

2009/2010



Seeking a Sustainable Future



## TABLE OF CONTENTS

5	Foreword
8	<b>Activating Creative Intelligence</b>
12	Automotive Intelligence Center (AIC)
14	Between Sports and R&D
16	Colleges and Companies: Working as a Team
18	Sense of Comfort
20	<b>Connecting People and Places</b>
24	The AVE is Coming to Valencia
26	Tarragona: Central Station
28	Metro Systems
30	Heathrow, Continually Growing
32	Road Infrastructure
36	<b>Creating Meeting Points</b>
42	Sports Facilities
44	Multi-Purpose Areas
48	A Business School in Beijing
50	A University in Libya
52	<b>Supporting Development and Competitiveness</b>
56	Technology Parks
58	Mexico: an Investment for Innovation
60	Strategic Urban Planning
62	<b>Improving the Environment</b>
66	The Atlantic Forest: Ecotourism Development
68	Biodiesel in La Rábida: Clean Energy
70	United States of America: Diversifying Biological Resources
72	<b>Aiming for a Sustainable Future</b>
76	Solar Thermal Power Plants: Main Actors
78	El Hierro Island: Self-Contained Power Supply
80	Hydrogen-Powered Public Transportation
82	<b>Promoting a Productive Economy</b>
86	Agri-Food Companies
88	Iron and Steel
90	Large Transportation Terminals
92	Prolonging the Life of Coal: Capturing CO <sub>2</sub>
96	<b>Security and Protection</b>
100	Data Processing Centers
102	Medical Technology and Biotechnological Sectors
104	Nuclear Safety
106	ITER: an International Project
108	Security in Vandellós II
110	<b>How We Are Organized</b>
112	A Few Important Figures
114	Technical Areas
116	Geographic Areas
118	Functional Areas



Approximately 1,500 of our clients have become repeat customers, not to mention that 500 new clients have found a secure reference in Idom during times of uncertainty.



### Diversification and Innovation

Although 2009 ended up being a tough year from a global economic standpoint, Idom's operations have continued at an excellent level in basically all areas, with economic parameters similar to the previous year and with an increasing amount of projects, as seen in this Annual Report.

Throughout Idom's history, the company's diversification, both geographically and technically, has proved to be an effective balance against the ups and downs that have occurred in the economy. In the past few years, we have also realized the truth of this statement while, more importantly, our clients are living it.

Several public organizations and private companies have considered Idom to be the ideal partner to cope with the crisis. Approximately 1,500 clients have become repeat customers, not to mention that 500 new clients have found a secure reference in Idom during times of uncertainty.

Idom has advanced in dimensions such as innovation and globalization since we have not only appeared in new countries, but we have also grown stronger in those countries we were already in, thanks to our participation in numerous innovative projects. Idom's global capabilities have become a reality.

Other indicators that Idom's growth has continued during these strenuous times include the incorporation of new people, which reinforce and expand our team and maintain our positive growth.

But the most positive thing that we've achieved in this tough year has been the testing of the quality of our professionals and the solidity of the company's values. The times of difficulty act as a mechanism of natural selection for professionals and companies and the truly embodied values, which are a mere expression of intent, can be distinguished in those people. At Idom, we once again have proved the will to serve our clients, our commitment, and the respect for others' work and technical excellence, which are only a few of our deeply rooted values.



Fernando Querejeta  
President



Our goal for 2010 is to show our clients that counting on us is the best option for success.

### Shaping the Future

The second half of 2009 yielded some ambivalent macroeconomic data that allowed us to look at 2010 with cautious optimism. First of all, if we follow the technical definition of recession – the occurrence of two consecutive quarters of economic decline – we can say that the so-called “emerging economies” haven’t entered into recession and that the brief period of contraction experienced should be seen as a consolidation of a growth process that will continue.

On the other hand, indicators haven’t been as positive in developed economies. The European Central Bank has established that the second half of 2010 will be a period in which “the start of recovery” will occur within Europe and that there will be a recovery and restoration of financial markets. This information indicates that 2010 will be another difficult year, even for Idom.

Therefore, we are currently experiencing a period in which we must continue implementing the methods that have been successful during this century: tenacious and constant work, speed to identify new opportunities, confidence within a solidly united team, with the client’s devotion and a great innovative spirit.

We are facing a year in which we must shape the future and shouldn’t let ourselves be limited by the current shortcomings. Idom brings together several features in order to meet its goals, including the youth of its staff, the desire to face new challenges, the financial independence which allows us to think without having constraints, always making the client our sole interest. Just take a look through this Annual Report and you’ll realize that the generation of innovative solutions, which enable clients to stand out in the market, has been present in all our projects, whether large or small.

I’d like to conclude by announcing that in 2010, two projects will be implemented which are important for the future: the launching of two new offices in Madrid and Bilbao, a few buildings designed by ACXT that will be distinguished for their quality and features. These projects will enable us to work in better conditions, better serve our clients, and continue to support Idom’s growth.



Luis Rodríguez Llopis  
General Director

# 1.

## ACTIVATING CREATIVE INTELLIGENCE

“The Big Bang theory describes an instantaneous explosion that created the universe. This analogy can also be used to denote the internal spark that Idom’s professionals experience when developing an innovative solution for a client.”

**Viral Bhavsar**  
Architect





Idom describes innovation as an ongoing and systematic process of accepting significant challenges that bring value to the client.

Idom's professionals go through this creative process every time a new project is presented.

## A GLANCE AT SOME OF OUR INNOVATIVE PROJECTS



### "The European Solar Telescope"

Located in the Canary Islands, this pan-European project will keep Europe at the forefront of solar physics as Idom continues to provide its advanced engineering services.

### "Fastcam" Astronomical Observation System

The most commonly used astronomical observation technique consists of obtaining sets of thousands of images using very short exposure times. The best images are combined until the desired sensitivity has been reached. In collaboration with the Technical University of Cartagena, Idom has designed a real-time electronic image processing tool to handle the thousands of megabytes generated every few seconds as well as to provide instant information as to what is being measured.

### Radio Frequency Identification (RFID)

#### Nearly a 100% Guarantee

When Dapargel, head of the Perfumerías IF chain with nearly 300 points of sale, needed to develop a solution to control store inventory and product traceability, it turned to Idom. This solution called for the integration of up-to-date anti-theft devices to allow efficient control over the inventory while eliminating positions that weren't focused on customer service. In order to overcome specific technological barriers, Idom has partnered with various suppliers of equipment and systems. Based on RFID tags and mobile reading systems, the final outcome was a system guaranteeing 100% read rates with low implementation and operation costs which made the project feasible.

### Corporate Innovation Forums

#### Unity is Strength

Innovation Forums are public events that aim to raise awareness between companies within a sector to identify common problems and challenges, encourage the sharing of knowledge and technology – amongst themselves and with other actors in the innovation system – and generate real opportunities for innovation. Thanks to Idom's experience with the implementation of innovation systems in companies and industrial associations, the High Council of Chambers of Spain has sought content management assistance of 22 Innovation Forums under the designation "Programa InnoCámaras."

### Design and Innovation of SMEs

#### Spain's Largest Project Yet

The Government of Spain wants a new strategic model for companies that incorporates a design and innovation culture. The State Society for Design and Innovation Development (DDI) has asked Idom to implement the project in over 120 companies within the autonomous communities of Andalucía, Castilla-La Mancha, Extremadura, and Galicia in its journey toward the systematization of design and innovation processes. Idom has offered its team of professionals that have been educated in the best institutes for industrial design in the Netherlands, England, Italy, and Spain.

## AUTOMOTIVE INTELLIGENCE CENTER (AIC)

The new innovation center within the automotive sector is a pioneering initiative in Europe.

The automotive industry has been known to reinvent itself throughout its history, and now, more than ever, it needs to carry out an innovative effort aimed at raising levels of competitiveness, environmental respect, security, and comfort.

In AIC's area of influence, the automotive industry involves over 200 companies and generates approximately 40,000 jobs. Innovation is the solution to the threat of globalization and the new centre fulfils this purpose, laying out its objectives to focus on industrial knowledge and research, promote education, and support the creation of new corporate projects while attracting innovative projects.



### THE AIC DESIGN PROMOTES COLLABORATION BETWEEN COMPANIES

The complex is divided into three buildings with a total area of 19,000 square meters (20,780 square yards): the main building and two product development units. The main building consists of a large, aerodynamically-shaped roof that wraps around the R&D units of various companies and also shelters the spaces designed to boost synergy. These spaces include laboratories for conducting team research, training areas, and a social hall (for ceremonies, building services, product presentations, etc.).

1 Social Hall  
2 Main Building: R&D Units  
3 Product Development Units  
Photographed by: Aitor Ortiz





## BETWEEN SPORTS AND R&D

Racing has become an incentive for the development of product innovation and design.

Épsilon Euskadi is a center for innovation and research in Automobile Technology that is a pioneer in the world of integrating design, R&D, and racing vehicle construction while managing internationally recognized sports teams and advanced education (Master of Engineering).

On the outside, the building has a façade that symbolizes carbon fiber, which is a material used in bodywork, incorporating stainless steel pipes that flow like the contours in computational fluid dynamics software.

The center contains advanced technology equipment, including a wind tunnel for aerodynamic testing, within multi-sector applications: scale models of vehicles, architecture, etc.

Épsilon Euskadi competes in Le Mans 24 hours, Le Mans Series, Formula Renault 3.5 World Series, Formula Renault 2000 European Championship and hopes to compete in F1 in 2011.



1 East Side of the Facade  
2 MPV Building  
3 Prototype NML1 for Le Mans races  
4 Turbine of Wind Tunnel  
Photographed by: Francisco Berreteaga



# 200 JOBS

The total number of positions needed for the creation of the new Center

3



4

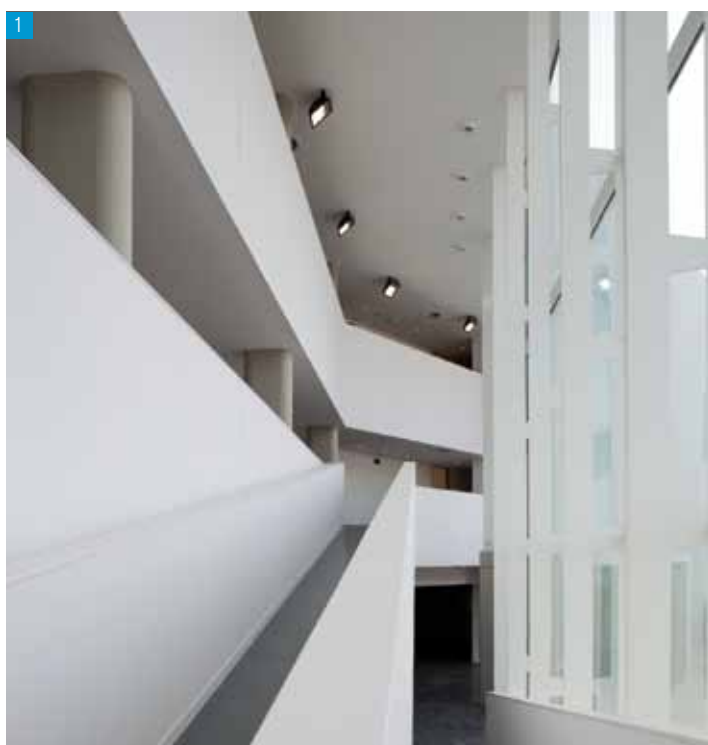


## COLLEGES AND COMPANIES: WORKING AS A TEAM

Madrid aims to be among the top 10 advanced R&D regions in the world, as it has been supporting the development of a network of research and technology centers for years. This network is capable of changing the region's current economic model through generating a common environment for major actors in public and private sectors. Idom is currently taking part in the design of the Southern Technological Zone: a cluster of universities and companies in which resources will be shared, in addition to the coordination of research activities.

### TECHNICAL UNIVERSITY OF MADRID

The Technical University of Madrid will be located within this technological zone, along with mining, aeronautic, and industrial technology centers and a general services building. Within the plot of land, a sequence of walking paths interspersed with green areas will connect the different facilities of the complex just like in a university campus.







4



## SILICON TECHNOLOGIES

This complex is dedicated to the development of silicon technologies. In this complex, research will be conducted regarding the stages of the manufacturing process of solar panels, from the attainment of solar grade silicon to the manufacturing and characterization of the panels.

## TECHNOFUSION

The Spanish government wants to promote the participation of companies and research groups in the International Thermonuclear Experimental Reactor (ITER). This requires creating building services that can carry out experiments related to nuclear fusion, such as developing new materials, studying their behavior under irradiation, etc. For this purpose, Idom is also designing the TechnoFusion complex in the Southern Technological Zone. This complex will provide the industrial community with versatile building services suitable for research and other development projects that are not necessarily science-related.

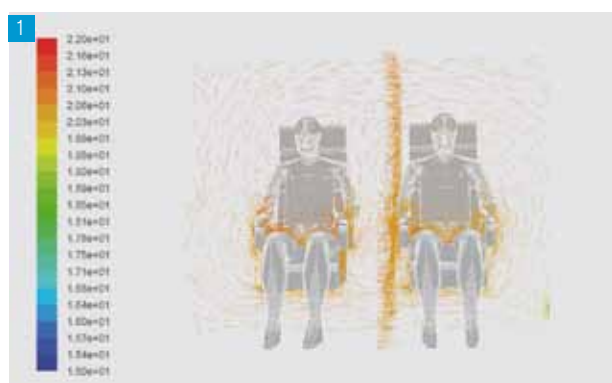
---

1 Corridor of Main Services Building

2 View of the Complex

3 & 4 External View of the Main Services Building

Photographed by: Miguel de Guzmán



1 & 2 Simulation of Air Velocity  
and Outside Temperature  
3 3 Reaction of the Human Body to Environ-  
mental Conditions

**CFD**  
Computer Fluid Dynamic is one of  
the simulation methods used.

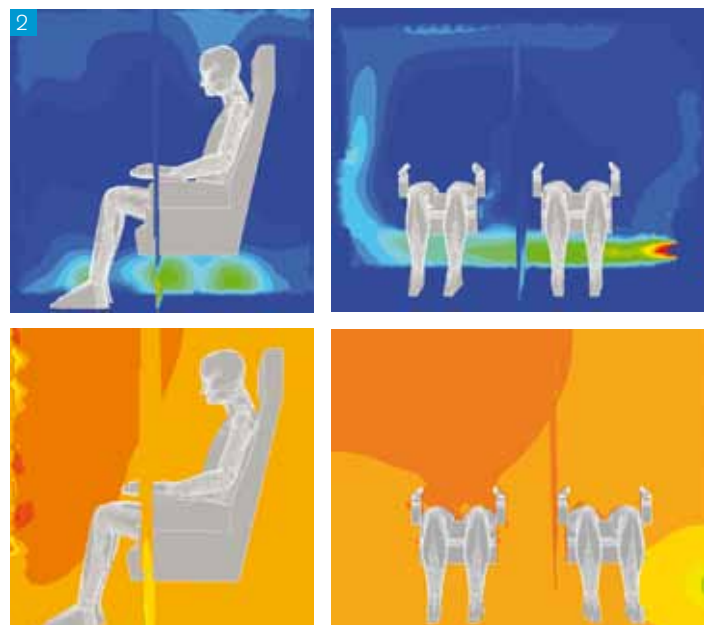
## A SENSE OF COMFORT, WITH SCIENTIFIC GUARANTEE

Long journeys and situations that require a long attention span require, as a minimum, a state of comfort.

