 2025. Before completion in 2025, the project will also have transformed and expanded the partnership into one poised to tackle global themes in concert with the coming wide field surveys and the new Extremely Large Telescopes.

Since September 2016, IDOM is developing, in collaboration with the MSE Team, the Conceptual Design for the Telescope of the Mauna Kea Spectroscopic Explorer with the goal of going through a Conceptual Design Review in February 2017.

Kei Szeto, Telescope Manager of the MSE Project Office, emphasized that "We are very impressed with the design progress so far. In less than two months, IDOM's engineering team has developed a solid telescope concept. With excitement, we look forward to the completion of the conceptual design."

MEXICO

PLANNING INFRASTRUCTURE

Strategic planning and improving the roads in Mexico will reduce travel times and foment the sustainable development of the network until 2030.

Mexico, through the Ministry of Communications and Transport and the 2030 National Strategic Road Infrastructure Program (ProNEIC 2030) developed by IDOM in 2011, is looking to achieve a safe and efficient road network that will raise the country's competitiveness, with a long term vision.

In this sense, in 2016, IDOM worked on updating the ProNEIC program, rethinking the desired state of the national road network to 2030. The objectives to achieve this and the strategic lines to be followed have also been updated.

IDOM also defined a new portfolio of projects to be implemented on a road network that gives structure to the country and while impacting on both the population and the national economy. This portfolio of projects has been prioritized according to criteria that are aligned to the defined strategy and that respond to the needs of road mobility in the country over time.

Finally, IDOM has developed a scorecard that will serve the Under-Secretariat for Infrastructure and the Department of Roads of the Communications and Transport Secretariat to optimize the execution of projects and monitor the performance of ProNEIC.

In addition, in the next 5 years, the movement of merchandise in Mexican ports is expected to grow significantly as a result of investments in the automotive industry, with capacity expected to increase by 40%, as well as the introduction of the Energy reform that will change the flow of existing merchandise. Given all this, it is now extremely important to have an estimate of the projection of future cargo demand in the ports, as well as a reliable estimate of the load capacity per line of business and port, taking into consideration the infrastructure constraints, equipment and characteristics of the market.

Photo: Iovanna Soto Bautista & Jorge Zugarramurdi in Mexico City.

SPECIAL ECONOMIC ZONES (SEZs).

ACCELERATING THE ECONOMIC GROWTH OF MEXICO

The Special Economic Zones (SEZs) project emerges as an initiative of the Mexican Federal Executive and is part of the strategy to detonate territorial development through dynamic economic poles that boost productivity at regional level and reduce asymmetries among Mexican states, especially between the regions of the north and south of the country.

The National Bank for Public Works and Services (BANOBRAS) together with the Ministry of Finance and Public Credit (SHCP) have commissioned the IDOM-led Consortium, which includes ADHOC and EVERCORE to develop the first four Special Economic Zones in Mexico: Lázaro Cárdenas (Michoacan State), Puerto Chiapas (Chiapas State), Salina Cruz (Oaxaca State) and Coatzacoalcos (Veracruz State) totalling almost 2,250 Hectares.

The challenge involves the elaboration and implementation of a Development Program and Master Plan for each SEZ, which will serve for integral planning with a long-term vision, identifying the potential sectors according to the industrial vocations of each region, anchor investors and needs.

The aim is to capitalize on the potential of local economies in their productive vocations (automotive, agriculture, etc.) to attract investment and generate social benefits such as the creation of more than 59,000 direct jobs, the development of value chains that detonate the demand for local services and the improvement of the quality of life of the population bordering these areas.

For each SEZ, the specific infrastructure requirements have been identified, both to enable the development of polygons and boost the development of the environment, in terms of road, rail, port, airport infrastructure, as well as new housing and urban amenities.

Upper photo: Carlos Petersen y Daniel Rubio in Mexico D.F.

CITY MODEL.

PLANNED GROWTH BECOMES REALITY

Since the Audi Plant was established in San José Chiapa, in the State of Puebla, the government has promoted the regional development of the area of influence of the automotive industry to become an economically competitive and socially inclusive territory.

Throughout 2015, IDOM collaborated with the different authorities in the elaboration of the Regional Programs of Urban Development and Ecological Planning and the Master Plan for the creation of a world-class urban centre, capable of offering a dynamic urban lifestyle which is safe for its inhabitants and workers.

In line with the development of the Master Plan, the Government of Puebla has again entrusted IDOM with the implementation of the first phase of 150 hectares for 20,000 inhabitants. The tasks assigned include technical assessment for the various government agencies involved in the project, and the elaboration of the regulations of urban and architectural criteria that conform the normative framework of the new city.

Currently, the first stage includes a metropolitan park, a health centre, an integral services centre, a school and the first phase of the Bilingual Technological University. There are 470 social housing homes, a convention centre, a hotel, a hospital, a sports centre, a shopping centre and the first phase of the Benemérita Autonomous University of Puebla.

Photo: Luis Felipe Pérez & Montserrat Tielve, in Mexico City.

COMPETITIVENESS & INNOVATION

MEXICAN OBSERVATORY OF INNOVATION.

The project aims to define and implement the "Mexican Innovation Observatory", which will bring together all relevant information on innovation policies in Mexico. One of the key products of the Observatory is a scorecard of innovation indicators that allow us to know the state of the innovation system in the country, as well as analyze the profitability of the public innovation policies that are carried out at federal level. The project includes, not only the definition of this scorecard, but also other products of the Observatory, such as technological trends reports, analysis of good practices in innovation policies or prospective reports, among others.

THE MEXICAN INNOVATION OBSERVATORY WILL CENTRALIZE ALL RELEVANT INFORMATION ON INNOVATION POLICIES IN MEXICO.

INNOVATIVE PUBLIC PROCUREMENT.

The Mexican Government, following OECD guidelines, has become involved in the development of Innovative Public Procurement (IPP), a tool for innovation policy from the perspective of demand. IDOM is accompanying the Ministry of Economy in the development of a pilot project of Innovative Public Procurement in the field of Information Technology within the framework of the National Digital Strategy, which will produce success cases and a model to be extended to the rest of Entities of the Federal Government.

LOW CARBON.

Low Carbon Business Action in Mexico, a project financed by the European Union, coordinated through the European Commission Delegation in Mexico, with the collaboration of PROMEXICO and implemented by IDOM, aims to reduce CO_2 emissions in Mexico, and in turn generate frameworks of collaboration between Mexican and European entities and companies in the field of green technology development.

IDOM IS ACCOMPANYING SOME 200 TECHNOLOGICAL COMPANIES IN THEIR PROCESS OF INTERNATIONALIZATION. THIS WILL INVOLVE THE DEVELOPMENT OF 40 EUROPE-MEXICO COLLABORATION AGREEMENTS.

THE GIGANTE GROUP.

NEW GRAN TERRAZA COAPA SHOPPING MALL

Grupo Gigante is a Mexican firm that since 1962 has been operating businesses in the markets of self-service, cafes, and specialist shops. In the southern part of Mexico City, the Group is developing the Gran Terraza Coapa shopping Centre. Spread over 175,000 m2, the shopping centre will include cinemas, restaurant zone, and retail outlets of major firms. The two underground floors will be used for parking while the three above-ground floors will be for commercial use.

Grupo Gigante has appointed IDOM to project manage the shopping centre project, including the coordination of the different design teams during the design phase, the pre-construction phase and construction supervision. The architecture is being developed by Sordo Madaleno Architects, specialists in the design of plazas and shopping centres.

LEISURE & BUSINESS.

SHOPPING MALL IN CORREGIDORA

The authorities of Corregidora, one of the 18 municipalities of the State of Querétaro (Mexico) are trying to boost the region, using formulas that seek to bring together the private initiative, and promote citizen/government collaboration. A new shopping centre, which will generate more than 600 jobs and provide all kinds of services for the population, is in line with this concept. And so, the authorities have welcomed with open arms the initiative of the Mexican developer Stiva. In addition to the shopping centre in Corregidora, in recent years Stiva has developed a dozen centres across the country.

The new building will be the third of its kind in the city (after Plaza Constituyentes and La Comer Pueblo Nuevo, specializing in food) and has been designed by the Mexican firm Ares. The building consists of a basement floor of 21,000 m², a ground floor and first floor.

HEALTH SYSTEM.

SCHEME DESIGN FOR SEVERAL HOSPITALS

During 2016 and 2017, at least 7 hospitals will be put out to tender under an APP (Public-Private Association) scheme, and IDOM is developing the architectural design, drawing of the firm's international experience in the field of hospital architecture.

The Hospital of Merida of the ISSSTE (Institute of Social Security of State Workers) was the first to be put out to tender under the APP scheme. It is a hospital of 12,500 m2 and 66 beds located on the outskirts of Merida, Yucatan. The architectural proposal responded to the difficulties of the terrain, narrow and long, with an implementation scheme that ensures its correct functionality, offering a great visual relationship with the exterior and allowing for future growth. The formalization of the complex is conceived with white stonework volumes evoking limestone, a material predominant in the geology of the location and strongly associated with the architecture of Mérida.

HOTEL SHERATON.

IN THE HEART OF THE FEDERAL DISTRICT

The Sheraton Mexico City, Maria Isabel Hotel, is an icon of the city and an integral part of the Starwood Hotels & Resorts, Inc. network. The purpose of the commission is the Project Management corresponding to the remodelling of the rooms and corridors of the Danube Tower. This remodelling is phase II of the master plan for the conversion of the Maria Isabel Sheraton Mexico City.

The expectation in terms of design is to continue with the general line implemented in the renovation of the rooms of the "Torre Reforma".

USING INFORMATION TECHNOLOGIES TO LEAD ENERGY TRANSITION.

RENEWABLE ENERGY.

DEVELOPMENT OF A MANAGEMENT PLATFORM

The Government of Mexico is determined to take advantage of information technologies to make administrative procedures more efficient and improve the delivery of services. Within this framework, the Energy Secretariat has requested IDOM to develop a management and monitoring platform for procedures, which will facilitate the project pipeline of Renewable Energy in Mexico. With this platform, it will be possible to manage all the procedures required by the different dependencies of the Federal Government.

The Online Renewable Energy Platform (Plataforma de Energías Renovables en Línea - ENREL) will provide investors with the registration, management and monitoring of their projects and will help the public administration with the control, analysis and exploitation of the corresponding information.

In addition, IDOM has developed, through the CONACYT-Government of Jalisco Joint Fund, an Energy Governance Model that includes a strategic plan, public policy guidelines and the design of an Agency to increase energy security, the promotion of renewable energy, and the efficient use of energy in the State.

Photo: Erich Marín, Gibran Ortíz & Alejandro Ramos in Mexico D.F.

WE ARE DESIGNING AN INNOVATION MODEL FOR THE AGRO-INDUSTRIAL SECTOR OF VARIOUS MEXICAN STATES.

EXPANDING TECHNOLOGICAL SERVICES

The Government of Mexico has commissioned the National Council of Science and Technology (CONACYT) to design and implement an innovation model adapted to the reality of Mexican companies. And our firm has taken on this challenge: over the next two years we will design and test the model for the agro-industrial sector in the states of Guerrero, Michoacán and Chiapas.

IN ADDITION TO INCREASING THE PRODUCTIVITY AND COMPETITIVENESS OF AROUND 600 MEDIUM AND SMALL COMPANIES, A TECHNOLOGICAL SERVICES AND INNOVATION MODEL WILL BE VALIDATED.

SIGMA FOODS.

GROWTH PLANS FOR A CHEESE MANUFACTURING PLANT IN CELAYA

The Sigma Foods Group, engaged in the production and distribution of cold meats and cheeses, has a significant presence in America and Europe.

According to the studies carried out by the Group, the existing cheese production facility in Celaya (Guanajuato) may not be sufficient to meet the expected growth in sales in the coming years. Sigma has appointed IDOM to carry out a study on the expansion of the plant and the modernization of the logistics and production processes.

To develop this project, the consulting and engineering areas of the IDOM offices in Mexico and Bogota have been working together, analysing the production plant of fresh cheeses in Celaya.

With the design developed, the plant expects to operate, increasing the production rate, improving productivity per worker and reducing manufacturing costs, guided by international best practices.

Photo: Said Nacif, Amaia Bernaras & Ignacio Castro in an agave plantation.

“BAJA CALIFORNIA III” COMBINED CYCLE POWER PLANT.

NEW THERMAL POWER PLANT IN THE STATE OF BAJA CALIFORNIA

In 1937, the Mexican Government nationalized the electricity system in order to ensure supply and reduce costs. At present, the Federal Electricity Commission (Comisión Federal de Electricidad - CFE) controls the generation, transmission and sale of electricity.

To carry out its mission, the CFE is counting on the support of concessionary companies, one of which is Iberdrola, the first private electricity producer in Mexico. In 2014, the CFE awarded Iberdrola the project for a new 294 MW combined cycle power plant, “Baja California III”.

In this new project, located around 20 km northeast of the city of Ensenada in Baja California, Iberdrola is responsible for the development, construction, ownership, maintenance and operation (for the next 25 years) of the facility and the associated services necessary for connection to the country’s electrical system. The works began in April 2014, and the plant is expected to enter into commercial operation by the end of 2016.

The combined cycle plant, designed as a 1X1 multi-axis, includes a 186 MV gas turbine and a steam turbine using General Electric technology, a heat recovery steam generator with the possibility of post-combustion, and the infrastructure for transmission and gas supply, which is to be supplied by CFE.

Located on the Pacific coast, the plant will use seawater for cooling in an open circuit (once-through) with a maximum cooling range of 7º C, so as not to affect the marine wildlife environment.

IDOM has collaborated with Iberdrola on the detailed engineering, providing Mechanical and Process Engineering, Implantation and Design, Electrical Installation and Instrumentation and Control.

Image courtesy of Iberdrola.

MONTERREY COMBINED CYCLE POWER PLANT.

DEVELOPING ITS POTENTIAL IN A WARM AND DRY LOCATION

Iberdrola, the most important private producer of electricity in Mexico, is growing its share of the energy market in the country.

The multinational electric utility company has one of the most efficient and flexible combined cycle power plants in Mexico. Located close to the city of Monterray, the power plant aptly named “Monterray III” has been in operation since 2002. Until now, the plant consisted of four operating units with an installed capacity of 962 MW.

In 2014, Iberdrola decided to build a fifth unit, known as “Dulces Nombres II” with an installed capacity of around 300 MW. After successfully completing the testing phase, this unit became operational in early October 2016.

The new plant will operate without post-combustion and with an evaporative cooler, an additional component that will improve the performance of the gas turbine and develop its potential in this warm and dry location.

IDOM has collaborated with Iberdrola on the detailed design of the project, sharing the scope of works, of which our firm has developed the mechanical, electrical, process and instrumentation and control engineering.

Image courtesy of Iberdrola.

STEEL MILL IN MONTERREY.

NEW ELECTRIC STEEL PLANT PRODUCING INGOTS FOR DIE FORGING

The Mexican company Frisa is a world leader in forged products for diverse sectors: aerospace, power generation, industrial machinery, oil and gas, and wind energy.

Established in 1971 in the city of Monterrey, Frisa has one plant in the United States and four in Mexico. They have recently built a new facility, start-up phase beginning in August 2016, in the municipality of Garcia (Monterrey), adjacent to the existing open Die facility.

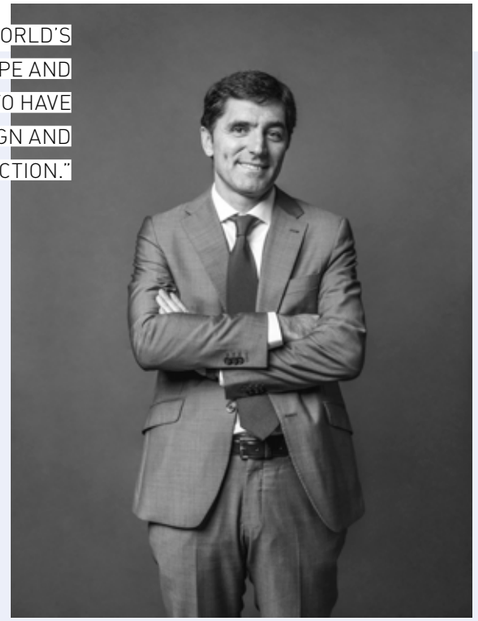
The new facility has an electric arc furnace for ingot casting, with a state-of-the-art technology for the production of special steel ingots. The facility has a production capacity of 300,000 t/year. Once produced, the ingots will be worked on in the adjacent forge, where special pieces are manufactured. Therefore, the new mill will complete the production cycle, optimizing the quality of the steel.

Frisa contracted Bascotecnia to develop the detailed engineering of the civil works, and the supply of turnkey buildings, water plant, fume treatment and auxiliary services. The main process equipment is being supplied by INTECO. Working for Bascotecnia, IDOM has carried out the detailed engineering for the foundations of the equipment, civil works, racks and routes of the auxiliary mechanical and electrical services.

Images courtesy of Frisa / Bascotecnia.

THE NEW STEEL MILL, EQUIPPED WITH STATE-OF-THE-ART TECHNOLOGY, WITH CAPACITY TO PRODUCE 300,000 tpy OF SPECIAL STEEL INGOTS.

"THE DKIST WILL BE THE WORLD'S LARGEST SOLAR TELESCOPE AND WE ARE VERY PROUD TO HAVE PARTICIPATED IN ITS DESIGN AND CONSTRUCTION."



Armando Bilbao. Dr. Industrial Engineer.
Director of Operations of IDOM ADA.

OTHER

PROJECTS

CANADA

British Columbia 40 MW Biomass Plants at Fort Saint James and Merrit for IBERINCO. Detailed Engineering Services.

11-kilometer highway for Infrastructure Ontario and Ministry of Transportation of Ontario. Technical assistance in geotechnics and value engineering in tunnel structures and installations and design of temporary diversions.

U.S.A.

Stainless Steel Plant Expansion in Kentucky for North American Stainless (NAS). Detailed engineering and technical assistance during construction.

Salem Harbor 674 MW combined cycle power plant for Iberdrola Multidisciplinary detailed engineering (civil/structures, piping, mechanical, electrical and I&C, 3D modelling). Training courses and technical assistance on site.

MEXICO

Valle Mexico II 543 MW net power combined cycle power plant for Initec Energía. Detailed engineering, procurement management, operation and maintenance manuals and other related services.

Thermal Power Plant of Baja California Sur V for Acciona. Basic and detailed engineering for the 46.8 MW plant (net capacity).

"NUCLEAR ENERGY IS ONE OF THE KEYS TO GUARANTEE THE CONTINUED DEMOGRAPHIC AND ECONOMIC SUSTAINABLE GROWTH BEING EXPERIENCED BY MEXICO."

Rubén Osorio. MSc. Industrial Engineer.
Responsible for the development of nuclear business in Mexico.

"THE 4 FIRST SPECIAL ECONOMIC ZONES OF MEXICO ARE DYNAMIC ECONOMIC POLES THAT WILL CREATE MORE THAN 59,000 DIRECT JOBS."

Master Plan of Four Special Economic Zones for the Mexican Federal Government. Pre-feasibility study, Strategic Evaluation, Development Program, Master Plan for each SEZ, Identification of and dialogue with potential integral managers and investors.