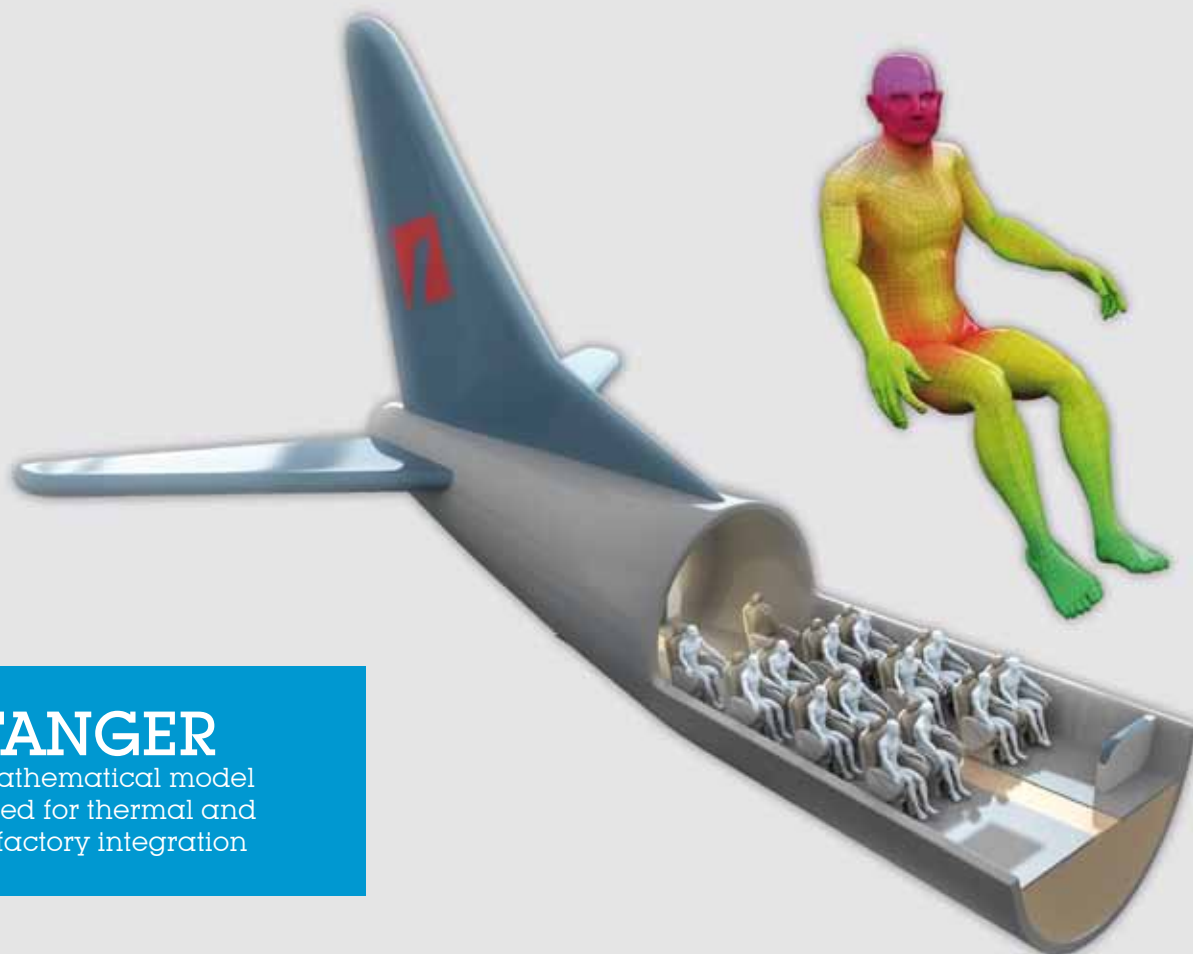
Even though concentration doesn't depend solely on comfort, it is an important aspect of it. Although science cannot guarantee driving safety or productivity at work, it can determine some parameters that make it easier to reach those goals.

These are assumptions upon which Ingenia led a project that originated in Idom, whose aim has been to define a model capable of quantifying the relationship between mechanical and physical parameters and the subjective perception of comfort of the individuals involved.

The final result is a chart that describes and analyzes how a person feels in an environment while experiencing a series of given olfactory, lighting, thermal, and ergonomic sensations.



3



## FANGER

Mathematical model  
used for thermal and  
olfactory integration

Graphics designed by: Prateek Vishwa

### THERMAL AND OLFACTORY COMFORT

The current state-of-the-art technology can assess the parameters of comfort independently, but not as a whole.

As part of the work team, Idom has performed a study on thermal and olfactory factors for the first time by using the Fanger equations and CFD simulation.

Once the test environment has been defined, it will be possible to obtain the physical parameters and post-process them to achieve global comfort assessment.

### APPLICATIONS IN THE AERONAUTICAL INDUSTRY

At first, simulations have been moving toward work environments in the aeronautical industry; however, these tools can be applied to countless situations.


According to the parameters defined by the project team and approved by Applus, an industrial certification company, the project is currently in the testing phase.

In order to define perceived comfort, metabolic parameters (weight and height of the individual), thermal insulation (clothing, footwear, etc.), air velocity in different parts of the body, and other environmental parameters must be taken into account.



# 2.

## CONNECTING PEOPLE AND PLACES

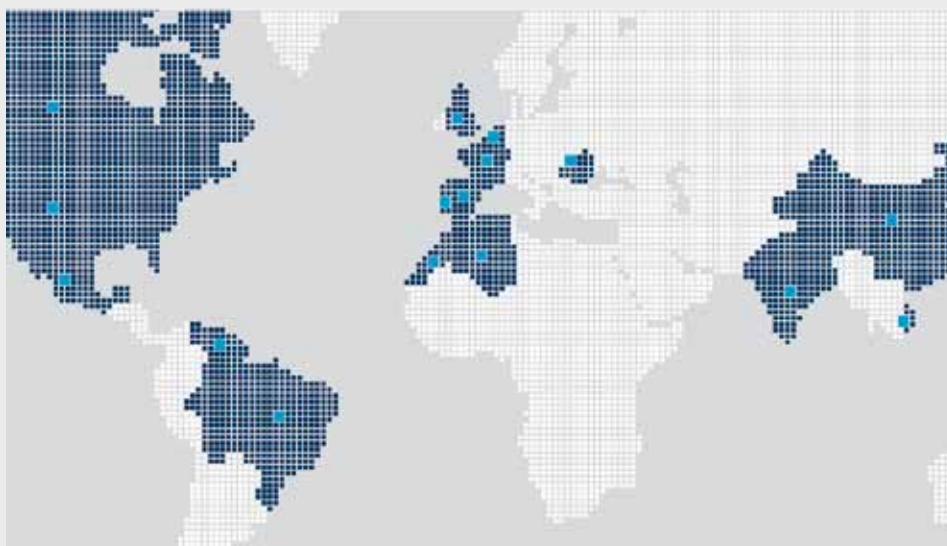
A full-page photograph of Manuel Mendes de Almeida, a middle-aged man with glasses, wearing a dark suit and a red patterned tie. He is standing with his arms crossed, smiling at the camera. The background is a bright, white studio setting with two diagonal tracks of spotlights hanging from the ceiling. The text is positioned in the upper left quadrant of the image.

“Infrastructure is the base for economic development: countries, regions, and industrial zones that want to grow must first get along in a safe and efficient manner.”

Manuel Mendes de Almeida  
Civil Engineer

By applying thirty years of experience, Idom lends support to public administrations, mixed entities, and private companies in both the planning and development of major civil infrastructure.

## A FEW OF OUR PROJECTS WORLDWIDE



### Countries in which Idom is operating:

Algeria / Brazil / Canada / China / France / India / Morocco / Mexico / Netherlands / Portugal / Romania / Spain / United Kingdom / USA / Venezuela / Vietnam

### Ho Chi Minh City (Vietnam)

#### Subway

Ho Chi Minh City (formerly Saigon), with a metropolitan area of over 9 million people and one of the highest population and economic growth rates in Southeast Asia, has serious problems with traffic congestion and pollution. It is estimated that there are over 2.5 million motorcycles in the urban zone alone. As a result, the Government of Vietnam has planned for the construction of 6 subway lines and is giving Idom the responsibility of performing a feasibility study of subway lines 5 and 6. The project entails studies of passenger demand, station typology, construction methods, facilities, rolling stock, garages, conditions, and an environmental impact analysis.

### Connecting Spain and France

#### Perspectives for 2020

In April 2008, a Spanish-French summit was held in which Public Works ministers decided to boost talks about high-speed rail. Idom is in charge of creating the masterplan for the construction of the new railway section called Vitoria - Dax. The plan will define rail services for passengers and freight based on the infrastructure data of the current and planned lines from studies of demand and potential train types. The project study is being conducted for the European Economic Interest Group (GEIE), which is an organization within the European Union that is responsible for promoting cross-border cooperation.

### Baixo Alentejo Expressway

#### Portugal

Through the public institute "Estradas de Portugal", the Government of Portugal has launched a road concession plan with the goal of constructing 1,300 kilometers (808 miles) of new roads and highways. In February 2009, SPER (which includes Iridium, a subsidiary of ACS) was given the responsibility of the sub-concession of the Baixo Alentejo Expressway, which will connect the cities of Sines and Beja with 84 kilometers (52 miles) of expressway. They will also construct the duplication of 43 km (27 mi) of roadway and improve conditions of 220 km (137 mi) of existing roads. Idom is working on the construction project of the entire sub-concession.

### Guadalquivir's New Floodgate

#### Connecting Seville to the Sea

This new infrastructure will extend the seaway by 20,000 DWT and 290 m (951 ft) in length, resulting in large-scale cost reductions and consequently a four-fold increase in the port's competitiveness. Idom has assisted the Seville Port Authority since the start of the project by providing technical assistance to the Project Department in UTE with Geocisa. In addition, Idom has carried out several technical projects including a thermo-mechanical analysis of the floodgate's critical modules with the goal of optimizing the construction process and the stress-strain analysis of the dike closure; Idom has also managed the entire construction project.

## THE AVE IS COMING TO VALENCIA SERVICE WILL COMMENCE IN 2010

The high-speed train service connecting the furthest points of the Iberian peninsula to the East coast is about to become reality. The project has required significant involvement in Valencia given that the project has been carried out while maintaining existing tracks.

### Accessing the Channel

To provide access to the AVE, a 480 m (1,575 ft) tunnel has been constructed under part of Ronda Sur of Valencia, which runs a short distance from the tracks currently in service. The work was carried out with low-gauge machines, which have allowed for the construction of a continuous perimeter screen made of reinforced concrete. On top of this screen, Idom has constructed a flat slab made of concrete forming the roof of the tunnel, and the part below the screen has been excavated to form the tunnel floor.

### Platform

The implementation of a double track platform running internationally has specified operations for moving furniture and for the partial demolition of the existing industrial complex within the work zone. The railway platform in service has been guaranteed stability through an instrumentation system that provides live data from the railway platform and allows access to remote data.

### Temporary Rail Station

In order to provide passengers access to the high-speed trains while completing the final station scheduled for 2014, a temporary rail station will be built with three platforms; two of which will be 230 m (755 ft) long and one of which will be 410 m (1,345 ft) long, giving access to six international routes. Urban planning projects include the implementa-

tion of a parking structure with 450 spaces which will integrate into the current urban context.

### Structure

Produced with lightweight materials that are reusable for the most part, the station is illuminated with sunlight and is composed of a metal roof over steel-beam trusses for the main support of the deck and the polycarbonate perimeter fences.

Idom has been responsible for controlling and monitoring these projects within a broader framework aiming toward temporary international access to Valencia.





# 1.6 HOURS

is the journey duration between  
Madrid and Valencia





1

# 2 MILLION

passengers will pass through the  
Central Station annually



2





## TARRAGONA. CENTRAL STATION

### HIGH-SPEED STRATEGIC CENTER

Within the province of Tarragona, two major railway lines will converge: the Corredor Mediterráneo and the Madrid - Barcelona - French Border High-Speed Rail Line.

The new station, equidistant between the cities of Reus and Tarragona, will boost economic and tourism development in the region in which it will be built, due to the proximity of the Reus airport and the junction between the AP7 expressway and the highway connecting Reus and Tarragona (T11).

#### Connecting Countries and Capital Cities

This intersection of two main lines will also allow for the expansion of railway service such as various routes linking cities (Madrid, Barcelona, Valencia, Zaragoza, Tarragona, Lleida) and connecting the Corredor Mediterráneo with the French border.

#### The Station Project

The new station project is a clear example of a multidisciplinary team project which has dealt with several issues, namely railway infrastructure, architecture, landscaping, urban planning and road construction, se-

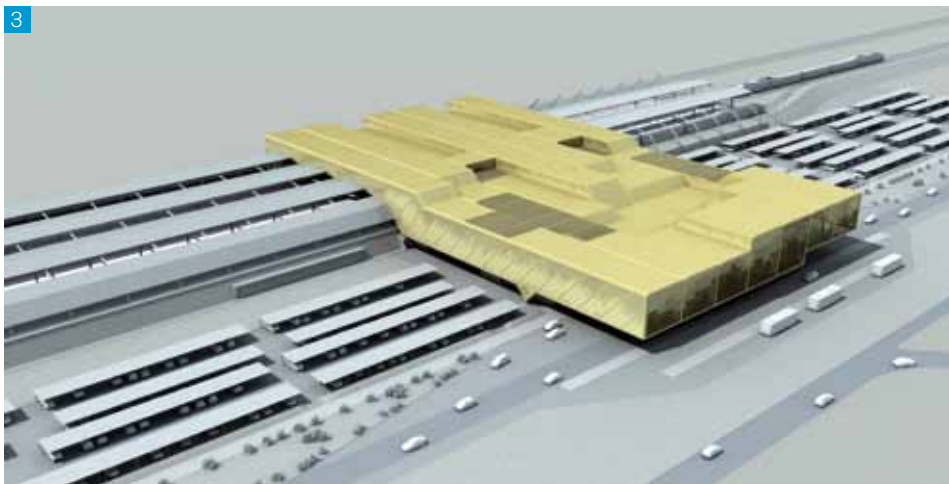
curity facilities, passenger information, and supervision.

#### Architectural Design

The architectural design aims toward accentuating the entrances and supporting the flow of the passengers inside the station in such a way that both actions are performed appropriately while taking the building's entrances and platforms into consideration.

#### Other Important Aspects

There have been other important parts of the project, including railway infrastructure construction work, electrification, security and communication facilities, and additional work regarding the international connection of the Corredor Mediterráneo and the Madrid - Barcelona - French Border High-Speed Rail Line. The lines in this project cover a total length of 26.9 km (16.7 mi); 10.6 km (6.6 mi) of which are double track and 16.3 km (10.1 mi) are single track.



- 1 Platforms
- 2 Foyer
- 3 General View





Photographed by: José Manuel Cutillas

## VITORIA LIGHT RAIL

Vitoria-Gasteiz has recently joined the list of European cities that have opted for a light rail line to promote mobility in cities by means of public transport as opposed to private vehicles.

Idom put the whole project together for the tram line, depot and garage building, and helped in the management of building and getting the lines up and running. The project included managing the network, infrastructure (platform, deviation of services, expropriation) and associated urban planning, the design and integration of nineteen stops, catenary at 750V DC, four drive-in substations (three on route and one in depot) and building services (traffic light priority system, railway signaling, communications and remote controls), rolling stock, and ticketing (vending and issuing machines using contactless technology).

- 1 Vitoria Train Garage and Depot Building
  - 2 Barcelona Subway: La Sagrera Tunnel
  - 3 Barcelona: Llefià Station
- Images 2 and 3 are a courtesy of GISA



## BARCELONA SUBWAY

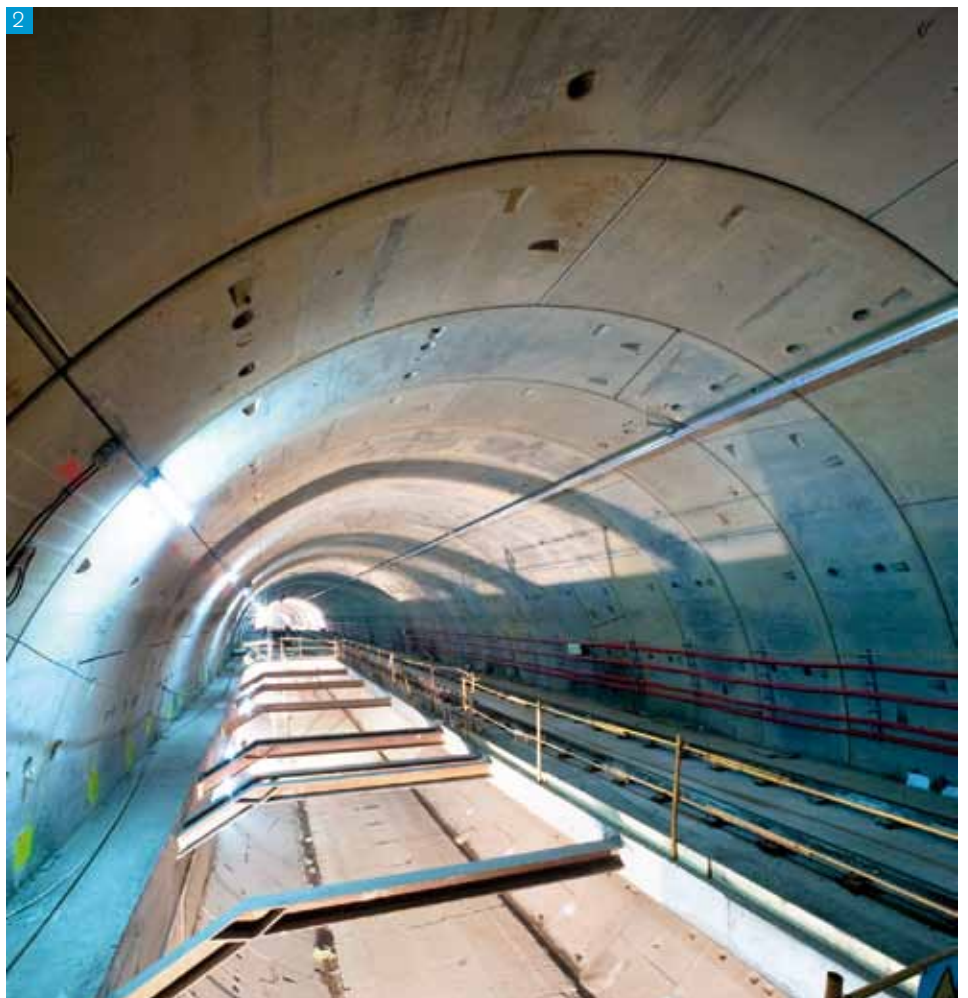
The new Line 9 is one of the Catalanian government's largest investments in transportation infrastructure. Once completed, the metropolitan railway will circulate around Barcelona, Badalona, L'Hospitalet, El Prat, and Santa Coloma de Gramanet.

### Construction Technology

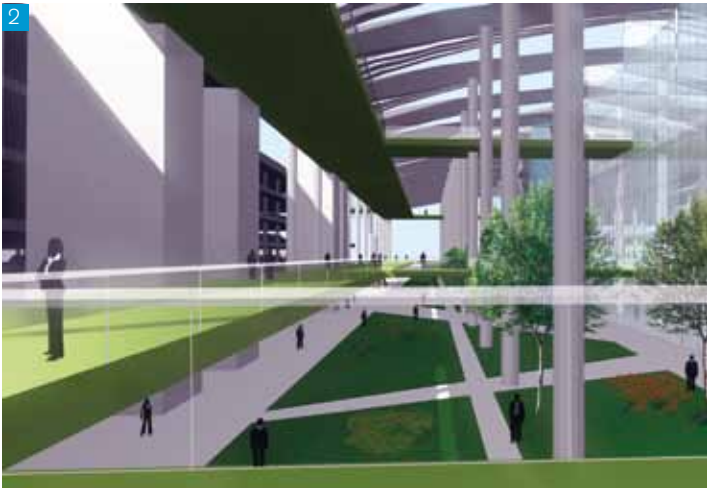
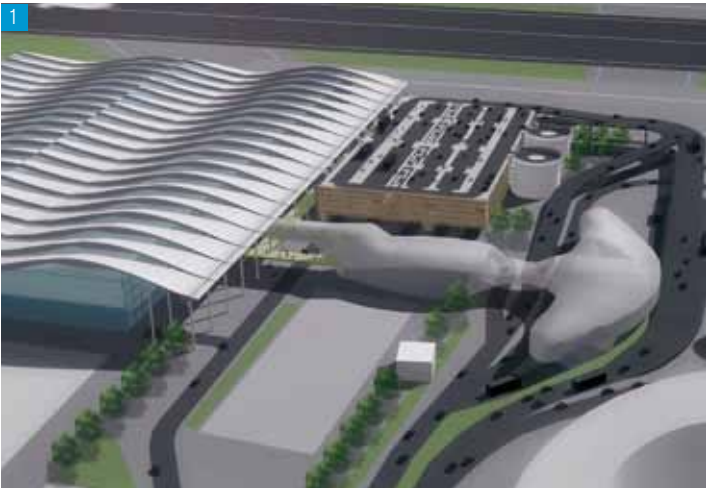
Due to the geological and geotechnical complexity of the terrain and the density of underground infrastructure that was to be covered, the line has been constructed at great depth: up to 90 m (295 ft) below ground level. Soil heterogeneity has led to the subdivision of the design into 4 stretches. In order to run stretches II and IV, Tunnel Boring Machines (TBM) have been used, which are 12 m (39 ft) in diameter and suitable for drilling into rock and the ground.

### Multidisciplinary Work

Idom has collaborated with GISA to conduct the entire L9 project on evacuation and emergency as well as the advanced ventilation project study. In stretch I, Idom collaborated with the Technical University of Catalonia to perform the civil work project of two stations in complex terrain, as well as the project for the architecture and building services of 6 stations. In stretch II, Idom carried out the project management of eight stations and collaborated with 12 meter TBMs for the tunnel project. In stretch IV, Idom developed the site management of Intercambiador de la Sagrera and is currently developing the monitoring and supervision unit of thirteen stations.







- 
- 1 Preliminary design study of the new parking facility for T2A (Options Stage)
  - 2 Gateway space between the new parking facility and Terminal T2A (Options Stage)
  - 3 London Heathrow Airport. Photography courtesy of Ferrovia



## HEATHROW, CONTINUALLY GROWING

---

Heathrow is the world's busiest international airport. Regarded as the hub of the aviation world, it is continually growing. Idom is working on several projects as part of this growth.

---

### MULTI-STOREY CAR PARK FOR THE NEW HEATHROW EAST TERMINAL T2A. DESIGN OPTIONS STAGE

As an integral component of the future Terminal 2A, plans are under development for a new car park providing direct access to the new terminal. Various options and distribution strategies have been evaluated by Idom, to provide a building that will have a capacity of 2,000 car bays spread across 4 levels.

The most significant element of the design concept is a new space located between the car park and the new terminal building, sheltered by the terminal's roof canopy. This space will have an area of approximately 7,500 m<sup>2</sup> (24,606 ft<sup>2</sup>), and is currently planned as a landscaped zone of trees and planting, crossed at high level by bridges which provide access to the terminal.

Idom is part of the HETCO Team (Ferrovial Agromán UK in joint venture with Laing O'Rourke), which has been appointed by BAA to carry out the Options Design Stage. Idom is taking on board the role of lead consultant, structural and environmental engineer and passenger / vehicle traffic specialist. The architectural concept has been developed in close collaboration with Grimshaw Architects.

### TERMINAL 3 INTEGRATED BAGGAGE FACILITY

The new automated baggage processing system will handle up to 50,000 bags per day and will be connected to the new T5 through a purpose-built baggage tunnel. The main design challenge has been the integration of the baggage system, which occupies 40,000 m<sup>2</sup> (131,234 ft<sup>2</sup>), with the new facility's structure & services, whilst maintaining continuous 24 hour operation of the terminal across the complex network of airport services which include an existing underground tunnel below the building. 3D integration and design software is being utilized by Idom for this project.

Idom is working alongside Pascall+Watson and Vanderlande as part of the Ferrovia Agromán UK Team. Idom is taking on board the role of lead consultant, structural and environmental engineer.





## ROAD INFRASTRUCTURE A VERY PROFITABLE INVESTMENT

Idom has extensive experience in the field of road infrastructure: highways, roads, tunnels, viaducts, and bridges.

The services provided range from the drafting of basic studies to the development of construction projects, including site supervision and environmental monitoring of those projects. Some projects that are currently underway include the following:

**Baixo Alentejo Expressway (Portugal)**  
Construction Project.

**Variante Sur de Bilbao. Step 9**  
Construction Project and Site Supervision.

**Murcia Highway. Connection between the MU-30 and the A-30**  
Project Control and Monitoring.

**A-40 Expressway. Stretch between Tarancón and Alcázar**  
Project Control and Monitoring.

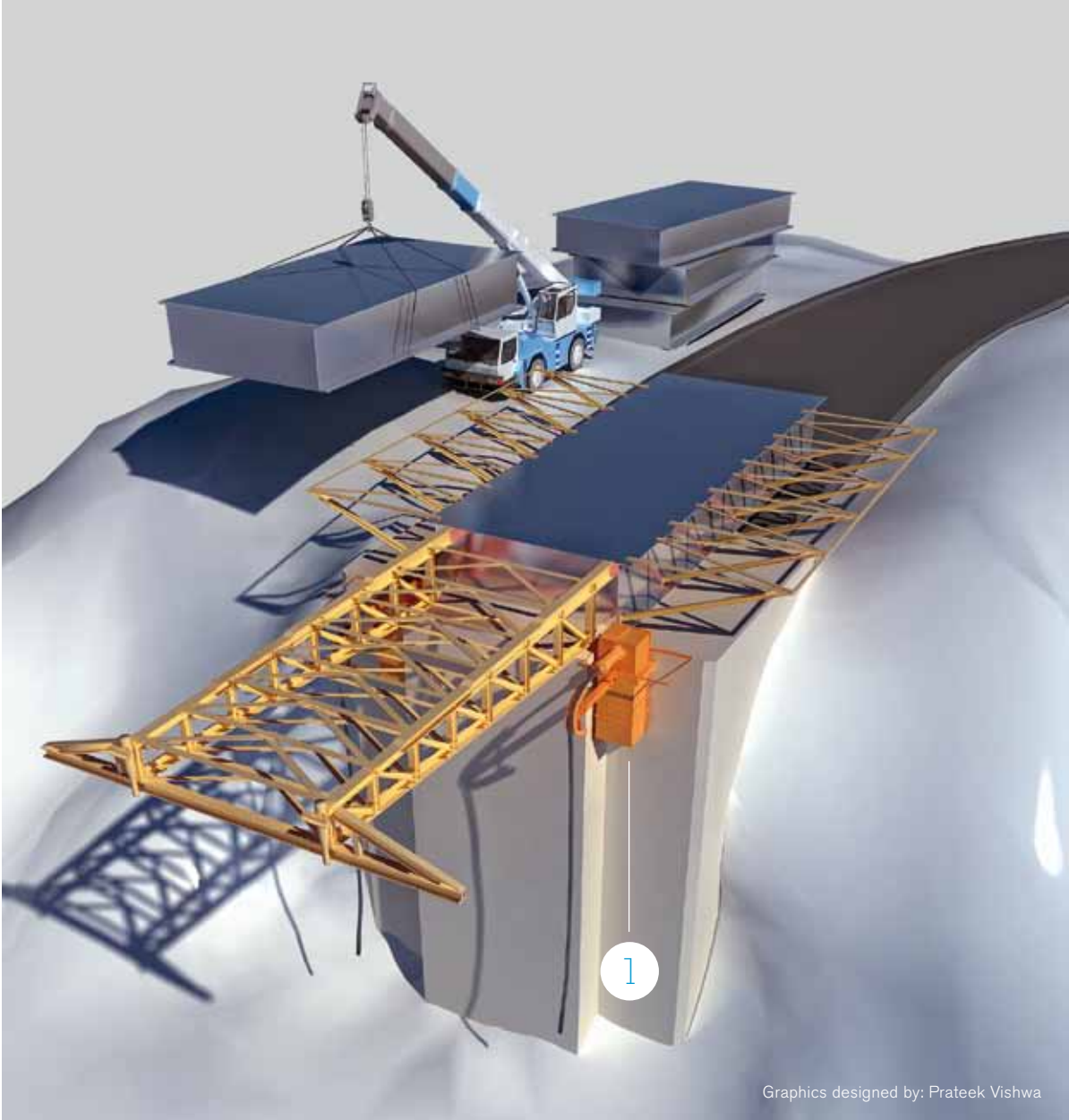
**Junction between Baix Llobregat Highway and the AP-7**  
Project Control and Monitoring.

## OUTLINE OF “ABACUS”

This project involves pushing a metal board horizontally from one end of the gorge to the other end; the distance covers 380 m (1,247 ft). The board rest on several piers which are separated by uneven distances.

- 1. The board glides as a result of the hydraulic jacks pulling a cable secured to the piece at the starting end.
- 2. In order to increase the length of the board, crates of structural steel are welded at the starting end.

- 3. To achieve the desired mechanical resistance, the 104 m (341 ft) board is soldered to the “abacus” (the crowning piece of the main piers). At last, concrete slabs are arranged on top of the metal board.