Development of the City Model for the Government of the State of Puebla. Technical advice and elaboration of the regulations of urban and architectural criteria that make up the normative framework of the new city.

Antonio Fernández. Economist.
Director of City and Territory.

"OUR IN-DEPTH KNOWLEDGE OF THE LANDSCAPE MEANS THAT WE CAN PROPOSE STRATEGIES TO MEET THE NEW CHALLENGES OF CITIES AND THEIR INFRASTRUCTURE."

Manuela Casado.
Senior Architect. Business Development: Landscape and Urban Design, Architecture and Building.

Atlantic Europe

04

URBAN TRANSFORMATION | ENVIRONMENTAL ENGINEERING IN LUTON | LEICESTER INNOVATION CENTRE | MICHELIN, RELATIONSHIP WITH THE CLIENT | **SPAIN** DIGITAL AGENDA OF THE BASQUE COUNTRY | EXTENSION OF THE SAN MAMÉS STADIUM ROOF | HIGH-SPEED RAIL MADRID - GALICIA | A CORUÑA PORT | NEW ENVIRONMENTAL COMPLEX | NEINOR HOUSING | MORE EFFICIENT PORTS | CAMERA FOR MICROSATELLITES | TRIPALA TEST BENCH | SALBURUA CIVIC CENTRE | **BELARUS** FROM THE BROWN ECONOMY TO THE GREEN ECONOMY | **PORTUGAL** ITS SYSTEMS IN MADEIRA | RESEARCH BUILDING FOR BOSCH | EXPANSION OF THE CUF DESCOBERTAS HOSPITAL | **SWEDEN** HIGH-SPEED RAIL | **POLAND** WEST WARSAW STATION | **FRANCE** BOUCHAIN COMBINED CYCLE POWER PLANT | COLLECTION SYSTEMS | **IRELAND** DUBLIN AIRPORT | INCINERATORS |

UNITED KINGDOM

ACTORS OF SUSTAINABLE DEVELOPMENT

Our projects involve international and local clients, linked by the goal of innovation.

In general, the situation of the industrial, nuclear, infrastructure and construction sectors, in the United Kingdom, is more than promising, with sustained development for almost a decade. IDOM is currently developing projects for public and private clients, putting us in a privileged position.

Photo: Chin Yow Fong, Irene Evgeniou & Iro Dimitriu, part of the architectural team in London.

PREPARED FOR GREAT CHALLENGES

Photo: Yian Jiang, Narciso López & Vincenzo Mannuca, part of the structures team at London Bridge.

“In the UK there are major infrastructure projects about to begin, and the construction sector has the challenge of providing these projects with the necessary means in time and budget.“

URBAN TRANSFORMATION

A POINT OF REFERENCE IN THE HEART OF BRISTOL.

AN OFFICE BUILDING FOR MAPFRE

In 2014, the Spanish insurance company Mapfre decided to establish its centre of operations in an emblematic building in the heart of Bristol. Located on the banks of the river Avon in front of the Cathedral, this 4,000 m^2 building is distributed over 7 floors and is a point of reference in the city.

THE BUILDING WILL BE THE WORKPLACE FOR 600 WORKERS, MOST OF THEM LOCAL TO BRISTOL

The building has undergone an integral refurbishment in order to attract international companies interested in establishing themselves in the city. After a series of technical audits carried out by IDOM, Mapfre decided to lease the building to accommodate its operations centre and call centre. The IDOM team has carried out the detail design of the interior fitting of the building, the integral management of the project and works supervision.

CONVERTING THE "EXCHANGE BUILDING" IN BRADFORD.

ADAPTATION OF AN EMBLEMATIC BUILDING TO RESIDENTIAL USE

The Xchange building is an iconic building in the heart of the city and within the conservation area of Bradford, some 14 km to the west of Leeds in the UK. Built in the 1960's and previously known as Arndale House, the new Xchange development will transform the building's commercial roots into a modern residential focal point for the city. The refurbishment will result in a mix of retail and residential developments over 9 floors, with space for 126 one and two bedroom apartments.

PARTICIPATION IN PROJECTS LIKE THE "EXCHANGE BUILDING" DEMONSTRATES THE SCOPE AND VARIETY OF OUR SERVICES IN THE UNITED KINGDOM.

IDOM has been appointed by Pinnacle (Bradford) Ltd, to manage the outlined design for all mechanical and electrical building services for the building. IDOM Merebrook's Manchester team has been briefed to design the heating, ventilation, air conditioning, domestic hot and cold water service and all electrical systems such as lighting and small power to meet the new requirements and residential usage of the building.

Photo: Anita Hatton, Paschalis Strekas, Carlos Azuaga & Ritika Daswani, outside the IDOM London office.

ENVIRONMENTAL ENGINEERING IN LUTON.

THE TRANSFORMATION OF NAPIER PARK

IDOM has assisted Blu 3, owner of a strategically located site in Luton, in its transformation to a multipurpose complex. The grounds were part of the old Vauxhall engine factory, a company that has been making vehicles since 1905. IDOM has been involved since the the initial phase of the competition, giving us the opportunity to propose the operations of decontamination, including the elimination of asbestos, before the new proposal. IDOM has assumed the responsibility of environmental engineer, designing the earth movement works, producing the geotechnical specifications and directing the validation processes of the works.

OUR EXPERIENCE IN DECONTAMINATION AND REMEDIATION GOES HAND IN HAND WITH THE BRITISH GOVERNMENT'S STRATEGY TO SUPPORT SUSTAINABLE DEVELOPMENT.

Photo: Linford Shacklady, Amy Jones & Max Charlottes.

A PROJECT THAT ASPIRES TO OBTAIN THE BREEAM CERTIFICATION, FOR SUSTAINABLE CONSTRUCTION AT GLOBAL LEVEL.

LEICESTER INNOVATION CENTRE.

CREATING EMPLOYMENT

Leicester City Council has set out to boost economic growth and create employment in the region and to this end has launched initiatives that have attracted attention in the UK. Among others, two new research and development centres for local companies. One of these centres will be designed by IDOM and aims to achieve the degree of excellence required by the BREEAM (Building Research Establishment Environmental Assessment Methodology) certification, the World's leading sustainable building certification.

Located next to the well-known National Space Centre, Dock 2 will have 12 modules of between 60m2 and 150m2, all equipped and fitted out as offices. The total area is 1,860 m2 in addtion to surface parking for more than 100 vehicles. The City Council will offer the modules of this building, and the adjacent one, to innovation companies working in the technology sector.

SCOTLAND

IDOM HAS BEEN DEVELOPING DIFFERENT TASKS FOR MICHELIN SINCE 2012 & IS NOW PARTICIPATING IN THE MODERNIZATION OF THE DUNDEE FACTORY IN SCOTLAND.

To date, IDOM has reached the final stage in all processes, and has been awarded two of them: the European Logistics Program (in which we are participating in the expansion of three centres in Spain) and the renovation of the tyre curing press line (being developed in the factory in Dundee, Scotland).

The press line is a complex installation, which involves the vulcanizing process. This is one of the five phases (mixture of rubber, manufacturing of semi-finished products, assembly, vulcanizing and inspection). The manufacturing process involves a press structure, which can either be steam powered or electric.

IDOM is collaborating in the renewal of the existing tyre curing press line in the Dundee factory. This will be substituted by a more modern one: electric, automatic and with optimized ventilation for the treatment of fumes.

This latest innovation is entirely due to the work of IDOM who, after conducting Computational Fluid Dynamics (CFD) study, analysed the process temperatures, concentrations of fumes and air velocities from the curing process. This data was then used to optimize the design of ventilation.

Participating in international procurement processes, the successful development of awarded projects and the delivery of innovative solutions (some of these initiatives proposed by IDOM), means that we are now a valuable partner of Michelin.

Photos courtesy of Michelin.

MICHELIN, A GREAT CLIENT.

IDOM HAS A MAGNIFICENT RELATIONSHIP WITH THIS TYRE MANUFACTURER

Of French origin and present in 170 countries on five continents, Michelin, with a market share of close to 14%, is one of the two largest tyre manufacturers worldwide.

Safety, sustainability and energy efficiency are just some of the demands of a market, in which Michelin is at the forefront, manufacturing products such as mixed summer-winter tyres, with digital pressure and temperature monitoring systems, etc.

Currently, Michelin considers IDOM to be a partner that can help them maintain their leadership in such market trends. But how have we achieved this position?

IDOM's relationship with the French manufacturer began in 2012 when we signed a Framework Agreement to develop engineering projects in the firm's Spanish facilities. After three years delivering this service, IDOM came to the attention of the Central Purchasing department in France, who included our firm in the selection process for the supply of engineering for international projects (Mexico, United Kingdom, Poland and Spain).

Lower photo: The Dundee Plant in Scotland.
Opposite photo: The factory in Alava, Spain.

SPAIN

DIGITAL AGENDA FOR EUSKADI 2020

With the development of industry 4.0., the European Digital Agenda is looking to the future.

Photo: Aitor Urzelai, Cristina de Miguel & Antonio Lázaro.

The Digital Agenda for Europe is one of the pillars of the European Commission's strategy to boost the economic growth of the Union by the year 2020. In order to align itself with this Agenda, the different European countries and regions have developed their own strategies. The strategy of the Basque Country is called the Digital Agenda for Euskadi 2020 (AD @ 2020). IDOM has worked closely with the Basque Government in its preparation and implementation.

A Digital Agenda sets the priorities of the Government to take advantage of the opportunities offered by Electronic, Information and Communication Technologies (EICT) to improve competitiveness, quality of life and employment. Among the programs that have been implemented within this ambitious plan is the creation in the Basque Country of an ecosystem of technological StartUps; the development of new digital skills to prepare new digital professions; the extension of broadband in the territory, especially in industrial estates; or the development of the technologies to support Industry 4.0, the basis of the new industrial and productive model for the coming decades.

SAN MAMÉS.
EXTENDING THE ROOF.

A TECHNICAL, ARCHITECTURAL &
TECHNOLOGICAL CHALLENGE

With the San Mames Stadium in operation, Althletic Club asked IDOM to carry out a study on the possibilities of improving the level of comfort of the spectators on rainy days.

As the result of an exhaustive analysis, it was concluded that an extension of the roof could partially reduce the effect of climatology on the fans seated closest to the pitch, without having to lose the typology of an open stadium. The stadium was conceived as an open stadium from its inception.

IN THE GALA CELEBRATED AT THE WORLD ARCHITECTURE FESTIVAL 2015 IN SINGAPORE, SAN MAMÉS WAS RECOGNIZED AS THE BEST SPORTS BUILDING. IT WAS ALSO AWARDED THE "STADIUM OF THE YEAR" PRIZE AT THE WORLD STADIUM CONGRESS IN DOHA IN 2015.

The possibility of completely covering the stadium was considered – the only option to ensure that not one of the spectators was affected by rain – but finally, the club itself opted to extend the roof, a solution that allows rain to still be part of the game, as it has always been in Bilbao.

IDOM HAS DESIGNED AND CALCULATED A SUPERLIGHT STRUCTURE BASED ON A DOUBLE-LAYER CABLE SYSTEM COMPOSED OF TWO INNER TENSION RINGS AND AN OUTER COMPRESSION RING.

Based on the architectural integration of a new structure to be added to the existing one, IDOM has designed and calculated a super light structure based on a double-layer cable system composed of two inner tension rings and an outer compression ring.

The latter is made up of a tubular lattice that, thanks to the development of an innovative system of connection with the existing roof, adequately transfers the loads to the original structure, thus minimizing the reinforcement needs on the same. Adequate management and commissioning made it possible to meet the demanding challenges of time and budget: the work had to be carried out, for the most part, during the summer season of 2016, to fulfil the commitment to finish in November.

SAN MAMÉS IS A REFERENCE SPORTS STADIUM AT INTERNATIONAL LEVEL, IN TERMS OF ARCHITECTURE AND ENGINEERING.

Photo: from left to right, Javier Llarena, Oscar Malo, César Azcarate & Armando Bilbao.

"THE FIRST STADIUM IN EUROPE TO OBTAIN THE LEED CERTIFICATION OF SUSTAINABLE BUILDING."

César Azcárate, Architect responsible for the project.

A COLOSSAL WORK.

THE BOLAÑOS TUNNELS OF THE MADRID-GALICIA HIGH-SPEED RAIL LINE

The gigantic perforations that have been made in Bolaños for the Madrid-Orense high-speed line (the Vilariño-Campobecerros section) have resulted in a twin tube tunnel with each tube/tunnel being almost 7 km long. The tunnels have been excavated using a 9.9 m Herrenknecht single shield TBM, nicknamed "La Peregrina".

In addition to the two tunnels, the works include the construction of two 40 m viaducts at the eastern access; a 1.2 km open air platform close to Campobecerros that will accommodate the railroad switch.

IDOM has participated from the beginning in these formidable works, providing Technical Assistance to the Works Management team of ADIF High-Speed.

AFTER 4 YEARS , THE WORKS ARE AT A VERY ADVANCED STATE.

THE PORT OF A CORUÑA.

RAILWAY ACCESS

The Port of A Coruña is the sixth most important in Spain in terms of the movement of cargo by rail; therefore, a rail link is one of the main priorities of the Port Authority whose objective is to make the Outer Port a logistics node of international reference while fostering the competitiveness of the port operators.

The connection project includes a single-track section, which will be electrified in the future. It consists of the main section of 5.58 km (including the connection in the direction of A Coruña) and a 0.96 km section in the direction of Santiago.

In terms of the environmental impact, the design incorporates preventive and corrective measures in accordance with the corresponding declaration. Finally, IDOM will support the Port Authority in obtaining European funding, developing the required economic and financial studies.

Photographs courtesy of the Port of A Coruña.

THE LONGEST HIGH-SPEED RAIL ARCH BRIDGE IN THE WORLD.

A TECHNICAL CHALLENGE FOR ENGINEERING

The new viaduct over the Almonte River, at the Alcántara Reservoir (Extremadura), includes the high-speed arch bridge which, in terms of the main span, is the longest arch bridge in the world (384 m), surpassing that of Dashegguan In China (336 m), and Lake Froschgrundsee in Germany (270 m), the current holder of the world record for a concrete arch used for rail transport.

The viaduct, part of the new Madrid-Extremadura high-speed rail line, is 996 m in length, and consists of twelve 45 m approach spans and an additional 36 m span at each end.

In terms of the arch-deck ratio, 45 m spans have been proposed for both ends and 42 m for the rest, separating, in a variable way, the piers on which the decks sit on the arch. The span is therefore divided into nine sections, resulting in an adequate load distribution along a curved structure.

IDOM has been involved in this unique structure since 2011, participating in the detailed design and providing technical assistance for the construction supervision for ADIF, in collaboration with the firm Arenas y Asociados.

THANKS TO R&D IN CONSTRUCTION AND THE EXPERIENCE OF THE ENGINEERS, THE CHALLENGE OF BUILDING THIS ARCH HAS BEEN RESOLVED.

Photographs provided by the AVE ALCÁNTARA-GARROVILLAS Joint Venture (FCC & CONDURIL)

NEW ENVIRONMENTAL COMPLEX FOR GIPUZKOA.

WASTE-TO-ENERGY

Incineration with energy recovery is a robust and reliable technology capable of using the resources that can be found in municipal waste. With the right corrective measures, this technology is harmless to the environment and human health.

Given that it is a more efficient and clearly more sustainable technology than landfill (considered the least favoured option in the waste management hierarchy), energy-based incineration is an especially attractive option for waste management in high-density urban agglomerations, located in areas with complex orography (mountainous, islands, etc.), and with low soil availability.

The north of the Iberian Peninsula is a clear example of this. Virtually all the most populated, developed and mountainous Autonomous Communities of the North have opted for incineration with energy recovery as a technology for waste disposal. In addition to the historic plants already in operation in Galicia, Cantabria, Biscay and Catalonia, in the short term, it is expected that the plants of Asturias and Gipuzkoa, which have been in the pipeline for some time will begin operations.

IDOM is playing an important role in the development of the second of these plants, and in general, with all the new waste infrastructure to be constructed, in the short term, in the Historical Territory of Gipuzkoa, since we were awarded the contract to deliver Owner's Engineering technical assistance for GHK, the public company responsible for the management of the plant's construction and operation. The scope of the contract includes technical assistance for the obtaining of authorizations, engineering design, construction and exploitation of the various infrastructures necessary for the management of waste and bio-waste, including the energy recovery plant.

NEINOR HOMES.

DESIGN WITH CHARACTER

Neinor Homes, one of the largest Spanish real estate developers, has decided to contract IDOM for the design of one of their important developments.

The 60 homes are located in Onditz, a residential area bordering the municipality of Getxo with extended views over the mouth of the estuary of Bilbao. The project consists of four apartment blocks of 2 floors and an attic, minimizing the presence in a low-density environment, a municipal green belt area. The proposed large terraces, south-facing windows and landscaped grounds set out to promote a friendly image of the city garden where the values of community life prevail.

"Greater environmental commitment through services which are more efficient is essential for the ports of the future"

Irene González, Logistics & Ports Consultant in the Port of Bilbao.

MORE EFFICIENT PORTS.

TECHNOLOGY AND INNOVATION AT THE SERVICE OF MARITIME TRADE

An example is the Port of Bilbao, where the increase in containers transport by rail in the Port called for the reorganization of the traffic of trains and trucks. Noatum contracted IDOM to relocate the access doors to their terminal. Following a study, we proposed measures to resolve the question and achieve further benefits: reducing the interchange of process roles between actors, increasing the level of planning in the terminal, optimizing the storage spaces, reducing queuing times at the entrances, improving the processes to identify and locate vehicles and merchandize, as well as improving the exchange of information with other external agents.

In addition, in mid-2016, given the daily increase in special transport in the Port of Bilbao, the Port Authority contracted IDOM to carry out a study with the objective of improving the competitiveness of special transport to the Port by combining solutions that minimize the social impact, maintain costs for companies and guarantee road safety. Our Firm analyzed the special transportation flows from the factories to the Port, studying technical characteristics, physical restrictions and regulations. Alternatives and improvements for the operation were proposed. The alternatives were assessed technically and economically and support was provided to implement the proposals.

Another example is the Port of Barcelona, where the Port Authority has requested IDOM to improve the documentary exchange processes related to the transport of goods by rail. In developing this work, we drew on our knowledge of international ports and the Port of Barcelona itself; we have designed maritime passenger terminal, port management systems and the quality control of maritime-port processes.

TO DATE, IDOM HAS ASSISTED MORE THAN 80 PORT AUTHORITIES AND COMPANIES FROM ALL OVER THE WORLD.

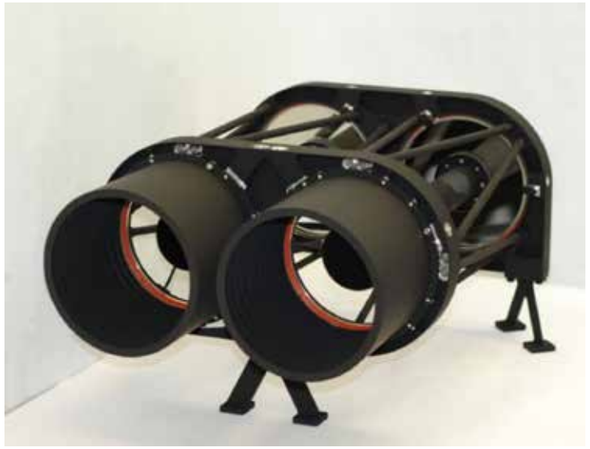
iSIM CAMERA FOR MICROSATELLITES.