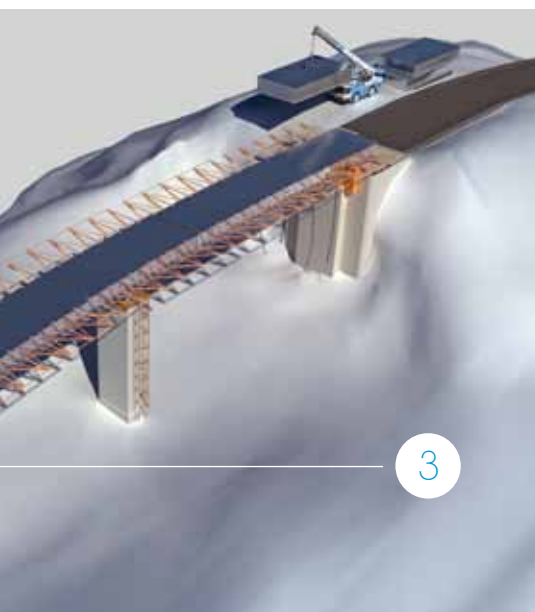
Graphics designed by: Prateek Vishwa

## THE "PAREDES" VIADUCT

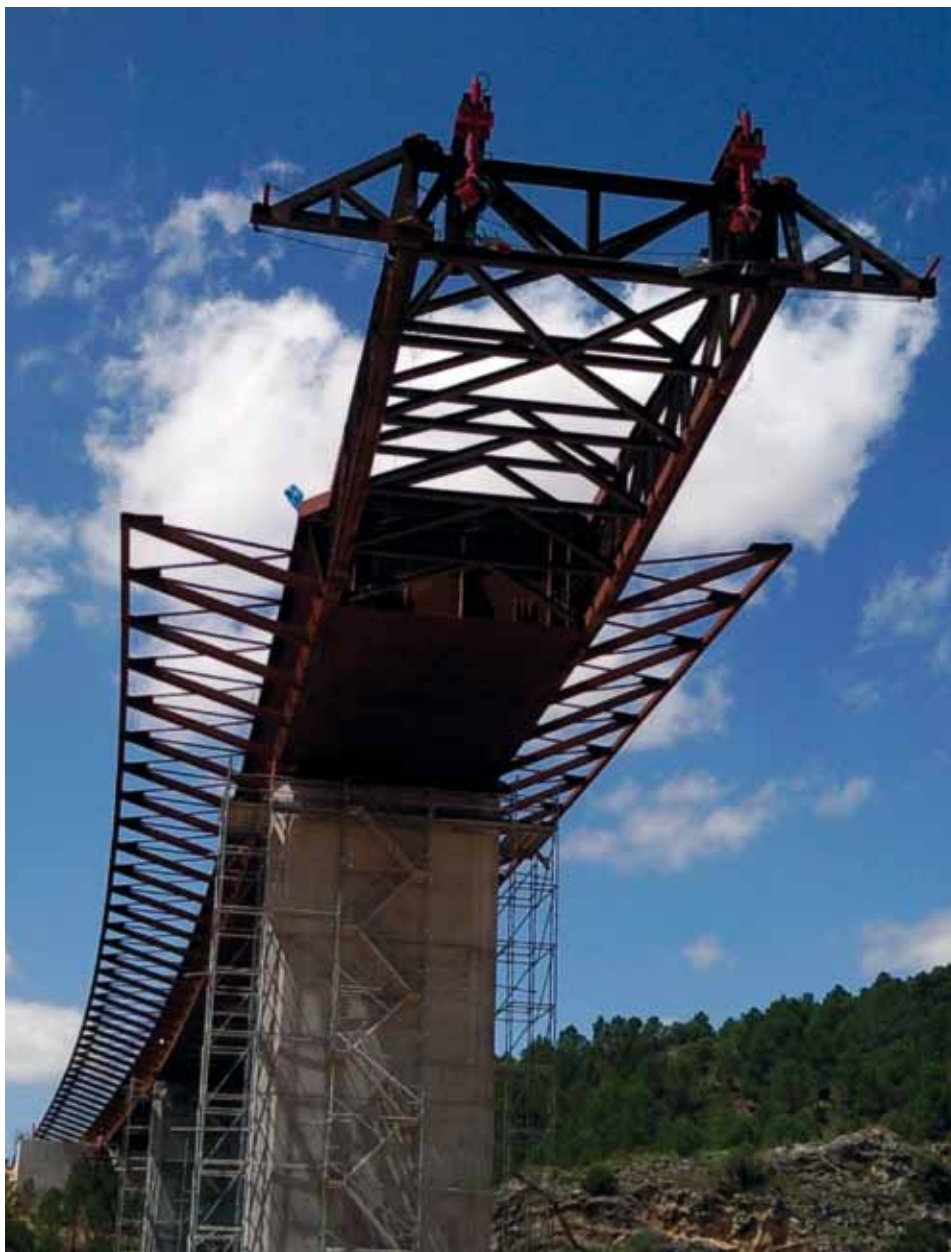
### A UNIQUE CONSTRUCTIVE SOLUTION

The Castilla - La Mancha (A-40) highway, which connects Ávila with Teruel passing through Toledo and Cuenca, will connect the West side of the peninsula with the Mediterranean without having to pass through Madrid. The 22 km (14 mi) stretch between Tarancón and Alcázar del Rey covers a zone with considerable environmental value. The most

challenging obstacles include working around the "Estrecho de Paredes" (Paredes Strait), which runs parallel to the current road, as well as preserving the Riansares River and the remains of an old railroad. In order to keep environmental impact to a minimum, Idom created a constructive solution called "abacus".




3



# 3.

## CREATING MEETING PLACES



"The term 'meeting' denotes the relationship between human beings, but it also expresses the relationship between humans and nature. In Idom, we use technology to create meeting points for humans to meet not only with each other but also with the natural environment."

César Azcárate  
Architect



Wherever human beings pursue a common goal, it becomes necessary to have an area that is recreational, cultural or productive.

Idom's architects and engineers aim to fulfill this need by designing areas that allow people to form relationships and share a mutual understanding.

## A FEW OF OUR PROJECTS WORLDWIDE



### Some of the countries in which we work:

Angola / Brazil / Canada / Chile / China / USA / Spain / France / India / Libya / Morocco / Mexico / Netherlands / Portugal / United Kingdom / Romania / Venezuela

### Misratah University Libya

The new campus for "7th of October" University in Misratah (Libya) is located within a landscape of great natural beauty along the Mediterranean coast. Since the designing phase of the masterplan at the start of this project, Idom's intention was to create areas that incorporate nature and bring about places for meetings, communication, the sharing of knowledge while employing Mediterranean-style architecture and typical lifestyle. These areas are meant to promote an experience among the various faculties while fulfilling the most important college goal: convey universal information as history, tradition, culture, nature and knowledge come together.

### Industrial Plants United Kingdom

The expansion of Saica's packaging facilities in the UK are the result of a multidisciplinary project involving logistics planning, flood insurance studies, architectural design and the entire engineering component (Wigan and Thrapston plants). In addition, Idom has performed the auditing of asbestos, emissions and electrical installations within eight facilities.

### Affordable Housing Morocco

In Safi, which is a city located in Northwest Morocco along the edge of the Atlantic Ocean, Idom is performing the first phase of project management of housing development and construction (approximately 300 houses) within a residential complex of 1,500 affordable homes.

### Bicentennial Buildings Mexico

The headquarters of Esmeralda technopole is one of the projects being developed to mark Mexico's 200 years of independence in 2010. The building has been envisioned as an outdoor sculptural object and will represent this historical moment.

The Hidalgo science and technology park is dedicated to the information and communication technology sector, which has been the starting point for designing the "Cinvestav" building. This building is meant to be a media-theque in which training and research are added to the traditional roles of information distribution.

### Energy Goals for 2030 Spain

In order to become deeply acquainted with energy consumption in the construction sector, a building energy analysis has been performed for the Institute for Energy Diversification and Saving (IDEA). This analysis includes all variables affecting building energy, such as climate zone, how building is used, type of energy being consumed, number of years since construction, type of building, etc., for each type of consumption (heating, cooling, DHW, lighting, etc.) The end result has been an application, called "Preseed", through which the project study results can be viewed and various scenarios can be created.



53,000

Seating Capacity of the New  
Stadium of Bilbao Athletic Club

## SPORTS FACILITIES

- 1 Model of the new San Mamés (left)
- 2 Aerial view of what the remodeled Balaidos Stadium will look like
- 3 Interior view of the Nou Moles Sports Center

Professional sports facilities require equipment that is designed differently than ordinary sports equipment for general use — the same goes for those with disabilities. Idom specializes in designing both types of sports equipment.

### REDESIGNING BALAIIDOS STADIUM (VIGO)

Spain and Portugal's candidacy in the 2018 and 2022 World Cup and the 2020 Confederation Cup may become a historical opportunity to remodel the Balaidos Stadium. Idom's design anticipates a project implementation method which allows for the continuation of the stadium's normal activities.

### NOU MOLES SPORTS CENTER (VALENCIA)

Designed with the following sustainability criteria: passive cooling systems, water saving, natural ventilation (free-cooling system, solar and photovoltaic panels and recyclable materials); this sports center has won First Prize in the local preliminary draft competition held by Valencia's City Hall.





## THE NEW SAN MAMÉS STADIUM ANOTHER JEWEL FOR THE BILBAO ESTUARY

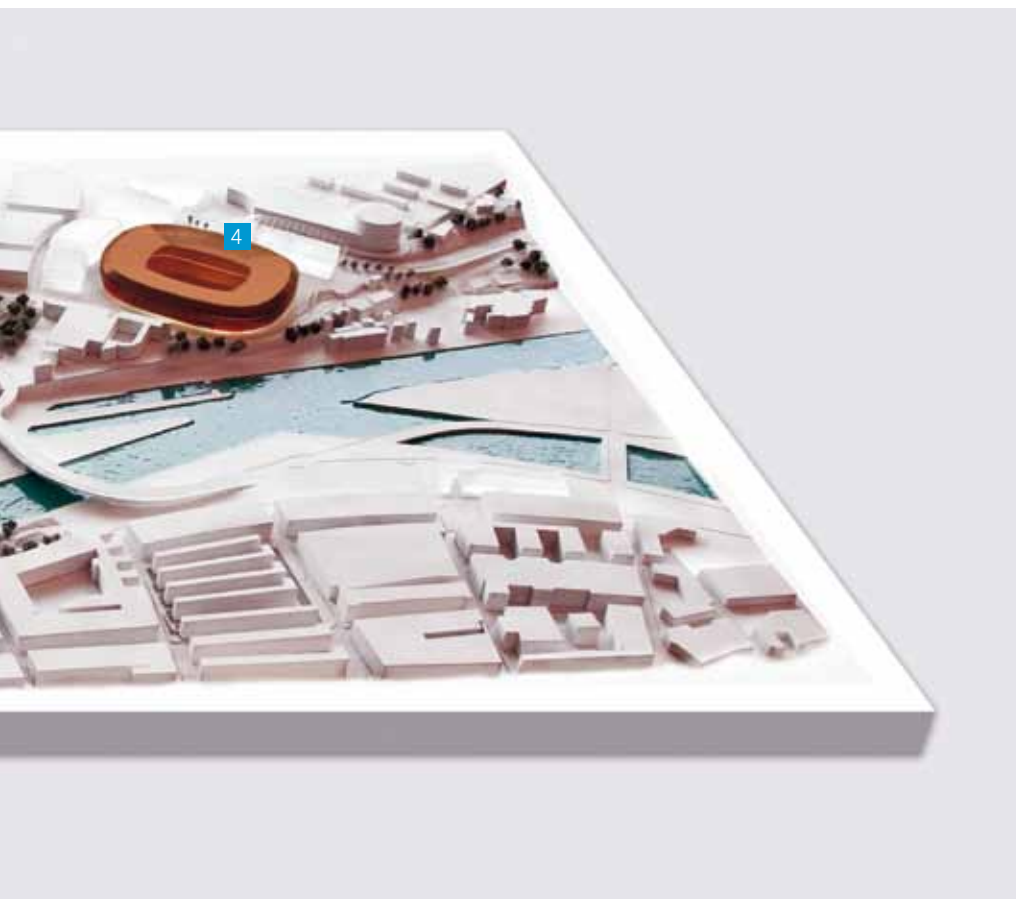


### "ELITE" STADIUM

The new San Mamés stadium for the Athletic Club is a key part of Bilbao's urban renewal. The social significance of an institution like the Athletic Club in the city and in the Basque society makes the stadium a reference icon.

The stadium was designed with equipment and facilities to be an "Elite Stadium", which is a requirement for hosting major international soccer tournaments. It will have shops, museums, box offices, offices, restaurants, four locker rooms - which is a UEFA requirement if two official tournaments are played in a row - and an underground parking lot with restrooms, security, radio and television.





## BUILDING STRUCTURE

With stands designed to maintain a constant pressure effect, the stadium will also have internal support with a unique design, as well as an outstanding permeable façade with an image representing the city.

The field is divided into six floors; two of which are underground levels with the purpose of maintaining the structure in its environment while making the most of the area and providing greater potential.

1 GUGGENHEIM MUSEUM  
Architect | Frank O. Gehry  
Executive Architect | Idom

2 IBERDROLA TOWER  
Architect | César Pelli  
Executive Architect | Idom

3 DEUSTO BRIDGE  
Authors | Rotaeche, Artiñano & Bastida (1931)  
Complete Restoration | Idom (2009)

4 SAN MAMÉS STADIUM  
Architect | ACXT / Idom

## URBAN PLANNING

In the last few years, Bilbao has been experiencing a phenomenal urban renewal of extreme importance which is currently being analyzed by numerous international forums.

The Nervión Estuary, which is a connecting thread of the urban renewal, articulates countless architectural elements of excellent quality; some of which were produced locally and others by international companies.

New bridges, buildings and urban planning projects are drastically changing the perspectives people have about the city.

Located on a row of balconies, the stadium will be among the new faces overlooking the estuary; an important piece of architecture that Bilbao is showing to the entire world.

## ECONOMIC IMPACT

Throughout the construction period, the new stadium will generate a total GDP of 104.4 million euros and help maintain 2,100 jobs.

When in use and throughout the course of its normal activities, there will be an increase in GDP of 200.8 million euros and the maintenance of 5,401 jobs.

## RECREATIONAL AREAS: IBAIONDO COMMUNITY CENTER



1,900

tonnes of CO<sub>2</sub> are saved  
annually with the current energy  
consumption plan

## CULTURE, LEISURE AND SPORTS

These public resources aim to be the center of life within a neighborhood and they have been designed in such a way to attract people while providing enough information about various services including the following: theaters, public swimming pools, solariums, cafés, sports centers, libraries, workshops, offices of citizen services, and so on. The visual effects are achieved through polymer concrete facades with a chromaticity strengthened by the alteration of transparent and translucent surfaces.

## THERMAL ZONING

The building's energy sustainability has been achieved through thermal solar panels (700 m<sup>2</sup>) and by differentiating systems and areas through applications and operating systems in such a way that it would be possible to turn off the heating and cooling systems in unused areas at any time. The choice of a precast concrete structure has been made in order to reduce costs, implementation time and increase technical reliability.





**Ibaiondo Community Center's Heating and Cooling Systems**  
A central cooling system was chosen for the community center as well as a central heating system through gas boilers. All of this energy is distributed to different areas of the center through systems equipped with free-cooling and heat-recovery features. In addition, the thermal solar panels provide energy for heating the swimming pool water as well as the domestic hot water. This meticulous design allows for an approximate annual saving of 1,900 tons of CO<sub>2</sub> emissions into the atmosphere.