DESIGN AND FABRICATION OF THE MECHANICAL STRUCTURE

IDOM has developed, in collaboration with SATLANTIS, the mechanical structure and fabricated a first qualification model for the iSIM camera for earth observation.

iSIM (Integrated Standard Imager for Earth Observation Microsatellites) is an optical imaging product family for microsatellites (20-75 kg) that provide an unparalleled performance and flexibility for a fraction of the cost of today's Earth Observation instruments. iSIM will be able to obtain high resolution images (less than 1m resolution) on microsatellites operating at 500km altitude.

iSIM is the premier product of SATLANTIS, a newly created company based in Spain and USA that aims to connect the three vertices of the "triangle of knowledge" –universities, industries, and government agencies– to work together towards a common goal: to become a global leader in the use of constellation of microsatellites for scientific and commercial applications.



The mechanical structure developed by IDOM for iSIM is able to provide a stiff, stable and lightweight support for the optical components of the camera able to withstand the accelerations imposed during the launching of the system.

Rafael Guzmán, founder of Satlantis, highlighted that "The innovative mechanical design and precise fabrication of the structure that IDOM provided have been essential to transform iSIM into one of the most powerful cameras for Earth Observations currently available in the market. In particular, the lightweight solution IDOM developed while maintaining its superb thermal stability has allowed Satlantis to ensure optimum image quality in a broader range of thermal environments largely reducing the overall cost of the camera."

"As a result of the success of this initial joint project, IDOM decided to become a partner in Satlantis."

THIS CAMERA IS ONE OF THE MOST POWERFUL TERRESTRIAL OBSERVATION SYSTEMS AVAILABLE IN THE MARKET.

THE CAMERA, WITH UNPRECEDENTED OPERATIONAL AND FLEXIBILITY FEATURES, WILL BE ABLE TO OBTAIN HIGH RESOLUTION IMAGES ON MICROSATELLITES, OPERATING AT 500 KM ALTITUDE.

THE SOLUTION PROPOSED BY IDOM MAY BECOME A GLOBAL REFERENCE FOR TEST BENCHES.

THE TRIPALA TEST BENCH.

A DEVELOPMENT FOR THE WIND SECTOR

Windbox, the Association for the Integration and Validation of Wind Subsystems by Advanced Testing has emerged as an Advanced Manufacturing Centre promoted by the Department of Economic Development and Competitiveness of the Basque Government, with the aim of developing the capacities of Basque companies in the wind sector and enhance its competitiveness. To this end, Windbox is commissioning five test benches to test and validate the critical elements of offshore wind systems for wind turbines up to 8MW.

In 2015, IDOM was awarded the turnkey project of one of the test benches promoted by Windbox, whose objective is the validation of the design of bearings of the blades and hub of wind turbines in term of extreme load and fatigue. The bench/stand must be able to apply moments of between 35,000-55,000 KN-m at the interface joining the bearing and hub.

WINDBOX IS COMMISSIONING FIVE TEST BENCHES TO TEST AND VALIDATE THE CRITICAL ELEMENTS OF OFFSHORE WIND SYSTEMS FOR WIND TURBINES UP TO 8MW.

Under these premises, IDOM has developed a bench design with a high technological component and with unique capabilities, which will be a reference worldwide. The solution designed by IDOM is intended for the simultaneous testing of 3 blade bearings (Tripala Bench), in which one of the 3 arms, with moment capacity up to 55 MNm, can test extreme loads.

The innovative load application system designed by IDOM is based on the concept of a compact two-degree-of-freedom mechanisms, allowing the application of varying loads, continuously at 360º in any direction in the plane, not limited to discrete directions.

After the design, manufacture and preassembly phases in the workshop, and once the civil work is completed, the complete assembly of the bench is planned, as well as the commissioning and acceptance tests. WINDBOX is based at the IK4-Tekniker facility in Eibar and has received grants from the Basque Government and the Provincial Council of Gipuzkoa.

FIRST PRIZE EN THE WAF AWARDS

World Architecture Festival

The Salburua Civic Centre is arguably the best civic centre in the world, according to the 2016 WAF Awards.

SALBURUA CIVIC CENTRE.

CHOSEN FROM 785 PROPOSALS

The organizers of the World Architecture Festival (WAF), the largest international architectural event in the world, chose the Salburua Civic Centre as the winner from among the 785 proposals received from around the world. The Salburua Civic Centre in Vitoria-Gasteiz, designed and managed by IDOM, won the Civic and Community - Completed Buildings category.

This year, the Festival was held at the Berlin Arena, where Gonzalo Carro, an architect of the team that drafted the project and managed the building works of the Salburua Civic Centre, presented the project and won over both the public and jury.

Since its inauguration in mid-2015, the Salburua Civic Centre has garnered other successes, such as reaching the final at the WAN Awards (World Architecture News), WAN Category Civic Buildings Award.

IDOM HAS BEEN A FINALIST FOR TWO CONSECUTIVE YEARS, WINNING IN THE CATEGORY "SPORT COMPLETED BUILDINGS" WITH SAN MAMÉS STADIUM IN 2015.

Photo, from left to right, top to bottom: María Eugenia Gauna, Juan Luis Gaija, Unai Mardomes, Arrate López de Maturana, Gonzalo Carro, María Robredo, Sara Barreda, Elena Guezuraga, Itziar Ramírez & Beatriz Lorenzo.

In addition, Juan Dávila, Federico Reguero, Camino López, Óscar Ferreira, Javier Manjón, Aintzane Gastelu-Iturri, Daniela Bustamante, Beatriz Pagoaga & Aitziber Olarte also participated in the project.

BELARUS

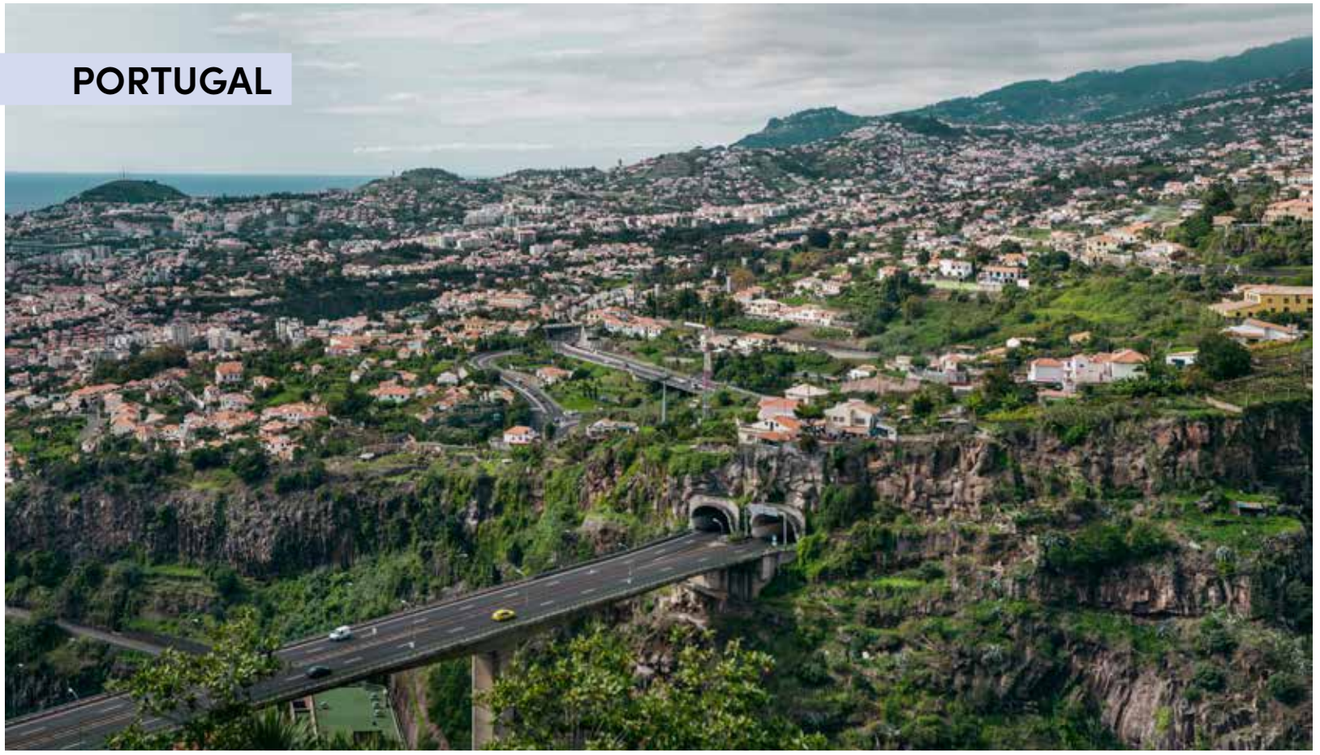
A PROJECT PROMOTED BY THE EUROPEAN UNION FOR A TRANSITION TOWARDS A "GREEN ECONOMY."

Our objective is the efficient use of resources and a reduction in carbon emissions.

Increasingly, advanced countries are recognizing the need to make a transition from the "brown economy", seeking to maximize wellbeing, towards a "green economy" model, which without forgetting wellbeing, also seeks to reduce carbon emissions, efficiently use resources, and be socially inclusive. IDOM is part of the international consortium funded by the European Union, which is developing an ambitious cooperation project aimed at helping the Belarusian authorities make the transition to the green economy in areas such as eco-labelling, organic agriculture, the sustainable management of biosphere reserves, and achieve a reduction in the emissions of atmospheric pollutants.

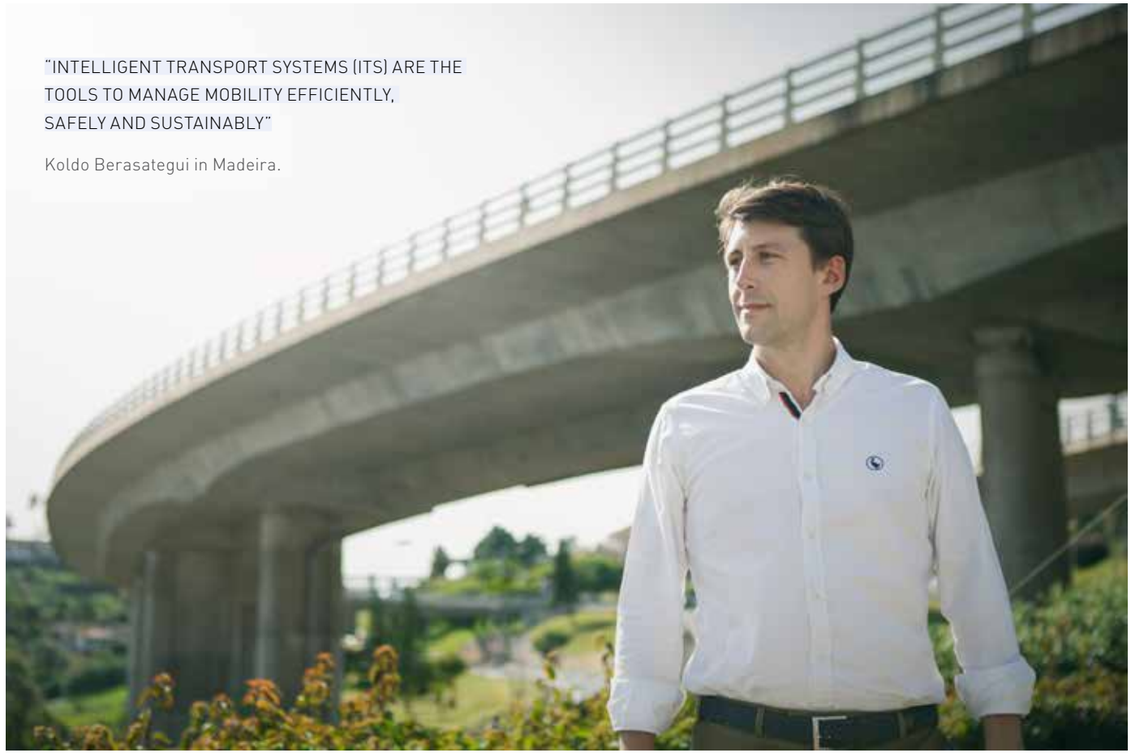
Photo: the team from Idom, German Monge (Project Manager), Dimitry Andeev & Pedro Fernandez, on a study visit to a Biosphere Reserve with a team from the Client.

PORTUGAL



"INTELLIGENT TRANSPORT SYSTEMS (ITS) ARE THE TOOLS TO MANAGE MOBILITY EFFICIENTLY, SAFELY AND SUSTAINABLY"

Koldo Berasategui in Madeira.



MADEIRA ISLAND.

TECHNOLOGY FOR A COMPLEX HIGHWAY

Stretching over 44 km, the VR1 highway connects Funchal, the capital of the island of Madeira (Portugal), with the airport. It is a complex dual carriageway running through sixty tunnels and over numerous viaducts, along the southeast coast of the island.

The highway is operated under a shadow toll concession model by the company Vialitoral. In 2014, the company commenced a technological renovation process of the Intelligent Transport Systems (ITS) both open space and in the tunnels where the works are now nearing completion.

This renovation process is allowing Vialitoral to adopt the most advanced technology for the management of traffic and mobility, and handle operations for the next ten years with greater security. In addition, for the correct integration of all the systems, the project is addressing the renovation of the Control Centre and the Supervisory Control and Data Acquisition (SCADA) system as an integral tool for exploitation.

CONNECTING THE CAPITAL AND THE AIRPORT, RUNNING THROUGH 60 TUNNELS AND ACROSS SEVERAL VIADUCTS.

The work of IDOM has involved auditing the project elaborated by FCC and providing technical assistance during the renovation works in order to ensure their correct execution.

AN INNOVATIVE BUILDING FOR
RESEARCH AND DEVELOPMENT.

R+D CENTRE FOR HOT WATER SOLUTIONS.

NEW RESEARCH AND DEVELOPMENT BUILDING FOR BOSCH

The international company of German origin BOSCH has its global centre of expertise for the development of hot water systems (thermo-technology) in the Portuguese city of Cacia (Aveiro) . The multinational has built a new facility dedicated to research and development.

BOSCH appointed IDOM to undertake the architecture and engineering of the new building, equipped with advanced research laboratories. The architectural features of the new building include constructive solutions devised by the IDOM team, with special attention not only to technological and environmental aspects, but also to formal and aesthetic features.

The building, that has achieved the Energy Performance Certificate with an A+ performance Level. It consists of two main floors, which accommodate the Thermotechnology Laboratories, rooms for events and informal meetings, and the administrative offices. On the cover or roof, a technical space was created to house the HVAC equipment and electric power transformer station, as well as other equipment.

The official opening of this new Bosch Thermo-technology Centre in Aveiro took place in early December 2016. The event was attended by Portuguese Prime Minister, António Costa, and Minister of Economy, Manuel Caldeira Cabral.

Images courtesy of BOSCH.

AT THE FOREFRONT OF HOSPITAL DESIGN.

EXPANSION OF THE "CUF DESCOBERTAS" HOSPITAL

Opened in 2001, the CUF Descobertas Hospital in Lisbon, owned by the José de Mello Saúde Group, a leading private health operator in Portugal, had become too small for its purpose.

To decongest the main building, the Group has proposed the possibility of building a new one, exclusively for outpatient use. This building needs to be connected to the main facility via a walkway and the basement floors, materializing the concept of a Campus Hospital.

To design this new infrastructure, the Group has not just called on IDOM for services, but has collaborated and worked closely with the specialists of our firm to achieve a very flexible design, which will, easily adapt the spaces to the various uses and distributions that will inevitably arise throughout the lifecycle of the facility.

A "NEAR ZERO ENERGY BUILDING", WHICH WILL PROVIDE HIGH LEVELS OF COMFORT AND ENERGY EFFICIENCY.

The building will have 11,200 m2 for healthcare assistance and professional training. It has been designed entirely by IDOM under strict criteria of functional, constructive, energy and environmental efficiency.

It will be a Near Zero Energy Building, and one of the first hospitals in the world to incorporate an air conditioning system using thermally active building structures (TABS) strategies that will also achieve significant energy savings and high levels of comfort for the users.

SWEDEN

HIGH-SPEED RAIL

Photo; Adrian Escobar, Patricia Díaz & Enrique Rico in Stockholm.

The East Link (Ostlänken) is proposed as a new double-track high-speed line connecting the entire eastern part of central Sweden with the rest of the country's rail network. The ambition of the client, Trafikverket (Swedish Transport Administration), is the successive start-up of the construction phases during the period 2017-2021. The first trains are expected to be operational by 2028. Once the project is finalized, 150 km of new high-speed rail will have been built, including 200 bridges and 20 km of tunnels.

POLAND

“WARSAW WEST” STATION.

THE BIGGEST TRANSFER
STATION IN POLAND

The Warsaw West Station was built after the First World War and is currently the busiest in Poland. This interchange or transfer station is also one of the biggest in the country, connecting major cities by rail and bus.

The Railway authorities have decided to upgrade this important infrastructure, converting it into a modern transfer station between different modes of transport. This will be a “tractor” project for the urban regeneration of the area, also aspiring to become a landmark in the Polish capital.

IDOM is developing the scheme design covering a series of analysis of the transport system and a traffic count including a particularly complex simulation process beginning with the macroscopic model of the entire metropolitan area of Warsaw and ending with a micro-simulation of pedestrian traffic in the underpasses. The objective of the simulation exercises is to measure the quality of current and future traffic.

Given the important number of interests in the project (Authorities, developers, individuals), one of the main objectives of IDOM – in collaboration with the Polish State Railways PKP, the tramway authority PKP PLK, and the Town Hall of Warsaw- is to reach a solution that is favourable to all.

Photo: Joanna Was-Briseño, Marcin Warda & Monika Samorajska.

FRANCE

© GE


© EDF / Mathilde Falempin

GUINNESS RECORD FOR EFFICIENCY.

THE BOUCHAIN COMBINED CYCLE
POWER PLANT IN NOW IN OPERATION

In recent years, IDOM has worked on a project for the construction of a new 605 MW combined cycle power plant in Bouchain, northern France. This facility replaces a coal-fired power station, which was in operation for over 40 years and was the first to use General Electric’s 9HA technology.

According to the original provisions of the project, the new technology was expected to achieve a base-load efficiency of 61%, however, expectations have been superseded. Following the acceptance tests, the plant has begun commercial operation reaching an efficiency rating of 62.22%, a level that has never before been achieved by a combined cycle power plant.

This achievement has attracted the attention of the Guinness Book of World Records™ with the facility setting the title for powering the world´s most efficient combined cycle power plant.

The construction of the plant, which commenced operation in mid-June 2016, is the merit of both General Electric (GE) and its partner Électricité de France (EDF). Our firm has also contributed to this success by developing the detailed engineering and providing technical support for certain engineering activities during the installation and commissioning phases.

COLLIMATION SYSTEMS FOR THE SPECTROMETRIC ANALYSIS OF GAMMA-RAY AND X-RAY RADIOGRAPHY.

THE JULES HOROWITZ NUCLEAR REACTOR
FOR MATERIALS RESEARCH

The future experimental Jules Horowitz materials research reactor (JHR), currently under construction in Cadarache, is an international project led by the Atomic Energy Commission (CEA), which aims to become the largest infrastructure in Europe for research in the field of fission.

The main objective of this facility is to respond to technological and scientific challenge of improving the safety and performance of existing reactors, and in which samples of nuclear fuel and structural materials under extreme conditions in a nuclear environment will be tested. As part of the Finnish in-kind contribution, IDOM has been contracted by the VTT Technical Research Centre of Finland Ltd. for the design, manufacturing and installation of two underwater test bench units (UGXR) that will be installed in the reactor pool and in the storage pool of irradiated components.

Each test bench is composed of the underwater test bench part, immersed in the pool water, and the Gamma-ray and X-rays collimation systems, confined in a sheath within the walls of the pool and exposed to the test sample.

The role of the Gamma-ray collimator is to control and direct with great precision, through the several collimation and filtering stages, the gamma rays emitted by the submerged sample toward the gamma detector located in the room next to the pool. Meanwhile, the X-ray collimator directs the beam (generated by the accelerator) from the adjacent room towards the sample and imagining measurement system located in the pool.

Upper image: The Gamma-Ray Collimator.

IRELAND

DUBLIN AIRPORT.

DESTINED TO GROW

Dublin Airport is one of Europe's busiest airports in terms of passenger flow, handling around 25 million in 2015 alone. As a result, daa (the airport operator) has carried out several studies to develop expansion plans for the airport. One of which were awarded to IDOM: the Remodelling of Pier 3 in 2016.

The main scope of the project is the redesign of the aircraft parking stands at Pier 3, including the design of a new airbridge to maximize the quality of the service. Work began with a feasibility analysis and then moved on to the design phase. It should be noted that throughout the construction phase, Pier 3 has remained operational, adding a lot of complexity to the work. "As well as our expertise in apron design, the client has valued our use of simulation methods in the design," Javier Losada, Director of Airports at IDOM.

IDOM IS WORKING ON THE EXPANSION OF AIRPORT INFRASTRUCTURE.

Lower photo: Javier Losada, Héctor Martín, Huw Ebenezer & Beatriz Rodríguez at Dublin Airport.

ENERGY RECOVERY PERMITS THE TRANSFORMATION OF WASTE TO ENERGY WHILE PROTECTING THE ENVIRONMENT.

INCINERATORS IN IRELAND, UNITED KINGDOM AND POLAND.

WASTE-TO-ENERGY

Until the late 19th century, landfills were the usual way to dispose of waste. But in 1874 the first incineration plant was built in Nottingham (UK) and since then society has realized that instead of "getting rid" of the rubbish and spoiling the environment, it is possible to "make a profit" from the waste (generating energy), in addition to respecting the environment.

This is the idea underlying the concept of energy recovery: to move turbines that generate electricity and to heat large bodies of water, either by burning residues (thermal plants), or by fermenting organic matter (biological plants). IDOM is working on several waste-to-energy plants, including the projects being carried out in Europe by the Swiss company Hitachi Zosen Inova (HZI), a leading constructor in the sector, which has its own technology.

The Dublin project stands out for the optimization of the process, with a cooling system using seawater. The capital of Ireland will transform much of the city's waste into electrical energy in a Waste to Energy thermal power plant being constructed by the North American energy corporation Covanta. The power plant is located on the Poolbeg peninsula in the bay of Dublin. Moreover, the strategy of the design of the facility is such that if in the future Dublin wanted to develop a district heating system, the plant could also supply energy in the form of steam. HZI has contracted the services of IDOM for the development of the extended basic engineering and the detailed engineering of the critical installation: the cooling system using seawater.

In the United Kingdom, IDOM has carried out the detailed engineering of piping (Buckinghamshire), electrical installation (Severnside) and water-steam cycle (Hartlebury), and in Poznan (Poland), the advanced basic engineering and the detailed engineering for the installation corresponding to the water-steam cycle for a thermal plant that produces, on the one hand, electrical energy by means of steam (obtaining almost 18 electric MW) and on the other, hot water (34 thermal MW) for municipal electrical and heating networks.

"WE WORK TO STOP THE LOSS OF BIODIVERSITY AS PART OF OUR NATURAL CAPITAL AND FAVOUR THE SUSTAINABLE USE OF ITS ECOSYSTEM SERVICES."

Iñigo Ortiz de Urbina. Graduate in Biological Sciences And Masters in Environmental Engineering. Responsible for natural environment projects.

OTHER

PROJECTS

GERMANY

Installation and test stand for wind turbines of up to 10 MW for Fraunhofer IWES. Turnkey test stand project. Architecture, Engineering and Installation Planning.

SPAIN

Logistics Centre in Madrid-Barajas for the Post Office. Consulting services for the design of a new exchange bureau.

Design of the urban integration of the alignment and conditioning of the Ourense Railway Network. Section: Seixalbo - Ourense Station for the Administrator of Railway Infrastructure (ADIF). Basic design and construction project.

Lugo-Santiago (A-54) highway. Section: Melide Sur - Enlace de Arzúa Oeste, province of A Coruña for the General Direction of Roads of the Ministry of Public Works. Alignment and construction project.

Railway line between Las Palmas de Gran Canaria and Maspalomas, Lot 5: Barranco de Guayadeque - El Berriel for Ferrocarriles de Gran Canaria, S.A. Development of the basic design and construction project for the track bed.

Workshops, depot and maintenance area of the Railway Line between Las Palmas de Gran Canaria and Maspalomas for Ferrocarriles de Gran Canaria, S.A. Development of the basic design and construction project for the track bed. Drafting of basic design and constructive projects.

Implementation of a SAP warehouse management system for Fournier.
Systems consultancy services.

New pipe machining and special coupling plant with a production capacity of 30,000 tonnes of tubes per year for Tubos Reunidos Premium Threads (TRPT). Detailed engineering, construction management and project management.

"THE TECHNICAL KNOWLEDGE AND ATTITUDE OF OUR ENGINEERS ARE KEY SUCCESS FACTORS OF OUR PROJECTS."

Diana de Rueda.
MSc. Industrial Engineer. Responsible for equipment / structures.

FRANCE

Mixed use building for the Campus of the Chamber of Arts and Crafts of Lille. Basic and execution design and construction management.

POLAND

Renewal of the rail and intermodal system in Lodz for the Headquarters of the Lodz Region.
Study of integration of transport.

UNITED KINGDOM

Embedded pressure tanks for Hinkley Point C Nuclear Power Plant for ENSA. Engineering services and specialized studies.

"IT IS VERY ENRICHING TO SHARE OUR TECHNICAL EXPERIENCE GAINED IN VERY DIFFERENT PLACES SUCH AS MORELIA IN MEXICO, DUBLIN IN IRELAND AND TABUK IN SAUDI ARABIA."

Javier Losada. MSc.
Aeronautic engineer. Director of Airports and Aviation.

"WITH 58 COMMERCIAL REACTORS AND SEVERAL EXPERIMENTAL PROJECTS, FRANCE HAS ONE OF THE MOST POWERFUL NUCLEAR INDUSTRIES IN THE WORLD."

Carolina Labarta. MSc. Industrial and nuclear engineer. Deputy Director responsible for the business development of IDOM Nuclear Services in France.

Mediterranean Europe

05

FRANCE INTERNATIONAL ITER PROJECT | **SPAIN** VIADUCT ON THE RIVER ALMONTE | PROJECTS FOR FC BARCELONA | TURNKEY PROJECT FOR ADISSEO | PORT OF ALGECIRAS | NEW WINERY FOR GONZÁLEZ BYASS | PROJECTS FOR REPSOL | NEW PIKOLIN PLANT | BUILDING IN A NUCLEAR ENVIRONMENT | **MACEDONIA** MACEDONIA RAILWAY | **SLOVENIA** NUCLEAR SAFETY SYSTEMS | **TURKEY** METRO OF ISTANBUL | KIRIKKALE COMBINED CYCLE POWER PLANT |

FRANCE

ITER: THE BIGGEST INTERNATIONAL COLLABORATION IN THE FIELD OF ENERGY

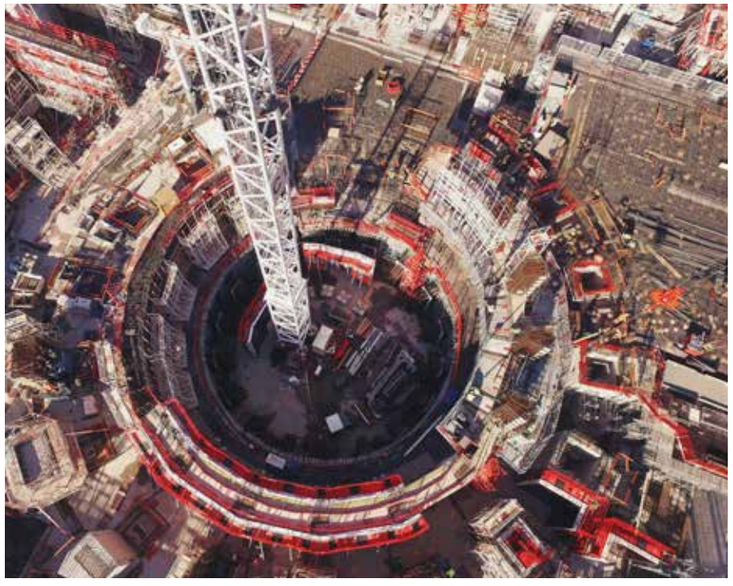
DIRECT TO FIRST PLASMA

The first test, known as "the first plasma" is foreseen for 2025, for what an important strategy change has been put in place, giving priority in the program and in the budget to the infrastructure and facilities mandatory to successfully reach the 2025 milestone. For this, the ITER Council is assigning intermediate milestones, some of them already reached with the collaboration of the ten people on site through the Support to the Owner contract with Fusion for Energy (the European Domestic Agency): start of civil works in level B1 of the Tokamak building, the installation of the Water Detriation Systems tanks in Tritium building, the lift of the 750 tonnes cranes in the Assembly Hall building.

The following targets set for Fusion for Energy are the energization of 400KV switch yard connecting the ITER facilities with the French high voltage distribution network (RTE) foreseen in January 2017, the completion of the Assembly Hall building (civil works and "basic" facilities: electricity, mechanical, HVAC, Instrumentation and Control) allowing the start of the installation of the specific systems, step foreseen for mid-2017, and the completion of the concrete crown for the Tokamak and the start of the installation of the "basic" facilities in level B2 in Tokamak by the end of 2017.

Therefore, currently more than a dozen of buildings are under construction, galleries networks, buried networks and areas, as the electrical substation, make that the activity on site is close to its pick due to the number of parallel activities, the complexity of the coordination between the different actors and the pressure of the program.

THE ITER PROJECT WILL EXPLORE THE VIABILITY OF FUSION ENERGY CONTRIBUTING TO HUMANITY'S FUTURE ENERGY MIX AND BATTLE AGAINST CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS



Upper photo: Ana González, Rafael Castillo, Pablo Díaz, Antonio Martinez, Luis Aspilcueta, Ana Castañeda & Javier González.

Images courtesy of the ITER Organization / EJF Riche

"BEING PART OF THE ITER PROJECT MEANS BEING AT THE TECHNOLOGIC VANGUARD OF SCIENCE AND ENGINEERING IN THE FIELD OF ENERGY."

Faustino Guillén
ITER Project Manager

REFRIGERATION OF A FUSION REACTOR.

THERMOHYDRAULICS ANALYSES OF ITER'S VACUUM VESSEL

In recent years, IDOM has increased its presence in the ITER experimental fusion reactor project, currently under construction on the Cadarache site, participating in 19 signed contracts, among which: Support to the Owner, Diagnostics Ports Integration, and framework contracts such as Thermohydraulics, Fluid Dynamics, Computational Fluid Dynamics (CFD), Neutronic and Fluid Dynamics Calculations, Advanced Design Engineering and Test Blanket Modules (TBM).

ITER's nuclear fusion reaction will take place within the Vacuum Vessel, where plasma reaches temperatures of hundreds of millions of degrees.

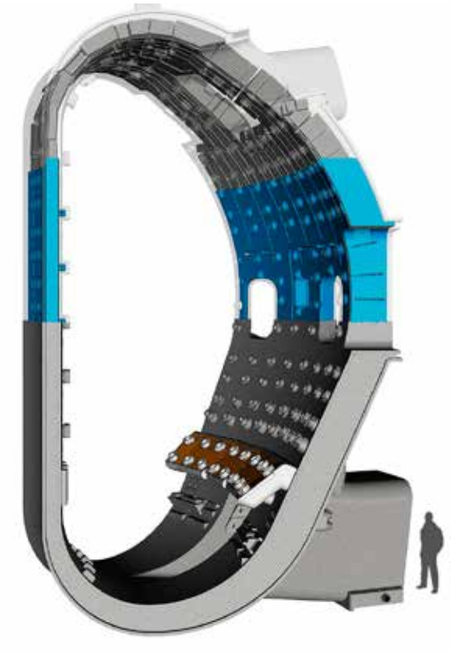
The Vacuum Vessel is design to ensure plasma confinement and it includes a water circulation system aimed at dissipating the enormous amount of heat generated by the reaction as well as ensuring its own structural integrity.
This basic ITER component has a toroidal shape and is composed of 9 D-shaped sectors, 3 of which are defined as "irregular"; the 9 sectors are welded to each other by the so-called Field Joints.

THE MODELLED STRUCTURE IS A DOUBLE-WALL STEEL COMPONENT, WITH A HEIGHT OF MORE THAN 13 M AND WEIGHING MORE THAN 500 T.

In 2012, IDOM Nuclear Services begun performing thermohydraulics calculations for ITER. Since last year, these analyses were done for both Fusion for Energy (F4E) as well as directly for the ITER Organization (IO) in several of the Vacuum Vessel sectors: Sector #2, Sector #3 (including the Field Joints) and Sector #5. The goal of these analyses is determining the effectiveness of the sector cooling by studying the water temperature and pressure patterns and the heat transfer coefficients.

The analyses were performed using Computational Fluid Dynamics (CFD) techniques and the results have been used by IO and F4E to introduce incremental improvements into the design.

INSIDE, A COMPLEX SYSTEM OF PLATES AND CHANNELS HAS THE TWOFOLD OBJECTIVE OF COOLING THE COMPONENT AND SHIELDING THE NEUTRONIC RADIATION PRODUCED BY THE FUSION REACTION.



SPAIN

INTEGRATION OF SYSTEMS AS A KEY TO EFFICIENCY.

MANAGEMENT OF THE FACILITIES AND INFRASTRUCTURE OF THE PORT OF ALGECIRAS

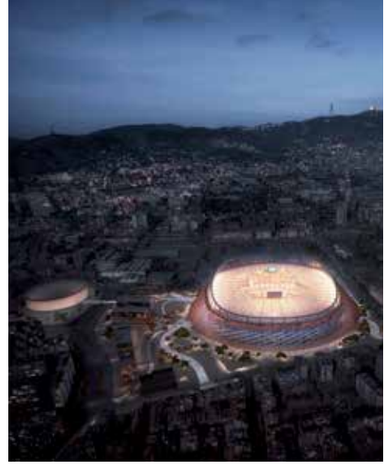
In 2014, the Port Authority of the Bay of Algeciras (APBA), launched a strategic plan to modernize its procedures and systems, in order to maintain its leadership in the Spanish port transportation market. One of the lines for improvement identified was the management of the facilities and infrastructure.

Although in recent years the Facilities and Infrastructure Management Systems have undergone continuous technological evolution, each one offers a partial vision of what happens in the surroundings of the port, without the possibility of exchanging information between them, while requiring a lot of personnel, and with little or no automation of the processes that require interrelation between systems: video surveillance, access control, incident management, port management system (PMS), etc.

In this context, IDOM is assisting the APBA in the definition and implementation of a new Integrated Management of Facilities and Infrastructure System, using Virtual Environments and Geographical Management Systems (GIS). Its main objective is to integrate all the security installations to be managed virtually from a single interface, allowing operators to obtain the information necessary to respond to the different events.

Already in the final stretch, an official presentation of the project has been made to all the departments of the APBA, who have been impressed by the capabilities of the system and the possibilities offered. All the works are being developed by a multidisciplinary team of professionals from the IDOM offices of Madrid, Barcelona, Seville and Bilbao.

Photo: José Carlos Zambrano (Technical Director, ATE - APBA) and Jesús Medina (IDOM) in the control room of the Port of Algeciras.



FÚTBOL CLUB BARCELONA.

GREAT PROJECTS FOR A GREAT CLUB

Since January 2015, IDOM has been working on a series of collaboration projects with Fútbol Club Barcelona, all related to the important project that has just commenced under the name Espai Barça, which has as its main objective the regeneration of the urban area around the Nou Camp football stadium, the Palau Blaugrana sports complex, an ice rink and the Mini-Estadi, as well as other service buildings and parking facilities.

Following a visit by a group of executives from FC Barcelona during the construction of the San Mames Stadium and the Miribilla Sports Facility in 2012, IDOM began these collaboration projects.

The first collaboration project between IDOM and Fútbol Club Barcelona was a study on the constructability of the remodelling of the Camp Nou Stadium "Nou Camp Nou". Following on from this study, once FC Barcelona had observed the way IDOM works, our firm was selected to participate in the Architectural Competition for the Nou Camp Nou stadium. IDOM collaborated with BIG and BAAS in developing the proposal.

Following these two projects, IDOM participated in an international contest for the provision of Project Management Services. IDOM was awarded the contract. Consequently, IDOM is currently undertaking Project Management functions for three main projects of Espai Barça: Nou Camp Nou, Nou Palau Blaugrana and Nou Mini-Estadi.

THE OBJECTIVE OF THE THREE PROPOSALS IS THE REGENERATION OF THE ENVIRONMENT OF NOU CAMP NOU, THE SPORTS COMPLEXES OF THE PALAU BLAUGRANA, THE SKATING RING, THE MINI-ESTADI AND OTHER SERVICES BUILDINGS.

FUTURE ANIMAL NUTRITION.

A TURNKEY PROJECT FOR ADISSEO

ADISSEO is one of the world's leading companies in the field of animal nutrition. Of French origin, the company is now 100% owned by the Chinese Group BLUESTAR, the second largest producer of liquid methionine (an essential amino acid for animal nutrition) in the world.

Through the French company INNOV'IA -IDCAPS, also part of the BLUESTAR Group, ADISSEO has developed and patented an innovative process for the production of a solid-state derivative of liquid methionine, and has decided to locate the first production facility adjacent to the existing plant of the firm in Burgos, Spain. This new product will permit the firm to attract new customers in new markets and further increase the competitiveness of ADISSEO and therefore maintain its leadership in the animal nutrition industry.