1 Heated swimming pool through solar panels  
2 Theater  
3 Basketball court





## OTHER EXCELLENT CONFERENCE VENUES

### Palace of Exhibitions, Conferences and the Performing Arts Vitoria - Gasteiz

This is an international center dedicated to the areas of exhibitions, conferences and performances designed with the vocation to be internationally recognized for both its functional and acoustic excellence. Project are expected to commence in the second half of 2010. The architectural project is being conducted by "Bayón Architects". Yasuhisa Toyota of Nagata Acoustics has been proposed to meet the objectives of excellent acoustic production within the various rooms of the palace.

**CLIENT** | Ensanche 21 Zabalgunea  
**SERVICE** | Project Management

### International Convention Center Madrid

This is a "rising sun" emerging between the four skyscrapers of Paseo de Castellana. It strategically positions Madrid as a target within the business tourism sector at an international level. Located in the new economic and financial district of the capital, the building will be 120 m tall with an area of 240,000 m<sup>2</sup>. It will house two bifocal auditoriums and a theater with capacities of 6,000 people and 1,400 people respectively, among other facilities.

**CLIENT** | Madrid Areas and Conferences  
**SERVICES** | Project Management





94%

of college graduates find jobs  
within the first three months



## EDUCATIONAL AREAS BUSINESS SCHOOL IN BEIJING

Asia's best Business School (according to a "Financial Times" survey) will have a new main campus designed by Idom.

Despite its youth (founded in 1994), the China Europe International Business School of Shanghai (CEIBS) is considered the best business school in Asia and among the best in the world (ranked 8th in 2009 by the "Financial Times" out of the top hundred business schools in the world).

The young university, founded with the support of the European Union, is booming at a high speed, receiving students from worldwide. In a few years, it aims to have a global impact through providing continuing education to Chinese company managers while expanding internationally.

The new campus is located on the outskirts of Beijing in Zhong Guan Cun Science Park and its design is based on three basic criteria: the teaching function of the building, the park planning (which raises the buildings as if they were islands in the ocean) and the need to undertake the project in two phases without it being perceived as incomplete at the end of the first phase.



- 1 North façade of the new building
- 2 South façade (November 2009)
- 3 External view of the first floor

## EDUCATIONAL AREAS

### COLLEGE IN MISRATAH (LIBYA)

The "7th of October" University will be located near the ancient Leptis Magna, which is a city that rivaled against Alexandria during the time of Emperor Septimus Severus (second century AD).

Reflecting the times of Roman and Arab history, the buildings of various faculties will intertwine within the new campus with the intention of creating social, study and relaxation areas. The college will hold its most important events and ceremonies in a central area of the campus.

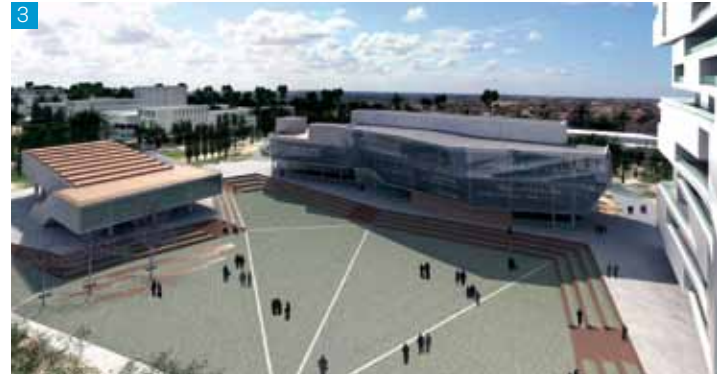
The design of the campus as a whole follows a flexible and scalable model which allows for steps toward a successful future.

The materials, building orientation, interior circulation within campus (roads and walkways), sun control of different paths and building construction have been designed to achieve a sustainable system.





- 
- 1 Main boulevard between faculties
  - 2 Main library and administration building
  - 3 Central area of campus



# 4.

## SUPPORTING DEVELOPMENT AND COMPETITIVENESS



"No matter how small a client's project may seem, Idom ends up making a huge difference. Our style of approach toward projects is to analyze the issues within a broad technical, economic, social and international context."

[Marta Álvarez Ochoa](#)

Economist for International Projects



Our strategic approach toward issues consistently allows for the development of practical solutions.

This skill of articulating theory and practice is highly valued by clients in both the public and private sectors.

## A FEW OF OUR PROJECTS WORLDWIDE



### Countries in which Idom is operating:

1 Angola / 2 Saudi Arabia / 3 Algeria / 4 Belgium / 5 Bolivia / 6 Brazil / 7 Bulgaria / 8 China / 9 Cyprus / 10 Colombia / 11 Costa Rica / 12 Croatia / 13 Ecuador / 14 USA / 15 Egypt / 16 France / 17 Guatemala / 18 Honduras / 19 India / 21 Italy / 22 Jordan / 23 Lebanon / 24 Libya / 25 Morocco / 26 Mexico / 27 Pakistan / 28 Panama / 29 Peru / 30 Portugal / 31 United Kingdom / 32 Romania / 33 Serbia / 34 Syria / 35 South Africa / 37 Turkey / 38 Venezuela / 39 Vietnam

### Centers for Technology and Innovation Andean Region

In order to achieve higher levels of development and competitiveness, countries within the Andean Region (Bolivia, Colombia, Ecuador, Peru and Venezuela) must move toward economic systems based on knowledge. To this end, Idom is working on strengthening national systems of science, technology and innovation in those countries while promoting research activities, technological development and overall quality. Idom plans to perform a comprehensive diagnosis and technology gap analysis as well as implement a pilot project that responds to priority demands in each country to develop their skills in science, technology and innovation. The project will range from the design of a comprehensive management evaluation system of the centers for technological development to the design of a strategic plan and feasibility studies of a technology park.

### Business Solutions Strategies and Tools

In the past year, ERP solutions have been implemented in multinational companies; projects have been carried out with a distinct perspective. At the beginning, information systems were being aligned with the company's management model, implementing flexible, scalable solutions directed toward people. As work progressed, the implemented solutions were used to develop more innovative management models. This process of "double-purpose engineering" is possible since Idom has both the strategic knowledge (ability to carry out management and alignment plans) and

operational knowledge (ability to implement and monitor specific solutions for each client).

### The EU-Algeria Association Agreement

Established in 2005, the Association Agreement between the EU and Algeria aims to create an adequate framework for political dialogue promoting economic, social and cultural development. The signing of the Association Agreement involves an important modernization process of the Algerian public administration and reforms within the private sector. Idom is in charge of managing the project and consulting two institutions closely linked to the Association Agreement: the Ministry of Trade and the Ministry of Industry. The goal is to improve the management and efficiency of these administrations. The consulting team will use two instruments of the EU that have already been successfully used in other countries: "Twinning", in the field of competition, environmental management, financial management, trade, etc., and TAIEX actions (Technical Assistance Information Exchange).



## TECHNOLOGY PARKS A PATH TOWARD COMPETITIVENESS

Technology parks contribute decisively to technological development by promoting the exchange of knowledge and the transfer of technology between companies, technology brokers and universities, as well as encouraging the creation of innovative companies.

Beyond the mere promotion of urban planning, park management companies need to take charge of supporting innovation and develop new services and infrastructure that make it possible.

The goals of this type of initiative and entrepreneurial renewal include: the creation of relationships and collaboration between companies, technology and cultural diffusion of the innovation, supporting entrepreneurship and the creation of new technology-based companies, and the management of aid for R&D projects for technology-based companies. Idom has been involved in both the physical design and the activities of several technology parks.

IMAGE | BTEK Technology Interpretation Center



CLIENT | Bizkaia Technology Park  
SERVICES | Architecture and Engineering  
Project and Site Management

Supporting Development and Competitiveness



Photographed by: Aitor Ortiz



# MEXICO

## A STRONG COMMITMENT TOWARD TECHNOLOGICAL DEVELOPMENT

The Government of Mexico and the National Council of Science and Technology have designed the National Development Plan 2007-2012 and the Special Plan for Science and Technology 2008-2012 with the goal of promoting technological development.

In these plans, technology parks play a key role as centers of wealth generation in each local community as well as driving forces for a culture of innovation and competitiveness within the companies that are located in or associated with the park.

Idom has had the opportunity to support this project through institutions, such as the Department of Economic Development of the State of Mexico, the National Council for Science and Technology and the Council for Science and Technology of the State of Hidalgo, by planning and designing two technology centers in Atizapán and Hidalgo.



1 Esmeralda Technology Park  
2 & 3 Hidalgo Science and Technology Park

## ESMERALDA TECHNOLOGY PARK

The technology park of Atizapán de Zaragoza (state of Mexico) is a pioneer initiative that manages the flow of knowledge and technology amongst universities, research institutions and companies oriented toward information technology.

Idom has designed a strategic plan that has helped identify and select the model and approach toward the park as well as a proposal for planning out a plot of 45 hectares (111 acres); these are included within a masterplan. In addition, Idom has developed a management model and business plan.



Graphics designed by: Diego Uruñuela

## ENSENADA, BAJA CALIFORNIA

Idom is also supporting the Economic Development Department of Baja California to design its own instrument of innovation in the city of Ensenada, which is located along the Pacific Ocean and is a short distance from the US border.



## HIDALGO SCIENCE AND TECHNOLOGY PARK

Located in Pachuca (state of Hidalgo), this park includes technology-based companies, R&D centers, high-quality facilities as well as value added services such as the incubation and start-up of companies ("spin off") and so on.

Idom has designed the strategic plan, the masterplan for planning out 16 hectares, the management model and business plan of the park and is also involved in promoting the project and seeking funding.

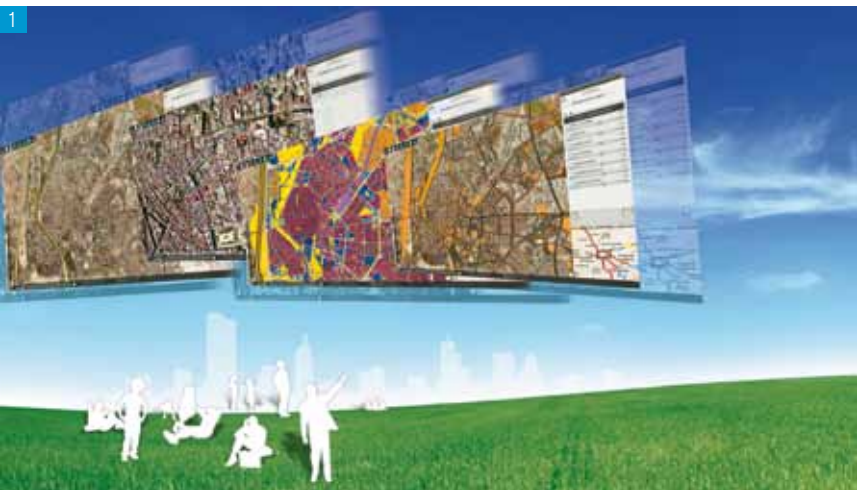


## STRATEGIC MANAGEMENT OF CITIES

In recent decades, Mexico has experienced an accelerated process of rural-urban migration which has caused major difficulties in the provision and management of municipal services. In response to this problem, Idom has formed a team which consists of Sedesol and the Metropolitan Autonomous University. This team has developed a planning strategy that will allow federal, state and particularly municipal governments to set out the fundamental criteria for the management of urban projects. The work has culminated with the publication of a methodological guide specifically geared toward cities in the area with half a million people and the organization of an International Forum.

## ONLINE URBAN PLANNING

The goal of online urban planning is to convert municipal planning into digital information, making it accessible to citizens and professionals on the Internet and interoperable for different administrations. Thanks to the boost from the Spanish government, online urban planning is being carried out in Spain through the public entity "red.es". Idom has developed and implemented the proposals of the program in four local entities, participating in the analysis phase and in pilot experiments.



1 "Online Urban Planning" Program  
Image courtesy of red.es  
2 Mexico City, headquarters of the International  
Forum for Strategic Management of Cities





49%

of Mexico's population live in cities  
with over 100,000 inhabitants



# 5.

## IMPROVING THE ENVIRONMENT

“In compliance with the meticulous and often demanding environmental regulations, we must develop systems to deliver real protection of the environment so that we can pass this down to our children.”

[Simon Edwards](#)

Environmental Engineering Consultant



Public and private managers are increasingly aware that future generations will benefit from environmental initiatives.

Similarly, an increasing number of companies and governments request Idom's help each year in order to plan their projects from an environmental standpoint.

## A FEW OF OUR PROJECTS WORLDWIDE



### Balboa Refinery Extremadura

This is possibly the most complete and complex Environmental Impact Study that Spain has been able to process in the last few years.

### Greenhouse Gases Reduction of Emissions. Logistics Sector

Idom has worked for the World Bank to develop a project study on greenhouse gas emissions (GGE) in the logistics sector of various countries in the MENA zone (Middle East and North Africa). The study's primary objective was to assess the emissions of different activities within the sector, from road transportation as the main contributor to greenhouse gases to other forms of transportation such as by rail or sea, to the emissions associated with warehouses, terminals and other logistic activity areas. After counting the sources, the project study will analyze potential actions of reduction and their costs, as well as the volumes of investment required for each measure. The analyzed measures include: alternative energy sources (biodiesel), technological improvements (aerodynamics, engines, thermal insulation, etc.), operational improvements (route planning, etc.) and shifting toward more sustainable means of transportation.

### Waste Management and Treatment Turkey

In 2011, one million Turkish citizens from the provinces of Amasya, Bitlis and Kütahya, will have an urban solid waste management service that will manage 7.5 million tonnes of waste over the next 20 years. The projects involve the construction of three regional landfill sites, the closure of twenty-two uncontrolled landfill sites, the construction of five waste transfer plants, nine Green Dots, three medical waste treatment systems and two pilot composting plants. Seventy-five percent of the financing is provided by EU pre-accession funds. The project will mobilize over forty technical experts and site managers. Idom provides technical assistance to manage infrastructure construction, as well as the establishment and training of the groups responsible for overseeing its operation.

### Reclamation of an Ancient Quarry United Kingdom

The reclamation project of a Midland (Nuneaton) quarry to create an area for development was "highly commended" at the annual UK Ground Engineering Awards. The project includes the construction of an embankment 38 meters (125 ft) high, the largest of its kind in Europe. The use of materials has been one of the key elements, maximizing the use of rock fragments, quarry waste and foundry sand waste. Idom-Merebrook's responsibilities have included the conceptual design of the solution and site supervision for the client, Redrow Homes.

### Control of Hydraulic Projects Galicia

Through the Ministry of Environment, Land and Infrastructure, the Galician government will invest in a budget of over 868 million euros (1.2 billion dollars) until the year 2013 in the set-up and development of measures and actions within the Hydraulic Infrastructure Plan.

Since 2008, Idom has provided technical assistance in this ambitious plan, particularly in the sanitary projects of the Galicia - Costa Watershed; Idom has also been in charge of technical supervision, monitoring, surveillance, start-up operations and controlling security, communication tasks, and dissemination of projects. Client: Public Company of Hydraulic Works and Services of the Xunta de Galicia.

### Housing in Brownfields Contaminated Sites

On the grounds of an ancient quarry within the Bolueta neighborhood in Bilbao, Idom is undertaking an ambitious urban planning project that has won First Prize from the Vasco-Navarra Group of Urban Development Architects. After the demolition of the old industry, excavation and decontamination needed to be carried out. These urban development projects will affect, among others, the Nervión riverbed, the vegetation and fauna of the area and could pose risks of erosion and flooding. As a result, a thorough study has been carried out regarding the best practices of the projects, as well as a plan with specific measures for environmental restoration. Clients: Orubide and Vallehermoso.







## THE ATLANTIC FOREST ECOTOURISM DEVELOPMENT

The Atlantic Forest is a Brazilian plant formation bordered by the Atlantic coast and the states of Rio Grande do Sul and Piauí. Formerly, it covered major stretches of hills and cliffs of the Brazilian Plateau and extended to Paraguay and Argentina as a continuation of the Amazon Rainforest.

Although the extension of the Atlantic Forest has dramatically reduced and is currently one of the most threatened tropical forests worldwide, it is still one of the most biodiverse areas on the planet.

Moreover, to achieve a type of economic development that respects nature and can be sustainable over time, the Atlantic Forest population needs jobs that are not tied to contaminating and destructive industries. São Paulo's government is addressing this double challenge — human and environmental — with a project for ecotourism development.

---

Throughout the last century, the Atlantic Forest extension has reduced dramatically.

---

## NATURE, ART AND TRADITION

In order to assist São Paulo's Department for the Environment in this project, Idom is developing a network of business units linked to the surrounding villages of parks characterized by their unique ecosystems, such as Ilhabela, Carlos Botelho, Intervales, Petar, Diabo Cavern and Cardoso Island.



The project's graphic identity and spatial interventions designed by Idom aim to highlight the natural wealth of the region, which is characterized by waterfalls, caves and trails, while integrating the causes and forms of natural wealth found in the Atlantic Forest.



- 
- 1 Ribeira Valley and Atlantic Ocean in the background
  - 2 Quilombo Native Population (mostly descendants of black slaves)
  - 3 Diabo Cavern Provincial Park
  - 4 Graphic Identity of Project, created from natural elements of the Atlantic Forest





# 250,000

tonnes of biodiesel are used annually. 500,000 in a second phase

## A CLEAN ENERGY MILESTONE NEW BIODIESEL PLANT IN LA RÁBIDA

### MULTIFEED TECHNOLOGY Physical and chemical refining

In July 2009, a new plant was constructed, which will use vegetable oil without air emissions or pollutant discharge and with a storage capacity of 100,000 m<sup>3</sup> (328,084 ft<sup>3</sup>).

This will cover the needs of the old CEPSA refinery in La Rábida; in compliance with the new hydrocarbon regulation, 5.75% of biofuels should be sold, which is calculated based on the energy content of gasoline, as well as the total amount of gasoline sold.

Idom has performed the TurnKey Service and has been in charge of the engineering, processing, procurement, construction, installation, start-up and site management, while developing operations, storage areas, racking processes, and utilities.

---

A 55 million euro investment will create employment for 45 skilled workers.

---

### GLOBALLY BENEFICIAL BIOFUELS Europe raises the bar in overall responsibility

In order for biofuels to be beneficial at a global level, they must come from historically cultivated land or have a low environmental value and sustainable crops that are not intended for human consumption.

This ensures price stability for farmers and consumers as well as respect for biodiversity. As part of the "Climate and Renewable

Energy" package, the May 2009 European Renewable Energy Directive takes these precautions into consideration, which should be put together by Spanish legislation before the end of 2010.

All of these precautions have been incorporated in the Bio-Oils plant.





## AMERICA'S MOMENTUM FOR THE DIVERSIFICATION OF BIOLOGICAL SOURCES

### HAWAII

#### Biomass Gasification

The Hawaii plant will produce electrical energy from waste generated on the island (from construction, demolitions and car tires), which will be subject to a gasification process to reach a total electrical output of 12 MW.

The plant aims to alleviate two limitations of insularity: the energy deficit and the difficulty of waste disposal.

Idom has performed the complete basic engineering of the plant, including the systems for receiving and storing raw materials, power block systems and other related assistance.

### MINNESOTA

#### Biodiesel

How can cheaper fuel be obtained through more diverse feedstock?

The answer lies in the McGlyan process — named in honor of its inventors McNeff, Gyberg and Yan — which is a continuous flow process with metal oxide catalysts that minimize glycerine residue, doesn't require the use of water and can be powered by nearly 30 different products, some being natural (coconut oil, seaweed oil and palm oil) and others being distilled (grain, animal fat and industrial fat).

Idom has performed the engineering component for a plant producing 11.4 million liters (3 million gallons) annually through the process created by Ever Cat Fuels in the laboratory.

### INDIANA & ILLINOIS

#### Bioethanol

Until now, ethanol (which is used both for increasing the octane level of gasoline and for directly mixing with gasoline), has been primarily based on the corn plant.

A new technological development that Abengoa Bioenergy is currently launching will use agricultural waste as a primary source, such as cellulose or biomass ethanol.

Abengoa Bioenergy's technology allows agricultural waste, such as cellulose or biomass ethanol, to be used as the primary source.

Idom has provided technical assistance to COFIDES (Spanish Development Funding Company) in the analysis of its investment in the American company Bioenergy Abengoa, which plans to build two plants in Mt. Vernon (Indiana) and Madison (Illinois) to produce maize bioethanol. These plants will have a combined capacity to produce 666.2 million liters (176 million gallons) annually using Vogelbusch technology, which is one of the most efficient technologies from an energy and environmental standpoint.

Even before the US government decided to support biofuels, Idom had started working in a few pioneer projects for fuel diversification.

# 3 MGAL

The Ever Cat Fuels plant will produce 11.4 million liters (3 million gallons) of biodiesel annually



# 6.

SEEKING  
A SUSTAINABLE FUTURE

“Environmental commitment is not only about renewable energy, but also involves the efficient management of the CO<sub>2</sub> produced by fossil fuels.”

[Kristie Williams](#)

Professional Engineer (P.E.)





By focusing on having sustainable energy in the future, Idom provides its clients with engineering and comprehensive planning to develop renewable energy production facilities.

Idom also helps discover possibilities of using renewable energy, rationalizing its consumption, reducing emissions and improving the reliability of its supply.

## A FEW SUSTAINABILITY PROJECTS WORLDWIDE



### TurnKey Services

Within the 50 MW solar thermal power plants located in Alvarado and Majadas del Tiétar (Extremadura), Idom has carried out the EPC (Engineering, Procurement and Construction) of the power block for Acciona.

2009 has marked a new direction for the global energy market since the moment in which numerous countries, including the United States and those within the European Union, decided to incorporate control measures against climate change based on their political agenda.

### Wind, Photovoltaic and Biomass

Idom continues to work with different photovoltaic systems using renewable energy, both commercially and in the residential setting. With regards to wind power, the actions taken to repower existing wind farms (Fuerteventura, Tarifa, Gran Canaria) and the engineering and technical support for wind farms in Álava, Jerez, Palencia, Puerto Real and Soria have been remarkable. Furthermore, regarding biomass, Idom has developed electricity production and storage facilities.

### Carbon Technologies

Systems using these fossil fuels have been profitable. As a result, Western countries have now turned to such systems. Idom is currently building carbon sequestration technologies as they have a promising future.

### Efficiency: Cogeneration

Energy efficiency is another form of intervention. With cogeneration, a large amount of thermal energy is produced in petrochemical plants while preventing its dissipation into the atmosphere or bodies of water. Idom is conducting detailed engineering of an 80 MW cogeneration in the La Rábida refinery and a 40 MW cogeneration in the Gibraltar - San Roque refinery for Cepsa, and another 38 MW cogeneration in the Repsol refinery in Puertollano.

### Solar Thermal Power Plants in Morocco Abener

When the construction of the Gas-Solar Hybrid Power Plant in Ain Beni Mathar is complete in 2010, it will be the largest power plant in the world using "Integrated Solar Combined Cycle" (ISCC) technology. It will have a total capacity of 470 MW; 20 of which will come from a solar field of parabolic trough collectors and a combined cycle. Located at the gates of the Sahara desert, Hassi R'Mel's Gas-Solar Hybrid Power Plant has a solar field with a nominal capacity of 25 MW and a combined cycle of 150 MW. Idom is currently performing the engineering for both plants.

### Solar Thermal Power Plants in Granada "Andasol 3"

This 50 MW power plant is one third of a compound that will produce electricity for approximately 250,000 homes. This power plant distinguishes itself from others due to its thermal storage system, which allows its steam turbine to continue operating when there is no sunlight, thus ensuring an energy supply that doesn't depend on weather. Idom is performing both basic and detailed engineering of the power block for the UTE between Man Solar Millennium and Duro Felguera Energía.

## SOLAR THERMAL POWER PLANTS: THE MAIN STARS OF THE ENERGY SCENE

The first solar thermal power plant to operate in the region of Extremadura, Spain is called Alvarado 1. It has a capacity of 50 MW, which is enough to supply electricity to 28,000 homes. Parabolic cylinder technology was used for this plant, which includes 184,320 mirrors arranged in rows along nearly 74 kilometers (46 miles) occupying an area of 130 hectares (321 acres).

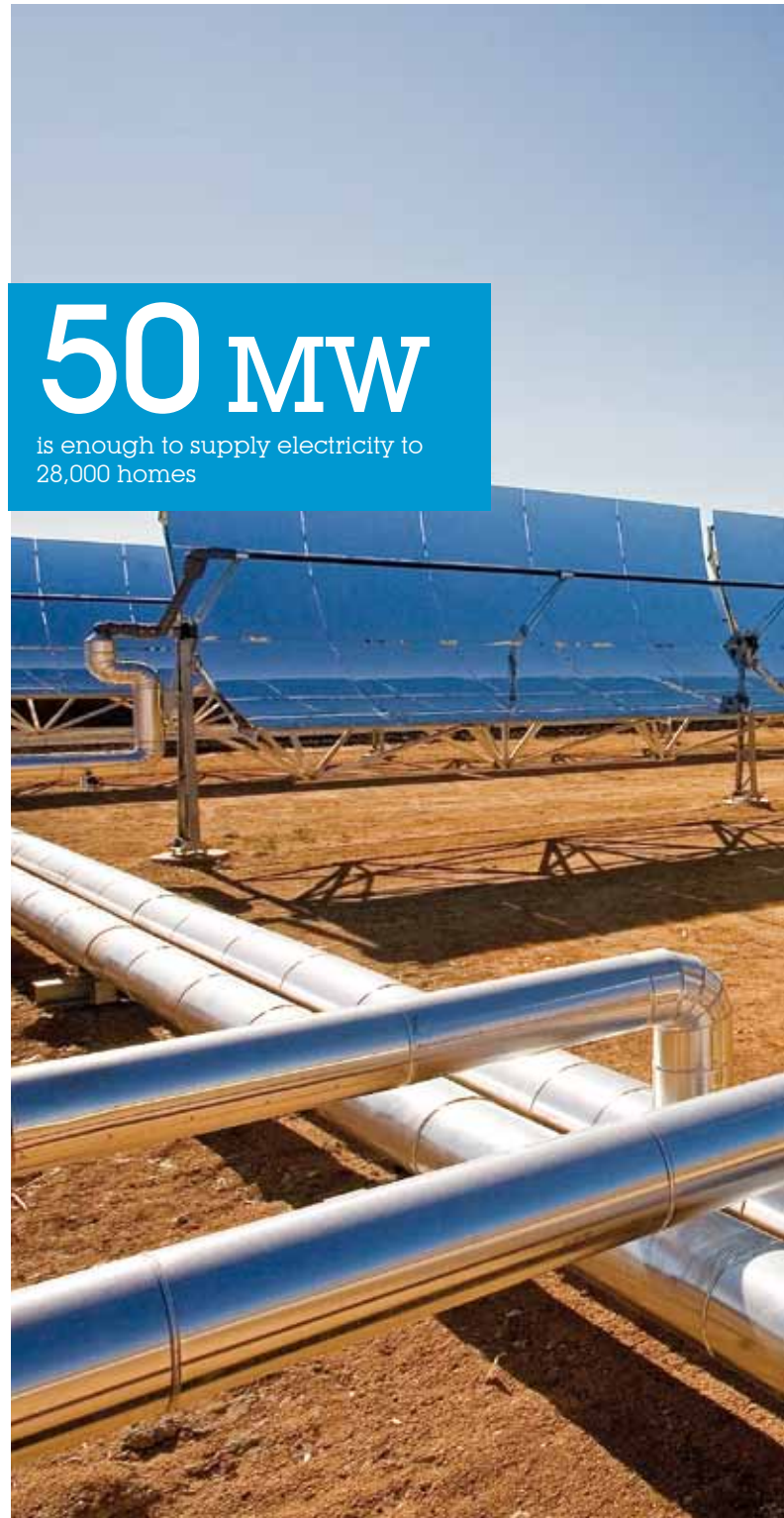
This plant will prevent the annual emission of 98,000 tonnes of CO<sub>2</sub> that would be generated by coal, while still producing the same amount of electricity.

The advantage of using solar thermal power plants is that their maximum output is recorded during business hours and can meet the peak in urban demand caused by the use of air conditioning at that time.

---

Idom is currently working with Acciona in another power plant similar to Majadas del Tiétar (Extremadura).

---





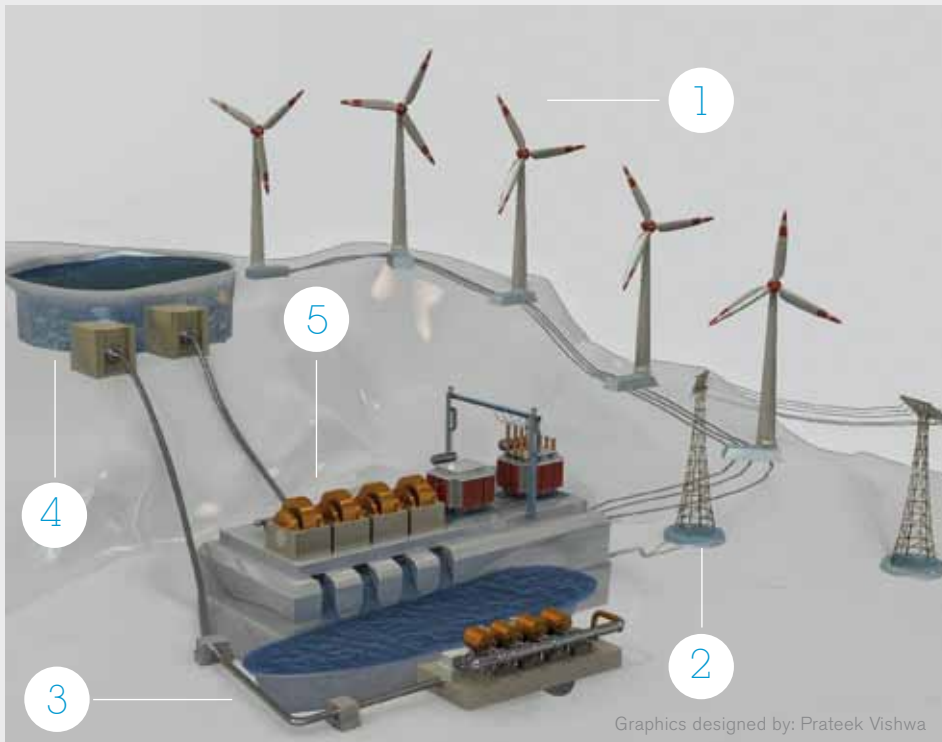
"Alvarado I" Solar Thermal Power Plant  
(area equivalent to 150 soccer fields).  
Image courtesy of Acciona



98,000

tonnes of CO<sub>2</sub> will be prevented from  
being released into the atmosphere





1. Five state-of-the-art wind turbines produce a total of up to 11.5 MW.

2. When there is wind, the electricity produced by the turbines is directly evacuated to a network through a new electrical substation associated with the system.