The plant in Burgos, located in the industrial area of Villalonquéjar, as well as being the largest chemical company in the province is one of the most important economic drivers in the area. The new facility will occupy a recently acquired site of approximately 10,000 m² adjacent to the existing plant, and will produce 9,000 tons per year of the new product called ADry+.

The previous work carried out by our firm has enabled the design of a fully operational production unit based on a pilot proposal. The facility also meets all the utility requirements of the main process. This is an innovative project in its entirety, as it is the first investment made by ADISSEO under a Turnkey contract.

THE FACILITY, A TURNKEY PROJECT DEVELOPED BY SERIDOM, WILL BE OPERATING AT THE END OF 2017.

Upper photo: Miguel Ángel Delgado, Alvaro Rilova & Benoit Lhomme from ADISSEO, Clara Canal & Mikel Guerra from IDOM, Gerardo Juez from ADISSEO, Ander Gorostiaga from SerIDOM, Miguel Echeveste from IDOM & Ricardo Fernández form the engineering firm Boutefeu in the ADISSEO plant in Burgos.

IN VINO VERITAS.

NEW WINERY FOR GONZÁLEZ BYASS IN VALLADOLID

Ten years after the inauguration of the "Finca Constancia" winery in Otero (Toledo), designed by IDOM and built by SERIDOM, the González Byass group has again called on our firm to build another winery in Rueda, Valladolid, for the production of high quality white wines, "Beronia Verdejo, Rueda".

IDOM has supported the Client since the very beginning of the idea, participating in the selection of the site and designing the landscape integration of the winery with the vineyard, while giving prominence to the process of wine-making, with the aim of attracting visitors and generating activities related to wine tourism.

The project has been fully developed using BIM, therefore, allowing the architecture and structure of the layout of all the processing facilities and machinery to be integrated.

Budgetary constraints have not prevented our experts from producing a design according to sustainability criteria, such as the reuse of water for the irrigation process, the use of the hygrothermal stability by half-burying the processing area, reinforced thermal insulation, solar protection, natural lighting, installation of a biomass boiler, use of rainwater, or 100% Led lighting, among others.

THE PROJECT DEVELOPED ENTIRELY IN BIM, HAS ACHIEVED HIGH LEVELS OF ENERGY EFFICIENCY AND SUSTAINABILITY.

Photos courtesy of Repsol

INTELLIGENT ENERGY.

PROJECTS OF INTEGRATION AND MODERNIZATION OF REFINERIES

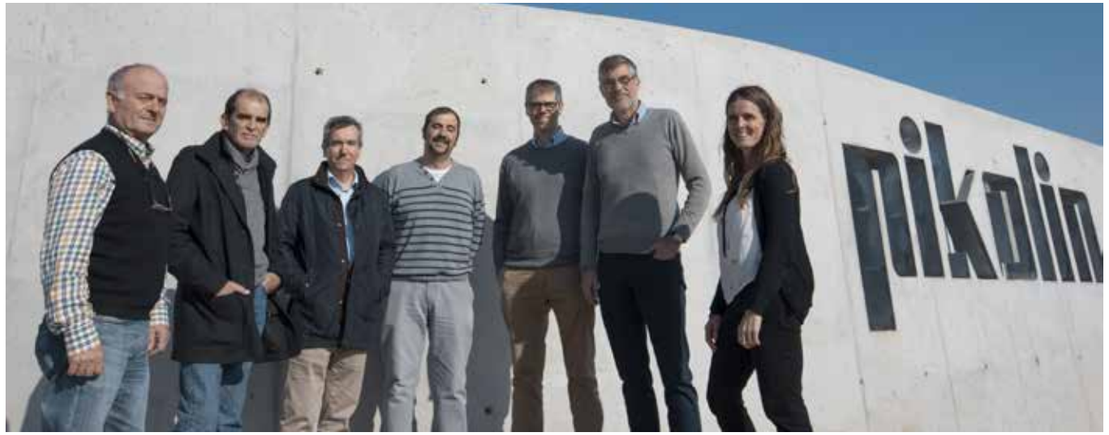
For some time, the Repsol Group, one of the largest energy companies in the world, has been making a commitment to what they call "Intelligent Energy", that is to say, the result of technological innovation, which is safe, respects the environment, and obtains a high degree of efficiency.

Our firm has been helping Repsol for decades with this ongoing technological renewal, either by improving the facilities of the Group or by integrating services.

Currently, IDOM is working for several of Repsol's refineries in Spain, developing two modalities of a framework agreement, which we refer to as "Team" and "Services".

The "Engineering Team" contract refers to the IDOM teams specifically assembled for each revamp project in refineries such as Tarragona, Cartagena and Bilbao (Petronor).

The "Engineering Services" contract refers to the projects whose undertaking or complexity requires specific attention. These projects are being developed in the five Spanish refineries of the Group.



PIKOLIN INDUSTRIAL COMPLEX.

THE FRUIT OF A LASTING RELATIONSHIP WITH THE CLIENT

In order to consolidate its position as a European leader in the bedding sector, the Pikolin Group has made important investments in recent years, which will allow the firm to meet the challenges of production in the future.

For this purpose, Pikolin has appointed IDOM to develop the design, works supervision and Project Management of its new industrial facility located in the existing logistic space known as Plataforma Logística de Zaragoza (PLA-ZA). This investment, in excess of €50 million, has been developed in two phases: the logistics centre and the industrial centre.

The idea for the logistics centre, with a surface area of 32,000 m^2, arose as a result of new distribution strategies. The project commenced in 2009 and concluded in 2011. Subsequently, the second phase, the construction of the industrial centre began in 2015 and finished in 2016, and will allow the firm to gain in productivity, flexibility and variety of products.

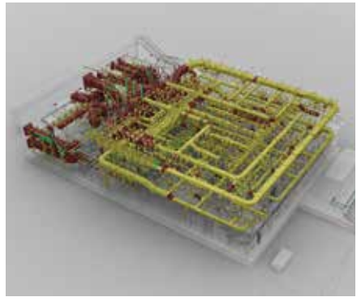
The industrial centre covers an area of 86,000 m^2 and is equipped with the latest technology. According to the requirements of the production equipment of Pikolin, the buildings have been designed to accommodate any modifications to the manufacturing process.

3D models were developed in the design phase and this has meant that interferences were minimized in the execution phase and the development and implementation of functional solutions to achieve greater flexibility of the facility.

Among others, our firm has responded to the challenge of completing the construction in 10 months, while at the same time meeting the milestones related to the transfer of machinery from the old factory to the new facility.

THIS WILL BE THE LARGEST INDUSTRIAL COMPLEX OF THE "BEDDING" SECTOR IN EUROPE

Upper photo: José Manuel Castañer, Alberto Solozabal, Ángel Munilla, Sergio Cubero, Luis Mingarro, Emilio Valero (Iberebro) & Sonia Casas.
Lower photo: Sonia Casas.



CONSTRUCTION IN A NUCLEAR ENVIRONMENT.

BIM TECHNOLOGY USED FOR BUILDING EMERGENCY BUILDINGS

In recent years, the Nuclear Safety Council of Spain has asked the nuclear power plants to implement additional safety measures to those already in place. One of them has been the construction, in each plant, of an Alternative Emergency Management Center (CAGE).

Recently, IDOM has been responsible for the construction of the CAGE building of the Ascó and Vandellós II nuclear power plants, providing the Engineering and Procurement services commonly known as Engineering, Procurement and Construction Management (EPCM).

Due to its complexity and the normative requirements, the construction phase of a nuclear installation requires intense technical and quality monitoring. In the case of the CAGE buildings in Ascó and Vandellós II, in addition to the main construction, it was necessary to install large equipment, implant more than 1,200 mechanical supports and to optimize the route of more 1,500 m of pipes and ducts, as well as 700 m of cable trays. This task required, in addition to great experience, the support of advanced technologies.

That is why it was decided to use the BIM tool from the design phase to generate a 3D model of the exterior structure and all the interior facilities that concur to the functionality of the building. The design work subsequently permitted the progress of the construction works to be controlled, as well as the integration of project documentation, quality, and even future maintenance, when necessary.

MACEDONIA

RAIL TRANSPORT IN MACEDONIA.

A STRATEGIC ACTION TO CONNECT WITH THE REST OF EUROPE

Due to its geographical location, Macedonia is an important transit route for land traffic in central Europe. Corredor VIII is a multi-modal transport network that encompasses seaports, airports, roads and railways and runs from east to west beginning at the ports of Italy, crossing Albania, Macedonia and Bulgaria to the Black Sea ports belonging to the Pan-European Network.

The Ministry of Transport and Communications of Macedonia, together with the public enterprise Macedonia Railways, has appointed the consortium formed by three companies with extensive experience in the country (IDOM, ADT OMEGA from Greece, and ZPD from Croatia) to implement a 23-km conventional rail section according to the technical specifications of interoperability of the European Union. This section is to the east of the country and runs from the last section under construction east of the capital, Skopje, to the border with the Republic of Bulgaria.

Along with the specialist areas of the infrastructure lots: civil works, track platform, tracks, stations, signalling, telecommunications, electrification, the project also included the preparation of all the previous studies necessary to justify the technical and economic feasibility of the solution and to apply for financing through European funding.

Photo: Mireia Capmany, Gorgi Pusev, Javier Fernández & Ljupco Arsov.

SLOVENIA

A STRATEGIC INTERNATIONAL PROJECT, A PIONEER IN TERMS OF MODALITY, AND ENSURING SAFETY

IMPROVING NUCLEAR SAFETY SYSTEMS.

THE KRŠKO NUCLEAR POWER PLANT

Following the Fukushima accident in Japan and based on the recommendations of the Nuclear Regulator in Slovenia, the Krško nuclear power plant decided to modernize its security measures.

The approved modernization of safety measures include the installation of the Emergency Control Room in a new bunker building (BB1) at the Krško NPP. The Emergency Control Room allows the operators to achieve and maintain safe shutdown of the NPP in the event of an evacuation of the Main Control Room.

IDOM and TECNATOM were awarded an EP+CM (complete engineering and procurement activities and construction management) contract for the detailed electrical, I&C and fire engineering design as well as the procurement/supply of the mayor equipment and site support during the construction and commissioning of emergency control room.

The mayor equipment to be supplied to NEK includes; field instrumentation, transfer panels, I&C cabinets, nuclear instrumentation system, main emergency control board, and a replica of all the panels in the simulator. The design will be carried out under the strict nuclear safety and radiation protection regulations.

As this project is the first of its kind in Europe, it is now possible to transfer the experience obtained and Lessons Learned to other European and worldwide PWR reactors.

TURKEY

METRO OF ISTANBUL.

HISTORICAL & CULTURAL HERITAGE

In October 2014, the Municipality of Istanbul commissioned IDOM to undertake the studies, basic and constructive design for the metro line between Bezayit and Sultangazi. This line with 15 stations will travel 17.3 km underground, crossing the capital from south to north, passing under districts with important heritage and historical value, such as Fatih and Eyup.

The historical peninsular district of Fatih is surrounded by the walls of the Byzantine city, the Golden Horn and the Sea of Marmara. Apart from being the most important historical centre of the city, it is also an important touristic and commercial centre. The district is home to a selection of Byzantine and Ottoman buildings, the Sultanahmet Mosque, Fatih Mosque, and Hamam Cimberlites, among others, making it one of the main tourist attractions of the city.

The District of Eyup is located on the peninsula of Çatalca, extending from the Golden Horn. The name Eyüp comes from Abu Ayyub al-Ansari, companion and disciple of the Prophet Muhammad, who was honoured after his death in the neighbourhood with the construction of his shrine and the Abu Ayyub Mosque. It was the first great mosque to be built in Istanbul, and has been sacred place ever since, and consequently a place of pilgrimage. Given the many monuments, it is an area of important religious significance. During the Ottoman Empire, Eyüp was one of the most popular urban areas outside the city walls. Such is the importance of this enclave that the Municipality required the inclusion of the station bearing the name of Eyüp at this location.

Of the 15 stations of the project, 4 will be located in the district of Fatih and 3 in the district of Eyüp. At present, the project is at the approval stage and is being studied by the Committees of Preservation of the Cultural and Historical Heritage of the City.

THE NEW LINE, WILL TRAVEL THE CAPITAL FROM SOUTH TO NORTH, PASSING UNDER THE DISTRICT OF THE FAMOUS FATIH MOSQUE.

“This project will significantly improve the mobility of one of the most populated cities of the old continent”

Gregorio Nieves, responsible for the project

WITH 849 MW OF POWER, THE KIRIKKALE PLANT CAN SUPPLY UP TO 50% OF ELECTRIC ENERGY CONSUMPTION OF ANKARA.

KIRIKKALE COMBINED CYCLE POWER PLANT.

A BOOST TO TURKISH POWER GENERATION

The construction of an 840 MW Combined Cycle Power plant near the city of Kirikkale has been recently completed.

The cycle is configured in multi-axis mode with two 9FB General Electric (GE) gas turbines operating only with gas and a GE steam turbine. When connected to the network, the plant will generate approximately 2.5% of the country's energy needs, or around 50% of the city of Ankara.

IDOM has developed the detailed engineering works of the plant, the technical assistance on-site during the construction, and the installation and commissioning of the equipment.

Images courtesy of GAMA.

OTHER

PROJECTS

CROATIA

Reconstruction of the Rijeka freight station and construction of the new container terminal associated with the new loading dock in Rijeka for Port of Rijeka Authority. Feasibility studies, basic design and construction project.

Country transport network for the Ministry of Transport. Transport Development Strategy.

Corridor V (Pan-European corridor) connecting the ports of the Adriatic. Designs for the improvement and duplication of track, Rehabilitation and electrification.

SPAIN

Joint management of the construction works of the new stations of Vallaparadis, RENFE interchange, Can Roca, reform of the current Rambla Egara station and extension of the Generalitat de Catalunya Railway Line of Terrasa for Infrastructures of the Generalitat de Catalunya S.A.U. Works supervision.

Extension of an industrial complex for the production of stainless steel in Cadiz for Acerinox Europe. Detailed engineering and technical assistance during construction.

Test facility for parabolic solar collectors for the Advanced Renewable Energy Technological Centre (CTAER). Design, construction and commissioning.

ROMANIA

Environmental and social due diligence of the public sector of supply and sanitation. European Bank for Reconstruction and Development.

SERBIA

Hazardous waste management plant. Funded by the European Union. Construction supervision. Technical assistance during the analysis process, planning, design and management of the infrastructure.

"THE MUNICIPALITY OF ISTANBUL INTENDS TO VERTEBRATE THE CITY THROUGH A POWERFUL METRO NETWORK (1,000 KM by 2023) JOINING BOTH CONTINENTS"

Gregorio Nieves. MSc. Economics and Business Administration. Business Development Manager for Turkey and Iran.

"IMPROVING EFFICIENCY AND PROCESSES ARE KEY TO INCREASING THE PRODUCTIVITY OF THE PLANTS WE DESIGN."

Alejandro del Cueto.
Msc. Industrial Engineer. Project Manager.

TURKEY

Engineering services for the verification of the Marmaray Railway Project for Obrascón Huarte Lain, S.A. Design verification services.

Innovation, technology transfer, business plans, recruitment of 45 SMEs and marketing for the start-up and internationalization of the first Technology Park in Southeast Turkey in Elazig. Consultancy services.

"CLIENTS VALUE THE FACT THAT WE GENERATE TECHNOLOGICAL ALTERNATIVES THAT ALLOW THEM TO OPTIMIZE THEIR DECISIONS"

Javier López. MSc. Industrial Engineer. Turnkey Bid Manager.

"THE NEW RAILWAY LINE IN MACEDONIA IS A STRATEGIC ACTION THAT WILL FACILITATE THE CONNECTION OF THIS BALKAN COUNTRY WITH EUROPE."

Mireia Capmany. MSc. Civil Engineer. Project manager of a rail project in Macedonia

Asia

06

CHINA SUSTAINABLE URBAN DEVELOPMENT | THERMOSOLAR POWER | **INDIA** DESIGNING THE NEW DELHI "VERTICAL DISTRICT" | CORPORATE LOGISTICS PROCESS DESIGN | EUROPEAN TECHNICAL COOPERATION | SOLAR PARK IMPLEMENTATION AND MANAGEMENT | **LAOS** WATERSHED PLANS & RESERVOIR MANAGEMENT STUDIES | **KAZAKHSTAN** ALMATY TRAMWAY |

CHINA

IDOM PRESENTS ITS EXPERIENCE IN SUSTAINABLE URBAN DEVELOPMENT IN SHANGHAI

The symposium brought together the world's best experts in "Building Leadership for Healthy Urban Sustainability"

The intense process of urban development in China in recent decades has reached a dimension that makes it unique, both for the speed of development and the social and territorial magnitude that has led to this phenomenon. In around 55 years, the population in the cities has risen from 108 million to more than 742 million.

This rapid increase in urban population and the consequent growth of their urban footprints has meant that the affect and use of local resources has not always been effective, with populated areas being exposed to natural hazards, resulting also in socio-spatial segregation and lack of infrastructure networks with sufficient capacity for these populations, in addition to producing high environmental costs.

Faced with this problem, international knowledge and research centres such as the Centre for Health and the Global Environment at the Harvard T. H. Chan School of Public Health have brought together the best world experts at the symposium held at the Harvard Centre in Shanghai. IDOM had the opportunity to participate as a guest and as a reference firm in the field of Sustainable Urban Development in the symposium. Presenting the paper "Sustainable Urban Growth in Latin American Cities", sharing the experience and leadership of IDOM in the development and implementation of programs for sustainable growth in more than 30 cities, in 14 countries in the region, describing the methodologies applied to each context.

The event was organized by the Centre for Health and the Global Environment and the Zofnass Program for Sustainable Infrastructure of the Harvard Graduate School of Design, sponsored by the Harvard China Fund.

Photo: Marc Potard, Urban Planning Architect, specialist in urban and territorial development.

"Thermosolar power energy is a technology under development in China, and IDOM is collaborating in important projects that will permit its commercial exploitation."

Susana Martínez Escriche, Director of the CSP, Geothermal and Biomass Division

DEVELOPING THERMOSOLAR POWER PLANTS IN CHINA

China is promoting numerous R&D projects to promote renewable energy and reduce greenhouse gas emissions.

Thermal energy storage capacity is fundamental in this type of facility, to guarantee the continuity in the supply even when there is no sun. An adequate thermal energy storage system, coupled with an efficient thermal transfer installation, will also deal with fluctuations in the demand on the electrical system, stabilize production, extend supply periods or increase electricity production with greater efficiency in converting solar energy to electricity.

BASIC AND DETAILED ENGINEERING FOR THE THERMAL STORAGE SYSTEM OF THE DELINGHA PLANT

Close to the aforementioned Huanghe Qinghai Delingha plant, another concentrated solar power plant is being built. The 50 MWe plant will use mainly parabolic trough technology and will be equipped with an energy storage system with a capacity of 1,300 MWht. Samway (Shandong Sunway Petrochemical Engineering Co Ltd), the turnkey contractor for the thermal energy transfer and storage system project, has contracted IDOM for the Basic and Detailed Engineering of the thermal storage system.