3. During hours of low consumption, the excess electricity is used to pump water to a higher deposit of 0.5 million m<sup>3</sup> (1.6 ft<sup>3</sup>).

4. In this 700 meter (2,297 feet) high deposit, water is stored as potential energy for use during periods without wind.

5. The water is sent through pressurized pipes to a hydroelectric power plant with a total of 11.3 MW, which then drains to the lower reservoir.

Graphics designed by: Prateek Vishwa

# 11,000

inhabitants will be self-sufficient with clean energy

## BIOSPHERE RESERVE

With just 278 square kilometers (173 square miles), a coastline perimeter of 107.5 kilometers (67 miles) and a maximum height of 1,501 meters (4,925 feet), the island of El Hierro is a true paradise due to the landscape diversity it offers. Its rich natural and cultural characteristics are the reason why 60% of its territory is protected by law. UNESCO joined this recognition in 2001 and declared the island a biosphere reserve; a place in the world with distinct values and wealth that should be considered as a model of coexistence between man and nature.

## EL HIERRO ISLAND WIND-HYDRO POWER PLANT FOR A DISTINCT ECOSYSTEM

El Hierro's authorities have promoted a system of clean power generation capable of self-supplying the needs of its population as well as its tourism (2,000 hotel beds).

The system consists of a wind farm that supplies electricity to the entire island. When there is no wind, the required power is obtained from the hydraulic jump provided by a deposit located 700 m (2,297 ft) high. In short, there is a wind power plant and a hydraulic power plant which combine to ensure reliability and secure-

ness of the system. Today, El Hierro generates its electrical energy in a diesel engine power plant, which, apart from contaminating, implies a complete dependence on external supply. Idom has been in charge of the entire installation, procurement, and site management of the project and will also be liable for its implementation. Work has already started being assigned, and the system will start operating in 2011.

---

El Hierro will be the first island in the world to become completely self-sufficient through renewable energy. Image: Roque de Bonanza.



## HYDROGEN PROPULSION ENERGY-EFFICIENT PUBLIC TRANSPORTATION

The fleets of hydrogen-fueled vehicles require fuel generation facilities and fuel distribution, which pose a new outlook of needs.

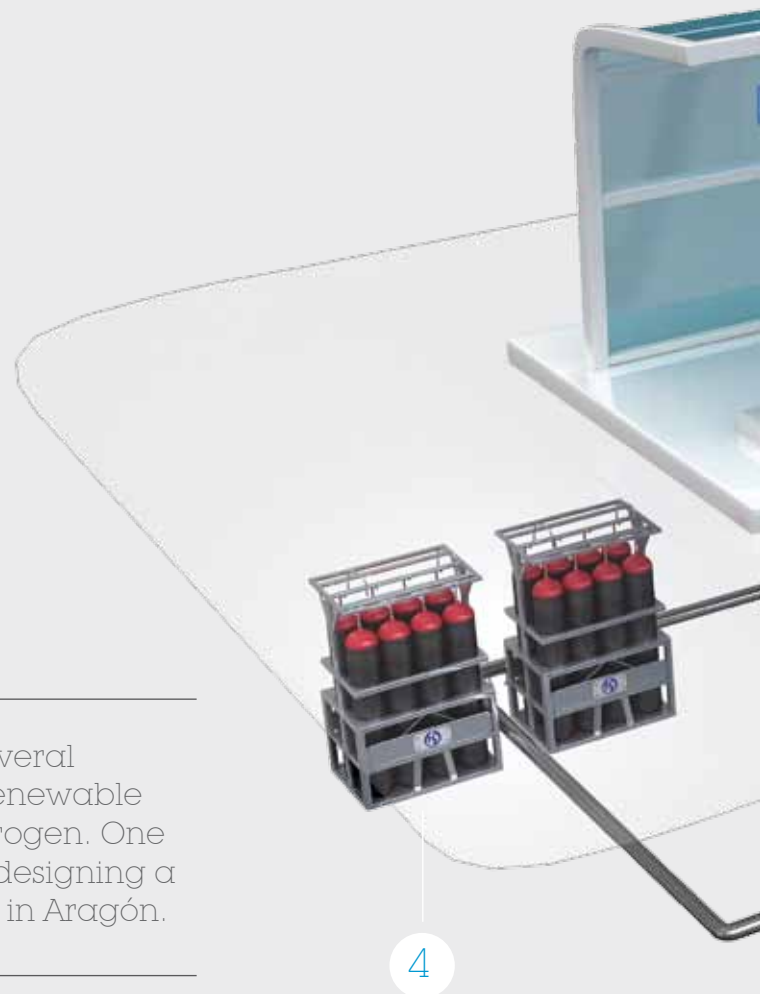
Idom is conducting an analysis of the needs associated with the logistics of these new transportation systems, which include the sizing of fleets to match needs, specialized maintenance of vehicles and facilities, implementation and social conditions, and a study of current legislation and future needs.

Performed in collaboration with the Hydrogen Foundation and the University of Zaragoza, the study also includes an analysis of the current transportation systems that use hydrogen as an energy vector and a prognosis of the evolution of transportation service in the metropolitan area with intermodal nodes.

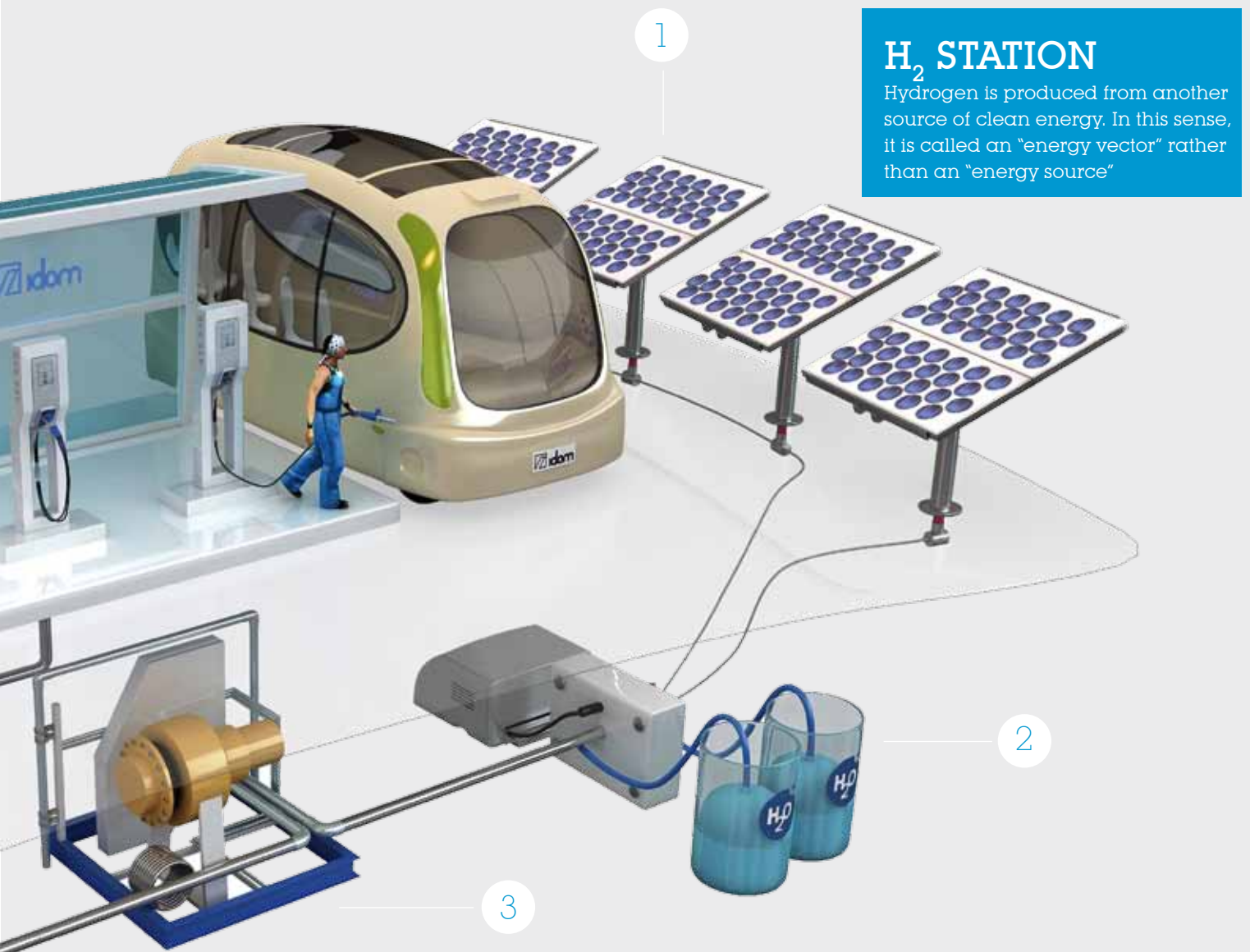
The experience gained in the hydrogen-powered public transportation project in the 2008 Zaragoza Expo has turned Idom into a global reference point when it comes to this type of transportation.

- 1 Photovoltaic Panels
- 2 Electrolysis of Water
- 3 Compression of Hydrogen
- 4 Storage of Hydrogen Gas

Recently, Idom has performed several projects to carry out a study on renewable energy storage by means of hydrogen. One of Idom's latest projects includes designing a second hydrogen station located in Aragón.



4



Graphics designed by: Prateek Vishwa



7.

PROMOTING A  
PRODUCTIVE ECONOMY

“Many companies that have withstood the setbacks of the financial economy consider Idom an ideal partner to develop new projects.”

Tom Lorentz  
Structural Engineer



Testing Wind Tunnels  
Épsilon Euskadi

Idom is known for working within a virtually unlimited spectrum of productive sectors.

Over the years, this diversification has proved to be a great ally in dealing with periodical market swings.

## A FEW OF OUR PROJECTS WORLDWIDE



### Capital Goods Sector Supply Chain Planning

Our client, which is a leader in the manufacturing sector of capital goods, needed to develop an ambitious program of industrial and commercial growth by strengthening its abilities to plan needs and resources in a holistic manner to offer its customers the best service possible with competitive prices. Idom developed the organizational model and processes of a new company in charge of channeling orders from commercial companies to productive units and suppliers. Idom provided all the logistics services necessary for getting the products to customers on time while ensuring quantity and quality.

### Auxiliary Railway Industry Brazil & Spain

The auxiliary railway industry is a sector that will experience significant growth in the coming years and will need to increase its production and assembly capacity to meet the growing demand. CAF is addressing both of these aspects by expanding its forged wheels facilities (Beasain) in order to reach 100,000 units per year and creating a new plant measuring 30,000 m<sup>2</sup> (98,425 ft<sup>2</sup>) in Hortolandia, Brazil. Idom is providing engineering and project management services.

### Energy Production: Combined Cycles Russia & Macedonia

Generating electricity by using natural gas combined cycles (NGCC) is one of the most efficient technologies causing the least amount of environmental impact. Idom has performed the engineering for combined cycles in several different parts of the world, including the recent 400 MW combined cycle district heating power plant for Iberdrola in Sugres, Russia, and a 220 MW combined cycle district heating power plant for Gama Power in Skopje, Macedonia, among others.

### Innovation in the Mining Sector Hibbing Taconite Mine (Minnesota)

The design and manufacturing of hydro-separators with a diameter of 27 and 20 m (89 and 66 ft) for the decantation of coarse particles in the water for processing iron. The design uses an original concept that reduces the thickness of the structure, saving on steel manufacturing and improving the water processing operation.

### Agri-Food Industry United States

Cargill, which is a multinational group with over 160,000 employees in 68 countries, is undertaking new investments. Idom - AEC is providing the engineering services.

### Sleep Products Industry Zaragoza, Spain

Pikolín plans to transfer its current headquarters to the Logistics Platform PLAZA in the surrounding areas of Zaragoza. This Spanish mattress manufacturer has given Idom the responsibility of performing the engineering component, project management, and supervision of a few facilities that will make up a new logistics and industrial center.

### Renewal of Electric Transportation Electric Transportation Network in Spain

The company responsible for Spain's electric transportation system plans to invest over 8,000 million euros (11 billion dollars) in electric transportation assets over the next few years. Idom is currently conducting the civil and electromagnetic engineering components for the construction of substations and lines laid out in the investment plan.

### Chemical Industry Port of Bilbao

Befesa is building a plant to produce sulfuric acid through sulfur residual recovered from petrochemical plants. This plant will solve environmental problems associated with oil by applying processes that are cleaner and environmentally safer. Idom is in charge of the basic engineering component of the plant.



## AGRI-FOOD COMPANIES EFFICIENCY AND COST REDUCTION: THE PATH TOWARD COMPETITIVENESS

The agri-food city of Tudela is an innovative complex where public institutions, production companies, auxiliary companies and agricultural service companies share infrastructure to enhance competitiveness and promote agro-industrial products and processes of the new generation.

One of the city's key elements is the shared infrastructure center that aims to provide basic services (centralized steam supply, hot water, chilled water, glycol and industrial cooling) with the consequent reduction of operating and maintenance costs for each company.

Another key element of this city is the trigeneration power plant using steam, hot and cold water, and electricity, whose energy efficiency is 87% with a 26.5% reduction in primary energy consumption (natural gas) and a 40% reduction in electricity consumption of the refrigeration system. These numbers ensure a very advantageous starting point for agri-food companies within the complex compared to their competitors.



68%

Overall energy efficiency of the  
Shared Infrastructure Center



## A DISTINCT FACILITY IN EUROPE

A 2 km (1.2 mi) long metal aboveground rack runs through the area in order to distribute energy services, including a pioneering refrigeration system within the perishable products sector.

1 Shared Infrastructure Center  
2 & 3 Service Distribution Rack  
Image courtesy of SPRIN

## TRIGENERATION AND THE ENVIRONMENT

Apart from reducing service costs, the implementation of a trigeneration system (steam, water and electricity) saves 14 tonnes of greenhouse gas emissions annually compared to using conventional methods to obtain the same services.



40%

of electricity will be saved by using the trigeneration system





# Recycling

by using scrap metal as the feedstock  
contributes to environmental  
preservation

## IRON & STEEL

### INTERNATIONAL SUPPORT

Iron and steel companies give Idom the opportunity to work in an international field, considering that the basic metals industry is a global market.

These types of companies require a wide variety of engineering services, including preliminary implementation studies, technology studies (electric furnaces, ladle furnaces, continuous casting, rolling mills of different products, etc.), basic engineering of the various auxiliary units (scrap and slag yards, water purification, smoke extraction, electrical substations, etc.), detailed engineering, and lastly, site management.