ENGINEERING FOR THERMAL ENERGY STORAGE AT THE HUANGHE QINGHAI DELINGHA PLANT

This project is part of this initiative and consists of a central tower-type concentrated solar power plant (CSP), which will have a capacity of 810 MW and will be constructed in phases in the northwest of China in Delingha (Qinghai province). The Conceptual Design of the thermal energy storage system has been carried out by IDOM, in collaboration with and commissioned by Bright Source Energy, the Californian Company responsible for the technology used in the installation for the capture and reception of solar energy.

Photo: JunYi Gao, Susana Martínez and Sergio González.

BASIC ENGINEERING FOR THE DUNHUANG PLANT

At present, Lanzhou Dacheng Technology Company (LZDCTC), an installer and manufacturer of equipment related to CSP plants, is launching a new project in the area of Dunhuang (a neighbouring province of Quinghai, the location of the two previous projects). This plant will use Fresnel linear solar concentration technology, using molten salts as the heat transfer fluid. Its installed capacity, in a first phase will be approximately 12 MWe.

The company awarded the turnkey project, NorthWest Electric Power Design Institute (NWEPDI), has contracted IDOM to develop the Basic Engineering services for the design of the molten salt system including the solar field collectors, the thermal energy storage system and the steam generation system.

INDIA

DESIGNING THE NEW "VERTICAL DISTRICT" IN DELHI

Designing a "Smart City" based on the most advanced concepts of sustainability and transit.

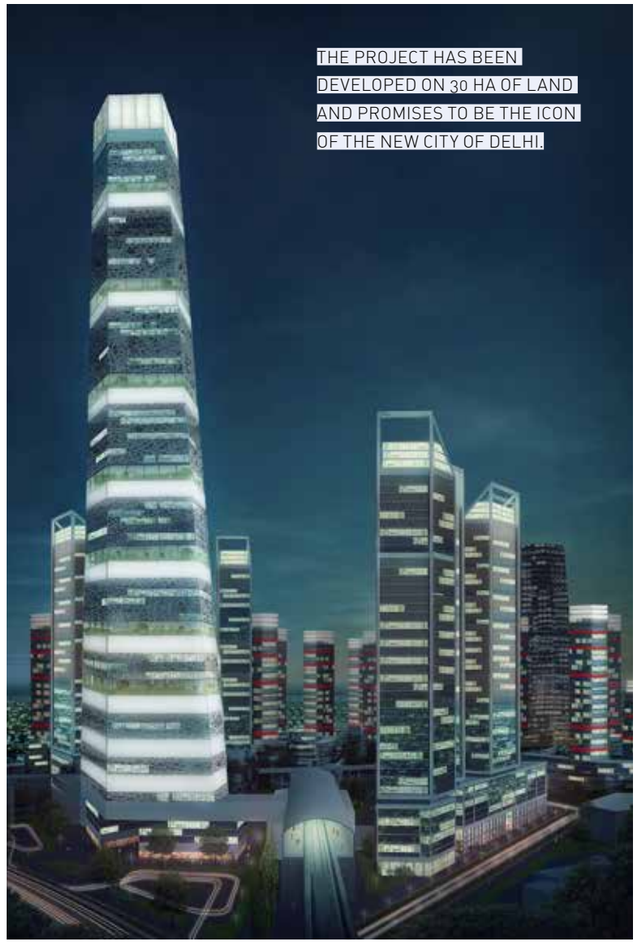
EAST DELHI HUB.

This new district in Delhi is being designed based on Transit Oriented Development (TOD) principles. This places the emphasis on maximising the impact of nodes of major transport infrastructure, which in this case is a New Delhi Metro station, within the wider context of the city. In addition, the scheme incorporates advanced concepts in Smart Cities.

The main focus of TOD developments is to limit the use of private cars and emphasis is placed on creating a high density sustainable mixed use community that encourages pedestrian and cycle movements by creating direct segregated routes.

The project is being developed on a 30 hectare site in the Karkadooma area of New Delhi, under the promotion of two public agencies of the government of India, the National Buildings Construction Corporation (NBCC) and the Delhi Development Authority (DDA).

The main feature of the Idom proposal is based around a concept of Organic Density, which manifests itself in series of hexagonal rings that help to organise the site, the pedestrian and road networks as well create the base for the buildings.



The main features of the scheme are the number of towers, which include an iconic high rise tower, as well as a number of residential towers which characterise the skyline.

An international Competition for this major project was convened in July 2015, and in December 2015 the consortium of CP Kukreja Architects (Delhi) and Idom' proposal titled "Organic Density" was selected as the winner and appointed to further develop the project.

Currently IDOM is working on the Concept design phase of the project, and will continue to develop the project through the various stages with construction due to complete by the end of 2019.

CORPORATE DESIGN OF THE LOGISTICS PROCESSES IN ASIA.

PROMOTING RENEWABLE ENERGY

The promotion of renewable energies in Asia is generating new opportunities for companies related to this sector. IDOM has been collaborating for several years with Gamesa, one of the main technological leaders in the global wind sector with production centres in China, India, Brazil, the United States and Spain.

With an international and multidisciplinary team made up of persons from Gamesa and IDOM, the warehouse and production management processes are being made more efficient in the client's main production centres.

For this purpose, the corporate design of the processes and the subsequent deployment of the SAP Warehouse Management tool have been carried out to guarantee the local implementation of the same. This tool will also improve the logistic processes of storage through multiple best practices.

Photo: Jon Cereceda, Anandaraj Chandran, Mengchen Yuan & Suresh Vijayan.

EUROPEAN TECHNICAL COOPERATION IN INDIA.

With more than 1.3 billion people and an annual economic growth rate close to 8 %, India is the most populous democratic country in the world and, by all accounts, the emerging economy destined to shortly take over China's hegemonic role.

The European Union is India's largest trading partner, as well as the main foreign investor in the country. Within the framework of the solid and strategic bilateral relations that both parties have maintained for decades, one of the most important areas of cooperation is energy, focusing mainly on promoting more efficient, clean and renewable energies.

In this context, the European Union has promoted and financed the project "Technical Cooperation in Energy and Environment for India", and has awarded IDOM a series of tasks to strengthen the capacities of the institutions responsible for clean energies, with solar energy being the priority axis.

Our profile as a European firm which is present in India, and the important project references we have in environmental matters and clean energies, were deciding factors in IDOM being awarded this work following an international competition.

THE EUROPEAN UNION IS SUPPORTING INDIA IN THE DEVELOPMENT OF MORE EFFICIENT, CLEAN AND RENEWABLE ENERGIES.

TOWARDS A BALANCED ELECTRICAL SYSTEM IN INDIA.

IMPLEMENTATION AND MANAGEMENT OF SOLAR PARKS

Although coal remains the main source of energy in India, the country is making great efforts to achieve the balanced development of its energy sector. Given that solar power in India has a potential that is currently underutilized, the Ministry of New and Renewable Energy (MNRE) has approved a national plan for the development of 25 solar parks with an individual capacity of between 0.5 and 1 GW, and projects across all states known as the Ultra Mega Solar Power Projects. The aim of the Ministry is to increase the installed solar power by more than 20 GW by 2020.

The Ministerial Plan is backed by the European Commission under the Clean Energy Cooperation with India Project (CECI). Within the framework of this project, a consortium in which IDOM is participating is providing technical assistance to the Ministry and the Solar Energy Corporation of India (SECI) for the grid integration, operation and maintenance of the planned solar parks, including some capacity building and adapting the best practices used in the EU to local conditions.

THE NATIONAL PLAN WILL DEVELOP 25 SOLAR PARKS IN 12 DIFFERENT STATES, WITH THE OBJECTIVE OF INCREASING THE INSTALLED SOLAR POWER BY MORE THAN 20 GW.

Our firm is in charge of developing a manual for the operation and maintenance of the solar parks and the definition of a monitoring system for energy production.

LAOS

A COUNTRY WITH ENORMOUS WATER RESOURCES.

WATERSHED PLANS AND STUDIES ON THE MANAGEMENT OF RESERVOIRS

The Democratic People's Republic of Laos, with a population of about 7 million people, has an enormous hydro potential that is currently underused. Improving the management of these resources, which is now an urgent priority, requires the planning new infrastructure for supply, sanitation, treatment and protection from extraordinary events (droughts, floods...).

In addition, the exploitation of the vast hydropower potential requires hydrological planning at both watershed and national level. For many years now, IDOM has been working in this direction, in collaboration with the Ministries of Energy and Mines (MEM) and Environment (MONRE), on watershed plans and action strategies for the rational and sustainable use of water resources.

Our firm has been developing hydrological studies, water and reservoir management studies of some of the most important watersheds of the country (Nam Ngum, Nam Ou and Xekong) where important hydroelectric development is being undertaken. The models produced will form the basis for the proper planning and management of the assets of these watersheds.

Photo: José Luis Palencia (IDOM), Mr Lamphone Dimanivong, Deputy Director of the Department of Energy Policy and Planning. Ministry of Energy and Mines, and other technicians of the department participating in one of the IDOM training courses.

IMPROVING THE MANAGEMENT OF WATER RESOURCES IN LAOS WILL ENABLE THE COUNTRY TO TAKE ADVANTAGE OF ITS IMMENSE HYDRAULIC POTENTIAL.

José Luis Palencia.

KAZAKHSTAN

THE LARGEST CITY IN
KAZAKHSTAN WANTS TO
REVITALIZE THE USE OF THE TRAM

THE TRAMWAY OF ALMATY

RECOVERING THE TRAM'S SPLENDOUR

The capital of Kazakhstan from 1929 to 1997, the city of Almaty - with two million inhabitants - remains the most populated city and economic centre of the Republic. Since its introduction in 1937, the electric tramway system had been extended greatly and reached its maximum extension in 1990 when ten different lines were in operation. From the early nineties, this mode of transport declined greatly, and in 2010, there were just two lines in operation.

However, this tendency is about to be reversed with the recent signing of an agreement between the European Bank for Reconstruction and Development and the City of Almaty to finance a new Light Rail Transport (LRT) system.

As a result of this agreement, the City has appointed IDOM to provide technical and legal assistance to award the design, construction and operations contracts, under a Public-Private Partnership scheme. The work of IDOM involves, among other objectives, a review of existing studies, the preparation of the structure of the contracts required to undertake the project, a reference design, as well as the provision of technical assistance during the bidding phase and signing of the contract.

Upper photo: Fernando Tomás Casado in Zaragoza, a tramway project on which Idom has also worked.

OTHER

PROJECTS

BANGLADESH
340 MW combined cycle power plant with a GE 9FA gas turbine fuelled with natural gas for ISOLUX CORSÁN.
Basic and detailed engineering.

BRUNEI
Feasibility study for the development of an Integrated Waste Management System in Brunei Darussalam. BEDB.

CHINA
Railway emergency management system for the Ministry of Railways financed by ADB (Asian Development Bank).
Consultancy services.

PHILIPPINES
Management of wastewater, waste and watersheds in Cagayan de Oro City. Cities Development Initiative for Asia (CDIA).
Feasibility study.

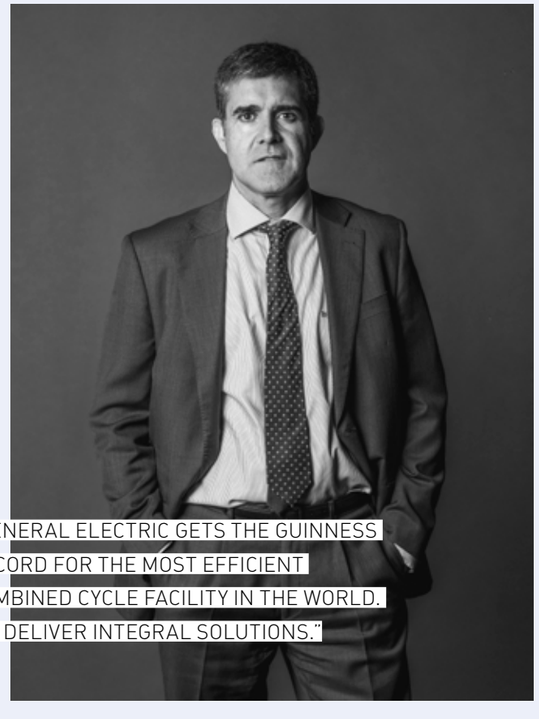
INDIA
Mohali Exhibition and Congress Centre for Punjab State Infrastructure Development Board.
Architectural design.

INDONESIA
New flat glass furnace for AGC. Detailed engineering of piping and electrical installation for a new float line of 800 t/day.

Sanitation and treatment in five cities in Indonesia for the Asian Development Bank. Technical assistance for institutional strengthening.

"IN IDOM WE DESIGN AND IMPLEMENT ADVANCED MANAGEMENT SYSTEMS FOR THE DEVELOPMENT OF INDUSTRY 4.0 IN CHINA AND INDIA FOR OUR CLIENTS."

Eduardo Martínez.
MSc. Industrial Engineer and Director of Management Systems.



"GENERAL ELECTRIC GETS THE GUINNESS RECORD FOR THE MOST EFFICIENT COMBINED CYCLE FACILITY IN THE WORLD. WE DELIVER INTEGRAL SOLUTIONS."

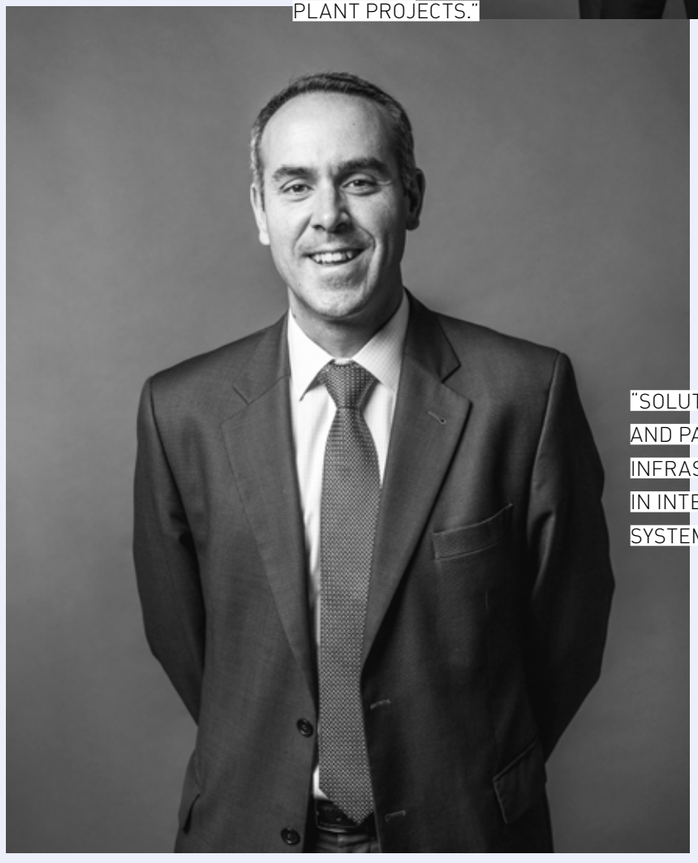
Francisco Javier García.
MSc. Industrial Engineer. Director of the Thermal Power Plants Division.

RUSSIA
412 MW Sredneuralskaya combined cycle with a GE 9FB gas turbine and Skoda steam turbine for Iberdrola. Basic and detailed engineering services.

VIETNAM
Project Management of Hanoi Metro Line 3 for Hanoi Metropolitan Railway Management Board (MRB). Project management.

"THE ASIAN MARKET OFFERS A HUGE POTENTIAL FOR OUR FUTURE INDUSTRIAL PLANT PROJECTS."

Luis A. Ripoll.
MSc. Industrial Engineer. Director of the Manufacturing division.



"SOLUTIONS FOR CONGESTION RELIEF AND PAYMENT FOR USE OF THE INFRASTRUCTURE ARE THE TRENDS IN INTELLIGENT TRANSPORTATION SYSTEMS."

Iñigo Larraondo.
MSc. Telecommunications Engineer. ITS Business Manager.

Middle East

07

| **SAUDI ARABIA** RIYADH METRO | ABI BAKR ROAD | TABUK AIRPORT | **QATAR** SPORTS CITY IN DOHA | **OMAN** COMBINED CYCLE POWER PLANT | **JORDAN** SAMRA COMBINED CYCLE POWER PLANT | BIOGAS AND WASTE PLANT | ZARQA COMBINED CYCLE POWER PLANT | **ABU DHABI** PORT COMMUNITY SYSTEM |

SAUDI ARABIA

OPENING THE WAY TOGETHER

The Kingdom of Saudi Arabia is accelerating the development of its transport infrastructures. Improving mobility in its cities is one of the priority objectives. In Riyadh, the capital, transport conditions are improving due to the development of infrastructures, such as the new Metro network, bus lines or Bus Rapid Transit (BRT). In addition, new urban highways and ring-roads are being built.

Photo: Imanol Urquiaga with a collaborator from IMAR in Riyadh.

THE RIYADH METRO

INNOVATION ON LINE 3

The works of the Riyadh Metro, commissioned by Arriyad Development Authority, are progressing as planned in all areas: viaducts, track, tunnels, stations and workshops. The tunnelling machine of the ANM consortium (ArRiyadh New Mobility), of which IDOM is the designer, is now drilling at high speed beneath the historic neighbourhood of Riyadh. This task is nearing completion.

THE PROJECT IS AMBITIOUS IN ITS OBJECTIVE TO ACHIEVE HIGH ENERGY EFFICIENCY AND SUSTAINABILITY. WITH 22 STATIONS, 25.9 KM OF THE 41 KM LINE ARE ELEVATED, 5.8 KM UNDERGROUND AND 9.3 KM GROUND LEVEL.

On the other hand, the seven impressive beam launchers that are building almost 28 km of viaducts have completed over 75% of the works and are now working on a crucial stage. The first train units have already arrived in Saudi Arabia and the objective is to have the test section in service before the end of 2017.

IDOM completed the basic construction design in June 2016 and since then has continued with the development of the engineering and architecture works while the works progress. The complete design of the West and Central sections was submitted for approval by the Owner's Engineer at the end of 2016.

THIS SECTION INCLUDES, VIADUCTS, TUNNELS, CUT AND COVER TUNNELS, GROUND LEVEL TRACK PLATFORMS, WORKSHOPS AND DEPOTS.

The section to the east of the line has had to be rethought to make it compatible with an existing large culvert. Our teams, in close collaboration with the partners of ANM and the client, have been able to do this work in less than half the time set out in the contract, in almost record-breaking time.

"The Riyadh Metro is an essential contribution to the development of transport infrastructure in Saudi Arabia"

Ramón Ramírez, Project Manager of the Riyadh Metro.

DUNES OF CONCRETE AND STEEL.

THE UNIQUE CHARACTER OF THE ABU BAKR AL-SIDDIQ ROAD URBAN HIGHWAY

The 12-km Abu Bakr Al-Siddiq Road, a three-lane urban highway, will allow the inhabitants of Riyadh to circulate at 100 km/h, while alleviating the north-south traffic of the city. The highway will have three-tier structures at the major intersections and service roads, and will incorporate basic urban services networks such as drainage, telecommunications, traffic control and lighting.

In addition, the creation of pedestrian areas and parking spaces around the highway will improve the city planning.

INTEGRAL TRANSFORMATION OF AN URBAN ROAD INTO A HIGHWAY.

One of the most outstanding structures of this project is the iconic bridge over the intersection at Iman Saud Road, with a central span of 77 m and a total length of 326 m. The bridge is a metallic latticework structure, covered with an anodized aluminium skin that imitates the shape of the dunes, giving the project its identity and character.

In 2013, IDOM completed the preliminary, detailed and constructive design of this infrastructure. In 2014, we began with the supervision and assistance for the construction phase. Phase I of the construction of the first three kilometres has just been completed with no interruption to traffic on this section while the works have been developed.

THIS IS AN INTERDISCIPLINARY PROJECT INVOLVING ENGINEERING, LANDSCAPING AND ARCHITECTURE.

Photo: Ignacio Diaz Morcillo in Riyadh.

EXPANSION OF TABUK AIRPORT.

GLOBAL DESIGN:
FROM THE TERMINAL TO THE TAXIWAYS

The increase in passenger traffic that has occurred in Tabuk Airport in recent years, with international traffic accounting for 50% of traffic in 2015, has led the General Authority of Civil Aviation of the Kingdom of Saudi Arabia to consider extending the facility.

Alongside two Arab partners, Imar Urban Consultants and the Jordanian engineering firm CEC, IDOM submitted a proposal to the design competition and won, fundamentally, because it is a project requiring global infrastructure design, including all technical disciplines such as architecture or airside.

The scope of the project ranges from the initial planning and updating of the Masterplan to the completion of the detailed design. The elements being designed include the expansion of the existing Taxiway; remote aircraft stands; an extension of the airport apron, parking area and accesses; an administrative building and the expansion and expansion of Cargo Building.

In relation to the new terminal, our proposal is to modify the current linear scheme to a centralized geometry, thereby achieving greater spatial clarity and route optimization in a 31,000 m^2 building with capacity to handle almost 3.5 million passengers annually.

A volumetric study of the building has allowed the required airport facilities to be significantly increased, both in the interior (check-in desks, security filters, boarding areas, luggage reclaim), as well as the exterior (BHS...), while maintaining the unique image of the existing building.

The final surface area of the expanded passenger terminal almost doubles the current one, therefore the design seeks to enhance the visual communication between the different parts of the building, both horizontally and vertically. Increasing the architectural brief does not just translate into an understanding the space, rather it is a recognition and enhancement of its unique elements: entrance atrium, cover and façades.

A SUSTAINABILITY ANALYSIS HAS ALLOWED STRATEGIES TO BE INTRODUCED TO REDUCE ENERGY CONSUMPTION IN THE BUILDINGS, TAXIWAYS AND APRON.

SPORTS CITY IN DOHA.

A METROPOLITAN OASIS

Qatar will be home to one of the most widely attended events in the world: the 2022 FIFA World Cup. The makeover that the country is undergoing has its epicentre in Doha, the capital, and aims to serve a global audience with amenities and world-class infrastructure.

IDOM and ASPIRE, the governmental corporation responsible for the planning and management of sports infrastructure, have collaborated in the creation of an economic and sports focal point of excellence, with a strategy of sustainability and post-tournament legacy.

Alongside two architectural landmarks such as the Al Khalifa Stadium and the Aspire Dome, the 190-hectare Master Plan features a large sports and cultural park surrounded by a commercial boulevard and apartment buildings, hotels and offices. This park aspires to be a new metropolitan oasis where users can lead the dynamic, urban, sporting lifestyle desired by Doha.

In a first stage, IDOM has defined the mix of uses to achieve this purpose, with a balance between lucrative and sporting uses. In the last phase of the project, the guidelines were developed for architecture, landscaping, mobility and infrastructure according to the Global Sustainability Assessment System (GSAS) of Qatar, on which the urban planning and building projects will be based.

OMAN

A NEW COMBINED CYCLE POWER PLANT.

COLLABORATION THAT GOES FAR

As the economy of the Sultanate of Oman is based mainly on oil and gas, the authorities are trying to diversify the economic activity and encourage investment from both the foreign and national private sector.

This is the context in which the combined cycle power plant of Salalah II is being constructed. The new plant is located close to a simple cycle plant near the port of Raysut, to the southwest of the city of Salalah.

The Chinese construction company SEPCO III, specializing in power plants, is in charge of the construction of the plant, in EPC format.

With a configuration of two blocks 2x(2x1), Salalah II will have the potential to provide a total of 445 MW. The main fuel will be natural gas, with the option to use fuel oil as a secondary fuel. The optimization of water consumption has prevailed in the design, as well as minimizing effluents.

SEPCO III, a very important company in East Asia, entrusted IDOM to develop the basic and detailed engineering of the plant. The work that we have carried out to date has generated a relationship of trust that, among other results, has given rise to 2 other combined cycle power plant projects in Jordan: Zarqa and Samra V.

JORDAN

AN OASIS OF ENERGY IN THE DESERT.

THE SAMRA POWER PLANT, CONVERTING A COMBINED CYCLE PLANT

In order to meet the growing demand for electricity in the Hashemite Kingdom of Jordan, increasing each year at a rate of 8%, in 2001, the state owned Samra Electric Power Company (SEPCO) began the construction of a large complex situated 35 km north of Amman, in the region of Al Zarqa.

The Samra plant has been constructed in phases. The first units, finalized between 2005 and 2015 were three combined cycles 300, 300 and 430 MW, while the fourth was a 146-MW open cycle power plant. At present, SEPCO is converting the final plant into a combined cycle, which should be operational in February 2018, increasing the power of the plant by 75 MW.

This work of closing the open cycle plant involves the installation of a triple pressure Heat Recovery Steam Generator (HRSG), a 75-MW steam turbine, an aero-condenser (ACC), as well as all the associated auxiliary systems required to achieve a closed water-steam circuit.

The Chinese State construction company, Electric Power Construction Corporation (SEPCO III), has been selected to undertake the turnkey project (EPC) for the works. SEPCO III has awarded IDOM the entire engineering (basic and detailed) of the project to close the open cycle plant. In addition, IDOM is collaborating with SEPCO in two other combined cycles, the Salalah II project in Oman (445 MW) and the Zarqa project in Jordan (485 MW).

Images courtesy of SEPCO III / SEPCO.

WITH THIS PROJECT SEPCO WILL COMPLETE THE COMPLEX, INITIATED IN 2001 IN THE REGION OF AL ZARQA, TO GENERATE 30% OF THE ENERGY DEMAND OF JORDAN.

BIOGAS AND WASTE IN AMMAN.

MANAGEMENT OF SOLID WASTE

IDOM continues to provide technical assistance to the Greater Amman Municipality (GAM) in the process of implementing its ambitious solid waste management project, working as Design-Build Engineer to review the design and supervise the reshaping works, landfill capping, and the biogas collection system at the Al Ghabawi landfill. This project will conclude with the construction of a landfill gas utilization plant, generating 5 MW of electricity.

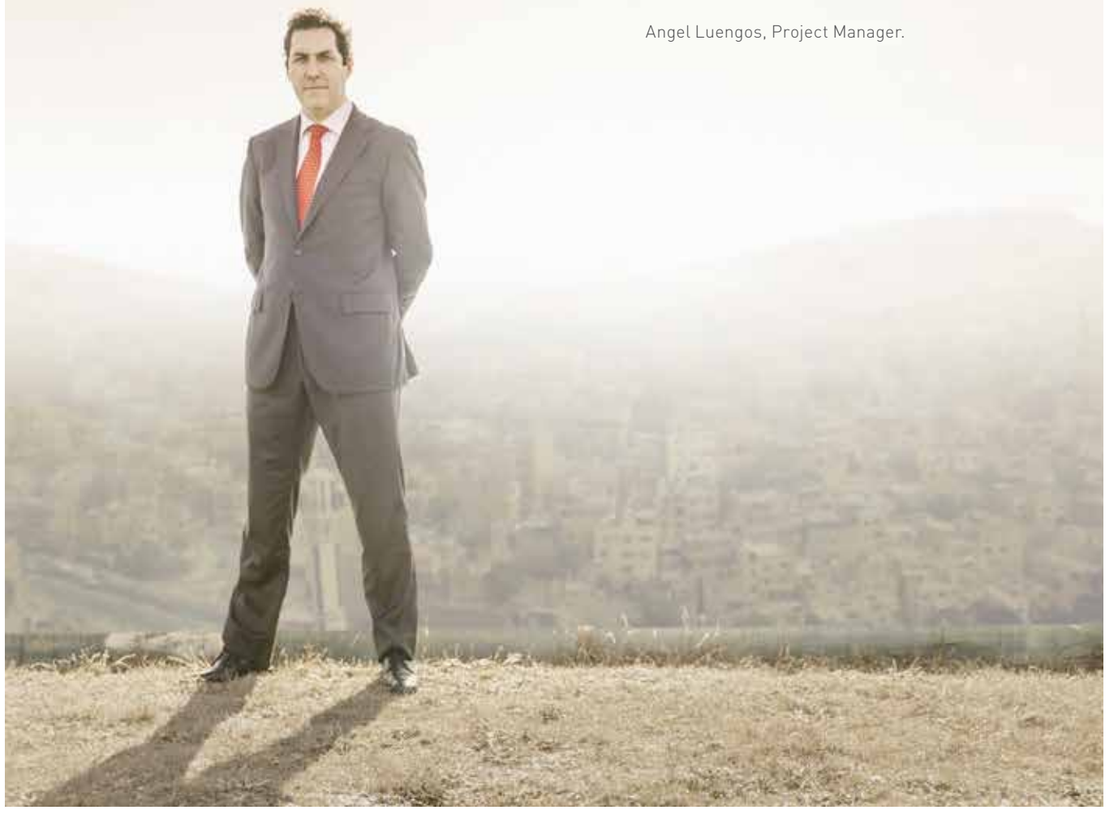
The collection and use of landfill gas results in a reduction in the carbon footprint of the waste management system, combating climate change and taking advantage of an alternative source of energy.

In parallel, for GAM, Idom has developed the detailed design of the new cells (4 and 5) to deposit waste and revamping of the leachate storage ponds, as well as the preparation of the tender documents for their construction.

IDOM has been awarded this project because of the firm's extensive experience in landfill gas energy recovery projects and waste management infrastructures.

"The management of Municipal Solid Waste should take into account local conditions and the particular needs of each community, while implementing the best available techniques, thereby achieving real sustainable development."

Angel Luengos, Project Manager.



ZARQA COMBINED CYCLE POWER PLANT.

TRANSFORMATION OF THERMAL POWER PLANT

In the Hashemite Kingdom of Jordan, important investment is being made, both to meet the growing demand for electricity and improve the stability and security of supply.

One investment, developed by the Saudi company ACWA Power, is the Zarqa Combined Cycle Power Plant. This facility will replace the outdated Hussein plant, which has been out of service since 2015. Located in an industrial area north of Amman, and a short distance from a residential area, the new plant is being built by the Chinese company SEPCO III under an EPC arrangement and is expected to begin commercial operation in mid-2018.

With a net power of 485 MW, the plant will cover around 18% of the country's needs using technology that will double the performance of the old plant, reduce fuel consumption, SO2 emissions, particulate matter and Greenhouse gases. The main fuel will be natural gas and the water treatment plant will include a reject recovery system.

Following a similar successful project in Oman for SEPCO III, IDOM has yet again been chosen to develop the basic and detailed engineering of this project.

ABU DHABI

KHALIFA PORT.

IMPROVING THE FLOW OF
TRANSPORTATION AND LOGISTICS

The Emirate of Abu Dhabi has undertaken an ambitious development of its ports sector in recent years. Its landmark project has been the creation of Khalifa Port, constructed on a reclaimed island with an offshore area over 2.7 square kilometres. Owned by Abu Dhabi Ports, Khalifa Port commenced operations in September 2012. It hosts the first semi-automated container terminal, and has a total capacity of 2.5 million TEU for containers and 12 million tons of general cargo per annum.

Today, maritime industry is a major driver of international trade, and Ports play a key role in supply chain efficiency and reliability. Their operational effectiveness has a direct impact on competitiveness of trade and industry. Being competitive at importing and exporting around the world is of crucial importance in Abu Dhabi, given the Emirate's strategy of creating national industrial champions in sectors that can develop a sustainable competitive advantage, as part of the Abu Dhabi Government's economy diversification plan.

In order to support trade development and logistics performance, Abu Dhabi Ports is developing the Maqta Gateway project. Maqta Gateway is a visionary, mobile-enabled and community-based IT system, which will act as a Single Window to automate procedures and facilitate information flows between all the port stakeholders and parties: terminal operators, Abu Dhabi Customs, Harbour Master, shipping lines, freight forwarders, Abu Dhabi Food Control Authority, rail and air cargo Operators, etc.

IDOM is working in a joint venture with PortIC (the operator of the Port Community System of Barcelona) in the design and Maqta Gateway and in the supervision of its implementation. Idom is also assisting Abu Dhabi Ports in the definition of the service development roadmap, organisation structure and strategy of Maqta Gateway.

"MAQTA GATEWAY" IS A VISIONARY PORT COMMUNITY SYSTEM WHICH WILL FACILITATE INFORMATION FLOWS BETWEEN ALL THE PORT STAKEHOLDERS.

OTHER

PROJECTS

ABU DHABI

Geographic Information System for the Abu Dhabi Department of Transportation. Consultancy services.

SAUDI ARABIA

Intersection of the Prince Turki Bin Abdulaziz Al Awwal Road and the Oroubah Road for the Arriyadh Development Authority (ADA). Preliminary design.

Underpass and urban development in Abi Bakr As Siddiqe and Prince Saud bin Muhammad bin Mugrin for Arriyadh Development Authority (ADA). Basic design and construction project.

Framework Contract with the Royal Commission of Jubail & Yanbu to provide Engineering Studies and Technical Services for new Infrastructures. Feasibility studies, basic design and detailed engineering of infrastructures, development of specifications and bidding documents and construction and technical assistance.

Audit of the ITS systems in ERAOA for the Arriyadh Development Authority (ADA). Consultancy services.

BAHRAIN

Combined Cycle Plant (PS 5) of 1,792 MW for the expansion of the aluminium smelting plant for Aluminum Bahrain B.S.C. (Alba). Basic and detailed engineering, as well as technical assistance during the works

QATAR

Master Plan of the Sports City of Doha, for the Aspire Zone Foundation. Master Plan, Architectural guidelines, landscaping, mobility and infrastructure.

JORDAN

Ma'an wind farm and its subsequent extension with a total of 80 MW for Elecnor. Detailed engineering of the civil works, medium voltage network and control building.

OMAN

National Railway Network of Oman, Section 1 between the United Arab Emirates border and the 200 km long Sohar Port for Salini Impregilo S.P.A. Tender project.

"WE TAKE AN APPROACH WHICH INTEGRATES ARCHITECTURE WITH TRANSPORTATION, HOSPITAL AND SPORTS INFRASTRUCTURE IN THE REGION."

Javier Dávila.
Technical Architect, Project Management Professional. Responsible for the Gulf Cooperation Council (GCC) countries, Architecture and Building.

Luis Gómez Liste. MSc. Engineer in Geodesy and Cartography. Director of Information Systems.

"THE DOHA SPORTS CITY WILL BE A NEW METROPOLITAN OASIS CONDUCIVE TO A DYNAMIC, URBAN AND SPORTS LIFE STYLE."

Nayibe Florez. Urban Planning Architect. Project manager for urban and territorial development.

"WE ARE COMMITTED TO THE DESIGN OF EFFICIENT AND SUSTAINABLE ELECTRICAL NETWORKS THAT ALLOW THE INTEGRATION OF DISTRIBUTED GENERATION"

Sergio Lastra.
MSc. Industrial Engineer. Director of the Power Transmission Division.

Africa

08

SENEGAL UNIVERSITIES OF SENEGAL |

ALGERIA CONSTANTINE TRAMWAY | ITS ROAD SYSTEMS | ALGIERS METRO | STEEL COMPLEX |

ETHIOPIA & KENYA HIGH VOLTAGE NETWORK |

SENEGAL

EDUCATION, A BASIC PILLAR FOR THE FUTURE

Photo: Fally Diop, Federico Pardos & Djibril Kane in Bambey, Senegal.

According to the words of the university rectors, the two projects being carried out by IDOM constitute a reference model for the country for two fundamental reasons: their design has been approached with sustainable architecture criteria and the universities themselves have been involved in the development, participating in the design phase; something which is not usual in similar projects.

THE FUTURE OF A COUNTRY

The Government of Senegal, with the financial assistance of the World Bank, launched an ambitious plan to expand and improve five universities. IDOM is working on the expansion of two of the most important: Alioune Diop, in the town of Bambey, located in the interior of the country, 120 km from Dakar, and Gaston Berger in Saint Louis, the former colonial capital north of Senegal. In both campuses, we have designed new buildings for classrooms and teachers, while in the case of Gastón Berger, sports facilities have also been included. The buildings are now under construction and we are supervising the development of the works, whose completion is scheduled for 2017.

In San Luis, spread over 7,200 m^2, the program of needs includes classrooms, an amphitheatre, faculty area, a covered sports centre, and a 50-metre pool. In Bambey, spread over 4,200 m^2, the program includes classrooms, a 500-seat amphitheatre, two laboratories, a computer room and an administrative area.

Both projects have been approached with strategies of sustainability and bioclimatic architecture: the double façade and double ventilated of the cover eliminates any solar incidence to the interior of the classrooms while creating air currents, thereby increasing the comfort of users. In turn, the wastewater is purified by autonomous systems and the stormwater is conducted by artificial channels and filtration ponds. All this is integrated into a landscape set in vegetated lagoons.

The term SENEGAL comes from SUNU (ours) and GAL (canoe), in the local language wolof. Hence the facade of our San Luis project is inspired by the colour and position of the moored fishing boats.

Photo opposite page: Federico Pardos, Djibril Kane & Fally Diop. Upper photo: Federico Pardos, Djibril Kane, Mouhammadou M.M. Fall (ALPAGES) & Fally Diop en San Luis, Senegal.

"SENEGAL, A REFERENCE COUNTRY IN HIGHER UNIVERSITY EDUCATION AMONG FRENCH SPEAKING COUNTRIES IN AFRICA, HAS ESTABLISHED AN AMBITIOUS REFORM PLAN TO INCREASE THE LEVEL TO INTERNATIONAL STANDARDS"

Federico Pardos Auber
Project Manager of the Senegal Universities project.

ALGERIA

COMMITTED TO MODERNIZATION

Photo: the City of Algiers.

Algeria is immersed in an extensive process of modernization, being as it is, the third economic power in terms of per capita GDP in the African continent. IDOM is collaborating in this revitalizing process, working on over 10 projects in the country, developing rail, road, telecommunications and energy production infrastructure.

TRANSPORT SYSTEMS

“ Passenger transportation in Algeria is undergoing a profound transformation, moving towards efficient and environmentally sustainable collective systems.“

Photo: Khaled Bouzghaia,
Jokiñe Uriarte & Amar Daoudi in Algiers.

“Engineering can be creative”

Jorge Bernabeu, Doctor of Engineering.

TRAMWAY OF CONSTANTINE

CONSTRUCTING A TRAMWAY,
BUILDING A CITY

IDOM is an engineering firm of reference in Algeria, not just because of the twelve of so big projects we are undertaking and our important local presence, but above all, for the firm's creativity in facing challenges.

One of these projects is in Constantine, the third largest city of the country, whose important heritage and difficult orography is in itself a new challenge: to combine tradition and modernity in the tramway extension project.

This infrastructure will renew both the urban configuration and the forms of mobility of the city, connecting the urban nuclei, eliminating traffic, planning new developments and motivating the population to move their residence to them.

The new tramway draws inspiration from the historical construction of Constantine's bridges: the lightweight slab of suspended concrete that covers the station covers follows the catenary of the hanging bridges. The bridge over the East-West highway updates the typology of the arch with a metallic structure covered with dichroic material that changes colour according to the angle of incidence of light to offer an iconic image similar to a rainbow.

The line departs from the Zouaghi multimodal station to connect with the new urban development of Ali-Mendjeli, along 10.3 km and with 12 stops. IDOM, the leader of the consortium with TEC-4, has been responsible for designing the project, drafting the bidding documents and providing assistance during the contracting of the works. The firm is currently monitoring the construction works of the consortium: Alstom (France) - Isolux Corsán (Spain) and Cosider (Algeria).

The experience and capacity of IDOM makes it possible to cover all the disciplines involved in the project: platform and civil works, urban development, track, electrification, signalling, systems and depots, as well as monitoring the manufacturing of the rolling stock in a new Algerian factory located in the coastal town of Annaba.

THIS STATE-OF-THE-ART SYSTEM IS LEADING THE WAY IN ALGERIA AND MEETS THE HIGHEST INTERNATIONAL SAFETY STANDARDS.

FROM TUNISIA TO MOROCCO BY MOTORWAY

INTELLIGENT TRANSPORT SYSTEMS IN ALGERIA

Algeria is currently immersed in the construction of one of the largest infrastructure project in its history: the highway linking the Moroccan border to the Tunisian border, connecting the most important cities of the Algerian coast along 1,216 km.

This project, led by the Ministry of Public Works and Transport through AGA (L'Algerienne de Gestion des Autoroutes) is also pioneering in another aspect, as it also is the first highway equipped with state-of-the-art ITS systems.

The ITS systems that have been implemented include toll systems, variable message signs, video surveillance with automatic incident detection, weather stations and traffic data collection. These systems all meet the highest international standards of safety and quality.

The work of IDOM, leading the consortium formed with the Lebanese company Dar-Al Handasah Consultants (Shair & Partners), focuses on the eastern side of the highway, on the stretch between the cities of El-Tarf and Bordj Bou Arreridj. With an approximate length of 440 km, this section affects seven wilayas (provinces): El Tarf, Annaba, Skikda, Constantine, Mila, Setif and BBA.

THE EXTENSION PLAN WILL EXTEND LINE 1 (9.5 KM AND 10 STATIONS), CURRENTLY IN OPERATION, TO A 55 KM NETWORK WITH OVER 55 STATIONS.

ALGIERS METRO.

IMPROVING MOBILITY IN THE CAPITAL OF ALGERIA

Algeria is the largest country in Africa in terms of area, and as such wants to be one of the main driving forces in promoting the continent. Therefore, the country has made a commitment to implementing the necessary transport infrastructure, which is characteristic of a developed economy. To promote this great social and economic development, the public company Métro d'Alger is undertaking an ambitious extension project for its metro network, scheduled for completion in 2025.

IDOM has collaborated in the study of this great extension of the metro network, designing the 6.2 km extension and the 6 stations that will connect the neighbourhoods of Ain Naadja and Baraki.

Some 120,000 passengers/day will be served by this extension. On the one hand, it will help decongest the road network of the Algerian capital, while on the other; it will further integrate these suburbs into the urban nucleus, thereby improving the quality of life of the residents.

The efficient use of natural resources has been achieved thanks to the open design of the stations that takes advantage of natural light, reducing energy consumption. The Le Jardin station is a perfect example of this: a window to the urban park that is considered the nerve centre of the Baraki neighbourhood. In all the stations, accessibility elements have been designed that will facilitate the mobility of persons with limited mobility.

BELLARA STEEL COMPLEX

ONE OF THE LARGEST DRI PLANTS
IN THE WORLD

The new Bellara steel complex in Algeria, will supply 2 million tonnes per year of bar and roll steel for construction.

THE BELLARA STEEL COMPLEX.

A GROWING GIANT

In order to reduce dependence on imported steel, the Algerian Government signed a collaboration agreement with Qatar in late 2013 to build the Bellara Steel Complex in the Jijel region. The complex has three Rolling Mills fed by two Steel Melt Shops and one of the largest DRI plants in the world.

IDOM has been present since the inception of this project, which is now in its second year of construction. In 2014, our firm was contracted as the Pre-Construction Project Management Consultant and in 2015, the project teams in our offices and on-site continued with the construction project.

The works have been divided into various separate packages, which have been entrusted to world leaders in their field.

The on-site team, which is still growing, has been at the complex since construction began in 2015, is responsible for the project management of the works and their supervision.

In addition, our firm is the designer for the balance of the plant, including the integration design of the different packages, such as civil works, logistics design, communication and security, workshops, offices, roads, landscaping, etc.

ETHIOPIA / KENYA

HIGH TENSION CABLES BETWEEN ETHIOPIA AND KENYA.

THE ELECTRICAL INTERCONNECTION THAT WILL FURTHER UNITE BOTH COUNTRIES.

With the commissioning of the 6 GW mega-hydroelectric power stations under construction on the Blue Nile in Ethiopia, one of the main obstacles to economic development in East Africa, the shortage of energy, will be greatly alleviated in the country.

Kenya will also benefit from this Herculean work, thanks to an overhead high voltage electrical connection. This line, stretching over 1,000 km, will allow electricity supply from Ethiopia. IDOM is participating in this initiative, designing converter stations and the connections with existing substations.

The project will be financed by the World Bank and the African Development Bank. The Consortium Isolux Corsán-Siemens has been contracted to design, build and install the required High-Voltage Direct Current (HVDC) equipment between Ethiopia and Kenya.

DC systems have been proven to have a clear advantage over AC: lower levels of losses, fewer drops in voltage, and lower equipment and maintenance costs. This system will increase the security, stability and quality of the electricity supply in both countries.

In addition to the overhead line, the main elements of the connection include a 2,000 MW HVDC converter and substation in each country, Suswa in Kenya and Sodo in Ethiopia.

Isolux has appointed IDOM to develop the complete detailed engineering of the two converter stations, as well as the interconnection and expansion of existing substations, which will include the engineering: auxiliary services, studies and electromechanical assemblies, the civil engineering associated with the converters, access roads, and the technical management of procurement.

Photo: Faustino Guillén & Sergio Lastra, Directors of the Power Transmission Division.

"MULTICULTURALISM IS ONE OF THE VALUES OF IDOM AND WE ARE STRIVING FOR EVEN GREATER DIVERSITY"

Mikel Etxeberría. Graduate in Economics and Business Studies Manager of the International Expansion Department.

OTROS

PROYECTOS

ANGOLA

Urban Regeneration of 11 neighbourhoods, for Cedrus, Lda / Sanitation Management Technical Unit of Luanda. Plans for regeneration and urban planning, services and urban infrastructure.

ALGERIA

Extension of the Constantine Tramway to El Khroub for Metro d'Alger. Basic design.

Ouargla tram for the UTE Tranvía Ouargla (Groupement Rover Alcisa-Elecnor-Assignia). Implementation project

New soybean processing plant, 6,000 t/day for Nutris. Conceptual, basic and detailed engineering, as well as technical assistance to the Nutris project team.

1,200 MW Combined cycle power plant in Djelfa for Duro Felguera. Basic and detailed engineering.

Single cycle power plant in Boufarik for Gama. Basic and detailed engineering for the 750 MW cycle.

EGYPT

Lighting, security, conservation and visitor management systems for the improvement of archaeological sites for DEFEX. Management, engineering, integration and accompaniment Services during implementation.

Interoperable non-contact charging system for Metro Cairo. Commission supervision on lines 1 and 2, and interoperability with the new line 3.

GHANA

Desalination plant for seawater in Accra, for Abeinsa EPC. Basic and detailed engineering.

"THE NEW NUTRIS SOYBEAN PROCESSING PLANT WILL SUPPLY THE LOCAL ALGERIAN MARKET AND OTHER COUNTRIES IN NORTH AFRICA"

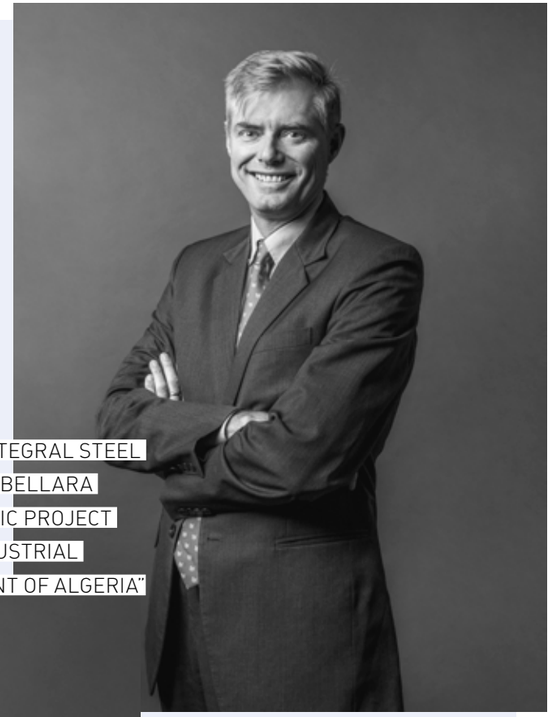
Javier Martínez. Forestry engineer. Director of the Manufacturing Division.

MOROCCO

Support in the design of the industrial plan, definition of installation of assembly plants and logistic operations in Tangiers, for Alstom Wind Spain. Logistics and Operations consultancy services.

TÚNEZ

Water Master Plan Drinking Water and Preliminary design of the 8,800 km distribution network in the region of Sousse, supplying more than 400,000 inhabitants. Analysis, diagnosis and digitalization of the network and Hydraulic model of the same.



"THE NEW INTEGRAL STEEL COMPLEX OF BELLARA IS A STRATEGIC PROJECT FOR THE INDUSTRIAL DEVELOPMENT OF ALGERIA"

Miles Shephard. Civil and Structural Engineer. Project manager of the integral Bellara Steel complex.

"INTERNATIONAL FINANCIAL INSTITUTIONS AND THE UN ARE BOOSTING THE DEVELOPMENT OF AFRICA WITH INTERESTING ARCHITECTURE PROJECTS"

Yolanda Cerezo. Senior Architect. Responsible for Business Development for projects financed by multilateral funds.

About IDOM

09

| **INNOVATION** | PROFESSIONAL **DEVLOPMENT** |

SOME **FIGURES** | SOME **EVENTS** DURING THE YEAR |

IDOM NEWS | **OFFICES** | **CREDITS**

Innovation for us means always being one step ahead of the needs of the client.

Photo: Marc Potard, Teresa Machado, Nayibe Florez, David Correia, Antonio Fernández, Philipp Ulbrich, Jon Arozena, Maria Jose Soler.

In IDOM, innovation means being one-step ahead of what the client needs. And this applies to all the activities of a firm that provides professional services: from the design of a combined cycle power plant to the design of an intelligent building or the enclosure of a solar telescope. The services we provide today are not exactly the same three years ago, they are evolving. We have an area of activity, Advanced Design and Analysis, working specifically on technological innovation, both for Idom itself and our clients. Innovation is very much present in all the other areas of the firm: from Innovative Agendas for businesses, to high-speed rail or bioclimatic architecture design.

TEAM

3,000

PERSONS

OVER

600

PARTNERS

Photo: Lourdes Lalanne , Ainhoa Arregui & Borja Martínez.

IDOM is owned by the people who work in the company, and only those who work in it.

This ownership structure creates a culture of engagement, resulting in a strong commitment to the client, colleagues and work.

The objective is that each person working in IDOM can become a co-owner once they have demonstrated their capacity to embody the spirit of the firm.

SOME FIGURES

Excellent customer service, looking after our own people, and professional development.

These three elements are what explains our past, present and the ever-increasing positive figures of our company. They are also the building blocks for our future.

Photo: Yian Jiang, Narciso López & Vincenzo Mannuca at London Bridge.

125
COUNTRIES
WITH PROJECTS

40
OFFICES
AROUND THE WORLD

€350
MILLION
VOLUME OF ACTIVITY

SOME EVENTS

Photo: María José Soler, Antonio Fernández, Nayibe Flores, Marc Potard.

QUITO.
THE UN HABITAT III CONFERENCE

In late October, the United Nations Habitat III Conference on Housing and Sustainable Urban Development was held in Quito, Ecuador. The conference was a platform to discuss the main growth trends in the world's cities, in order to design and implement a global strategy to guide the process of urban development in the next two decades.

This conference, held every 20 years (Istanbul 1996, Vancouver 1976), has had over 30,000 participants, including representatives of UN member states, and other relevant stakeholders such as regional and local governments, international institutions, multilateral agencies, professionals and researchers, the private sector and the civil society.

IDOM participated in an event organized by the Inter-American Development Bank (IDB) dedicated to the presentation of the book "From Emerging Cities to Sustainable Cities", which explains IDOM's experience in urban planning in more than 30 intermediate cities in Latin America. The event was attended by the President of Findeter, Mr. Luis Fernando Arboleda, the Director General of Banobras, Mr. Abraham Zamora, and several authorities of Latin America.

BILBAO.
8th EUROPEAN CONFERENCE ON SUSTAINABLE CITIES

The 8th European Conference on Sustainable Cities and Towns was held in Bilbao. This is considered the most important international event to exchange ideas and experiences on local sustainability.

The event was promoted by the International Network of Local Governments for Sustainability (ICLEI).

IDOM presented the firm's experience in the Sustainable Development of Emerging Cities in Latin America and the Caribbean, addressing the current problems of disorderly urban growth, the environmental and socio-economic vulnerability to which the cities are exposed in the region and explaining the methodologies in management and recovery of informal neighbourhoods and in areas at risk.

ARAB EMIRATES.
MIDDLE EAST RAIL CONFERENCE

The conference took place at the Dubai Exhibition and Convention Centre, and IDOM was present there with a stand, giving us an opportunity to reinforce the relationships with our current clients and meet others of great interest.

Within the framework of this event, conferences were held on transport, especially railway projects in the Middle East. Our colleague Pablo de la Puente offered a conference "Detailed Design of the Metro Line 3 of Riyadh" where he presented the challenges and key solutions of the project, as well as the work developed by IDOM as the only designer of the 42 km of metro and of the 22 stations, all delivered as a fast track project.

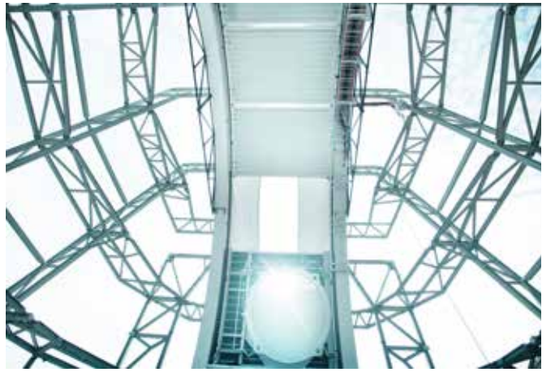
BERLIN.
JURY DUTY FOR IMPORTANT ARCHITECTURAL AWARDS

On the occasion of the awards received by the San Mames Stadium, the reputation of IDOM as an expert firm in the design of stadiums has spread rapidly around the world.

As a result, two very different major architectural events, the World Architecture Festival and the Stadium of the Year Awards, contacted IDOM to invite us to participate in their respective juries in their 2016 editions.

The World Architecture Festival (WAF), celebrated in Berlin, is the biggest international architectural event and guests from IDOM invited to form part of the jury were César Azcárate and Diego Rodríguez.

Photo: César Azcárate & Iñaki Garai.



SWEDEN.
CONGRESS ON STRUCTURAL ENGINEERING

In Stockholm, under the spotlight of several specialists of the International Association for Bridge and Structural Engineering (IABSE), our colleagues Javier Llarena and Ibon Larracoechea explained the design and planning of the expansion of the cover of the San Mamés Stadium and the characteristics of the project of the Moveable Structure of the Dome of the DKIST Solar Telescope.

The two papers presented by IDOM, during the session on Structures, described two success stories in design and construction.

Photo: the structure of the DKIST solar telescope.

PARTNER'S MEETING.

On Wednesday, December 21, the Annual Assembly of Partners of IDOM took place in Bilbao, with the attendance of four hundred and fifty people.

The meeting had four parts: an estimation of the closing figures for 2016, corporate information and the objectives for 2017; casting of votes for the new president; questions and comments; and the announcement of the results of the vote.

Luis Rodríguez Llopis was endorsed as the new President, with 96% of the votes cast in his favour.

Photo: Luis Rodríguez Llopis addressing the assembly of partners.

Photo: Washington Chidawanyika at the offices of IDOM in Manchester.

IN THE "TOP 50."

The British publication "New Civil Engineer", one of the most prestigious in the sector in the United Kingdom, announced on May 11 that it was including Merebrook, the IDOM brand in the British Isles, in the list of the 100 best British Civil Engineering companies. Ranking it number 44, to be more exact.

The list was drawn up by a jury of 30 prestigious professionals from the sector who, for the first time in its history, used qualitative than quantitative examination criteria.

"FINITE ELEMENTS" IN THE SERVICE OF HISTORICAL HERITAGE.

Our colleague Alberto Ayensa, a Doctor in Industrial Engineer, published a research article in May this year in Construction and Building Materials, one of the most prestigious journals in the field of structural engineering.

In the article, Alberto proposes a new methodology for analyzing masonry historical structures, according to Eurocodes. This method is based on finite element simulation.

Photo: Fernando Querejeta greeting some of the retired members of IDOM.

ANNUAL MEETING OF RETIRED STAFF.

On March 27, the annual meeting of the retired staff members of IDOM was held in Bilbao. Although they no longer work in the company, they are still an important part of IDOM.

There was a great attendance, with people from both Bilbao and San Sebastian.

The meeting had a festive and cheerful tone, as the trials and tribulations of many of the projects were remembered. The importance of teamwork was the common thread of conversation.

The founder of IDOM, "Don Rafa ", who never missed this type of events, was present in the minds of all.

Photos of the San IDOM celebrations in Medellin and Barcelona.

"SAN IDOM."

The annual Company Day Out "San IDOM" was held in 30 cities around the world, from Riyadh to Minneapolis, or Bogota to Delhi.

This is a special day when all the company in all the different offices around the world organize activities and sports, and above all, a lot of fun and companionship.

Traditionally, San IDOM is celebrated on the last Friday of September.

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Have you ever been curious about the team of people that put together IDOM's Annual Report each year and keep our website updated!

The communication team of IDOM is as rich, professional, complete and varied as the activity of the company itself.

We want to thank all the team for the work and illusion they put into the project, combining it with their other respective professional responsibilities.