#### Celsa Group

For a multinational company like Celsa Group, Idom's excellent consulting skills can be put to use in order to help with the expansion and internationalization of the company. Idom has carried out technical and financial work (logistics, alternative studies, location, layout, auditing, line extension) for Celsa Group's expansion in France, Poland, the United Kingdom, Norway, Asia, North America, South America, the Middle East and North Africa.

#### New Rolling Mill in Poland

In Ostrowiek (Poland), Celsa Group just opened up a new steel rolling mill that incorporates the latest technological trends. Idom provided services, such as detailed engineering, civil project management, and mechanical and electrical engineering, for both the new rolling mill and its ancillary facilities, while basic engineering has started for the construction of a new steel mill.

#### Acerinox Group

Another client is Acerinox Group, which is the largest stainless steel producer in the world. They have three plants: one in Spain (Campo de Gibraltar), one in the United States (North American Stainless, Kentucky) and another in South Africa (Columbus Stainless, Middelburg), with a total annual capacity of 3.1 million tonnes.

#### New Plant in Malaysia

In East Asia, Acerinox Group has found Malaysia suitable for the construction of its first stainless steel production plant. Located between Tanjung Langsat port and the city of Johor Bahru, this plant will incorporate the latest technology and will be built in three phases, followed by an annual capacity of 1.3 million tonnes.



1 Liquid Steel from Continuous Casting  
2 New Rolling Mill in Ostrowiek (Poland)  
Image courtesy of Celsa Group



## MAJOR TRANSPORTATION TERMINALS

### PORT OF BARCELONA

The operations carried out in major port terminals, such as the Port of Barcelona, require international security codes that monitor both operations and traffic. Idom has worked with the Barcelona Port Authority to define process indicators in order to establish a new port service guarantee program.

### DELTA DEL LLOBREGAT

In Delta del Llobregat, there is a series of infrastructures (airport and port of Barcelona, railroad) that make up a logistics platform at a European level. Idom is undertaking the prognosis studies for the Barcelona Chamber of Commerce in order to transform the delta into a leading platform, which will take effect by 2050.

### GUATEMALA, EGYPT, PAKISTAN

Idom also performed the preliminary studies for the expansion of the Port of Santo Tomás de Castilla in Guatemala and collaborated with the World Bank and the International Finance Corporation (World Bank) in the development of logistics and transportation chains in countries such as Egypt, Morocco, Algeria and Pakistan.

### PORT OF LÁZARO CÁRDENAS (MEXICO)

The Port of Lázaro Cárdenas (Pacífic Coast) aspires to be one of the most important ports in Latin America. Idom has performed the economic study of the planning, pre-investment and technical, economic, ecologic and social feasibility for the installation of the second container terminal, which is an infrastructure necessary in order to achieve the port's goal.

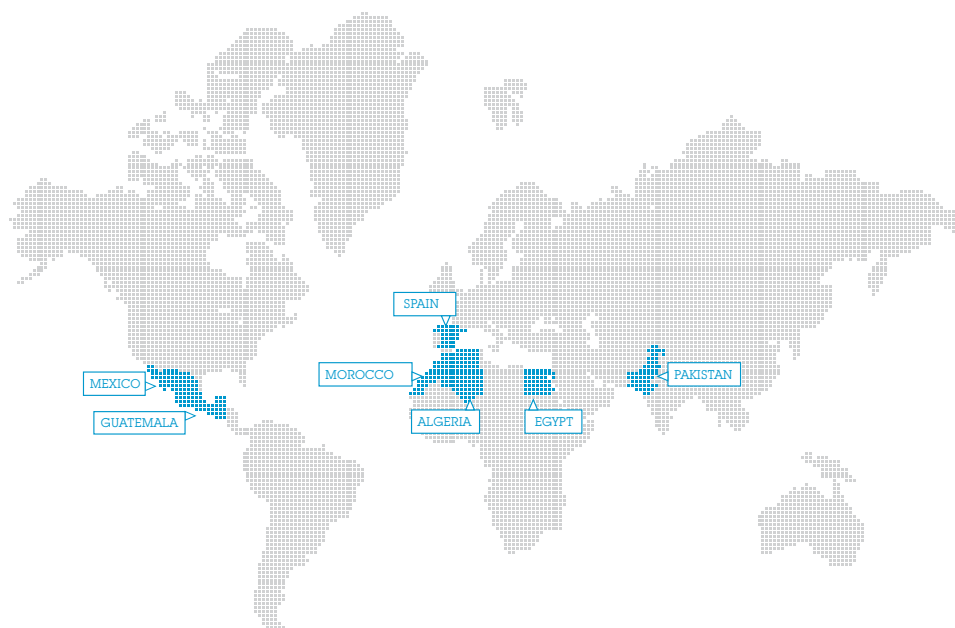
---

Image courtesy of the Barcelona Port Authority  
Author: Lluís María Castellà



**229** HECTARES

The port of Barcelona covers an area equivalent to 250 soccer fields



**600** COMPANIES  
and 15,000 people operate daily  
in the Port of Barcelona









## THE REVIVAL OF A FOSSIL FUEL

### COAL EXTENDS ITS LIFE

The recent CO<sub>2</sub> capture and storage technology is changing perspectives on coal.

A primary energy source that had been considered "cursed" until just recently could become strategic. The Earth contains well-distributed coal reserves that can last for several centuries. Several energy-dependent countries would be able to achieve their desired autonomy.



## THREE TECHNOLOGIES FOR CAPTURING CO<sub>2</sub>

There are three ways to capture CO<sub>2</sub> when producing electricity through coal:

- 1) Before the combustion, once coal gasification has been carried out. The result is a synthesis gas (city gas) that will be burned in a gas turbine.
- 2) After the traditional combustion, separating the CO<sub>2</sub> as it is in the exhaust gases through absorption processes or processes based on carbonation calcination cycles.
- 3) During the combustion with oxygen instead of air (oxy-fuel combustion), recovering more than 95% of CO<sub>2</sub> in the exhaust gases.

### The Elcogás Plant

Located in Puertollano, this plant is an example of the first technology mentioned: integrated gasification combined cycle, which has exemplary environmental characteristics. Idom has recently completed a conceptual design for the oxygen and nitrogen fractionation unit.

### The Project For Endesa

An oxy-fuel combustion project was performed for Endesa, under the European Plan that finances up to a total of twelve demon-

stration projects that use CO<sub>2</sub> capture and storage technology (CCS: Carbon Capture and Storage).

Idom has used CCS technology to conduct the basic engineering of a supercritical carbon dioxide plant with a fluidized bed, in which a mixture of domestic and imported coal will be burned. The plant is equipped with an atmospheric circulating fluidized bed boiler which is capable of working in supercritical conditions at 600°C and 270 bars.

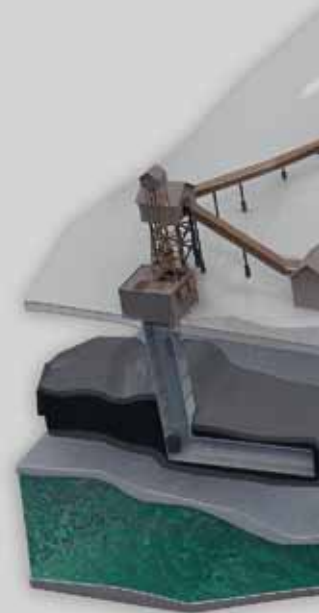
### A Mission in Egypt

The Mexican firm, HYL, is part of the multinational company, Tenova, a supplier of plants and services for the mining and metals industry. HYL is going to construct a CO<sub>2</sub> absorption plant that will be integrated into a direct reduction plant of Suez Steel in Suez, Egypt. Idom will perform the detailed engineering for the new plant.

---

## OXY-FUEL COMBUSTION

1. The coal is burned with oxygen and the exhaust gas is purified of ash in an electrostatic precipitator.
2. The pure oxygen from the air separation unit is mixed with exhaust gas to reduce the combustion.
3. The exhaust gas is purified and compressed into the gas processing unit, obtaining a gas with 95% of CO<sub>2</sub>.
4. The CO<sub>2</sub> is injected into a safe place: saline aquifers, abandoned or unprofitable coal mines, exhausted oil or gas deposits, etc.



Graphics designed by: Prateek Vishwa

2.5 MILLION  
tonnes of CO<sub>2</sub> are stored annually

ELECTROSTATIC  
PRECIPITATOR

1

AIR SEPARATION  
UNIT

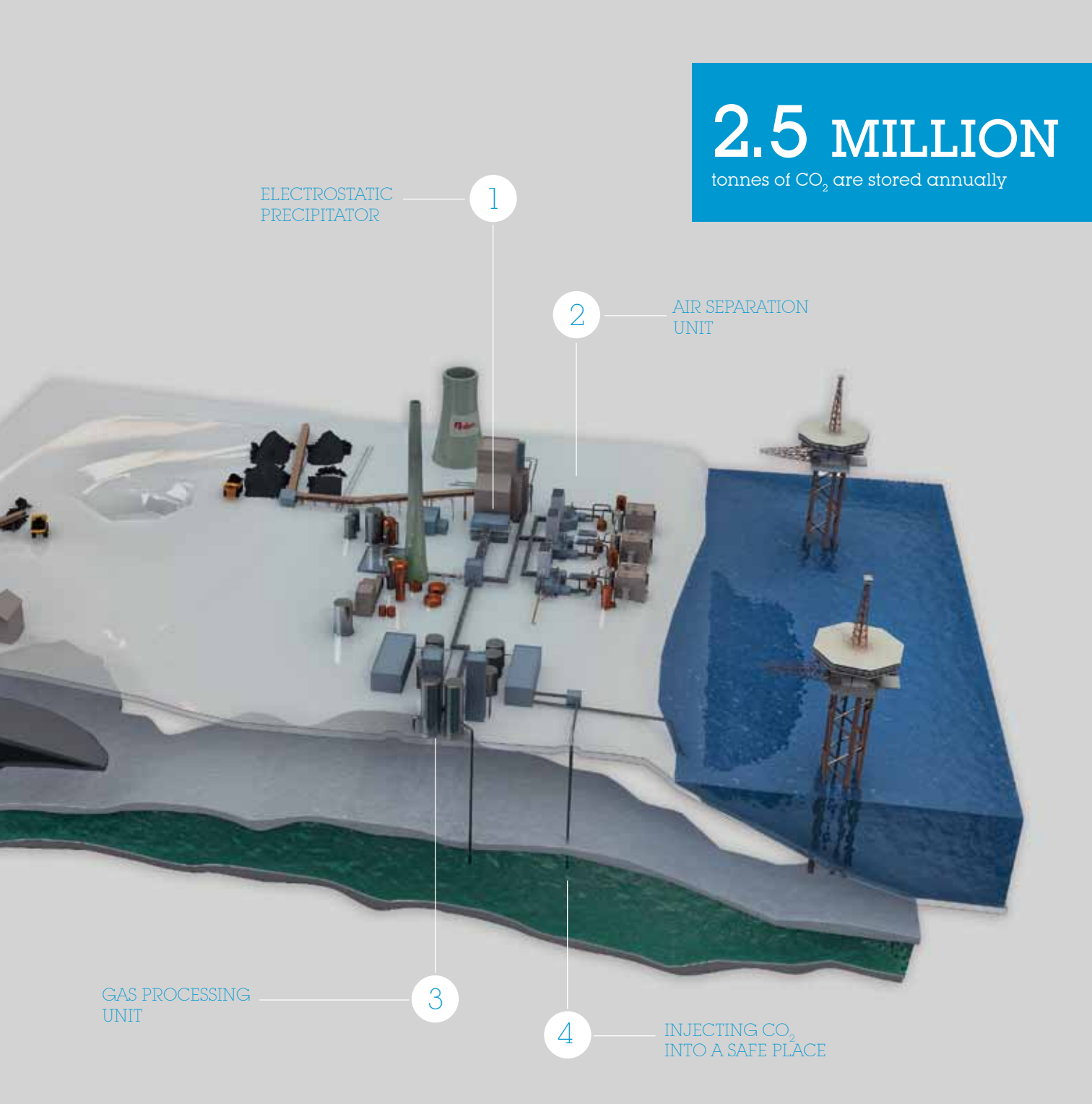
2

GAS PROCESSING  
UNIT

3

INJECTING CO<sub>2</sub>  
INTO A SAFE PLACE

4



# 8.

## PROTECTION AND SECURITY



“Protecting the population is definitely a priority in areas like nuclear energy, transportation and communication networks, and health services.”

Alejandro Valdez  
Architect



Technology makes us both strong and vulnerable at the same time. For example, most companies greatly depend on their computer system to the extent that if it crashes, their operations also stop running.

Idom works to ensure the security of citizens and users of various technologies.

## SECURITY PROJECTS WORLDWIDE



### Angra Nuclear Power Plant (Brazil)

Several advanced engineering projects to replace the steam generators in the containment building.

### Railway Emergencies

#### China

The Chinese railway system has some peculiarities which complicated the direct implementation of major international standards in emergency management: the extension of the railway system, the pyramid management structure, etc.

From the information provided by the railway authorities of Germany, France, Spain, Japan, Korea and the United States, as well as by major companies of the sector, Idom has designed a system that is appropriate for the legal base and institutional framework of this large Asian country. In collaboration with the China Academy of Railway Sciences, recommendations were developed to improve management procedures, including training plans for staff of the Chinese Ministry of Railways, communication networks, and technology needed to deal with emergency situations effectively and efficiently.

Client: Asian Development Bank. Final Beneficiary: People's Republic of China Ministry of Railways.

### Usage of Computer Systems in Health Services

#### The Government of Aragón's Masterplan

In recent years, health services have become increasingly efficient due to computer systems that allow for the improvement of both management and clinical processes while freeing up time for professionals which they can dedicate to their patients. The development of systems that can ensure efficiency, security and privacy has become a strategic factor for all health services. Ordinary health

centers are adapting to new organizational structures based on communication technologies. Idom is helping out both public and private health organizations to successfully achieve this transformation. Along these lines, the Government of Aragón's Ministry of Health, as well as other organizations, has created an information systems plan with the reformulation of organizational elements.

### Highway and Tunnel Safety San Sebastián & AP1 Beltway

Tunnels can be dangerous in certain situations, which is why legislation requires increasing levels of equipment to improve security systems and to ensure evacuation during accidents. Idom has conducted several projects in both new and existing tunnels, adapting them to current regulations. An example of the improvement of existing tunnels includes the AP1, which is an expressway where the security systems are divided by stretches. In the case of accidents, recent experiences show that results are more efficient when systems are centralized; consequently, the decision was made to control the entire AP1 expressway from one center. For Bidegi, Idom has carried out the site management for installing the security systems and equipment while integrating them into the control center of Ondartza (Gipuzkoa). In addition, Idom is conducting the site management for security and monitoring facilities of the new San Sebastián beltway, which is 16 km (10 mi) long.



# 99.995%

is the availability of the electric infrastructure according to TIER IV

# 99.982%

is the feasibility of the overall infrastructure according to TIER III

## DATA PROCESSING CENTERS A CRITICAL INFRASTRUCTURE

“La Caixa” is constructing a new data processing center. For an organization engaged in banking and insurance, the feasibility and security of the infrastructure supporting the flow of information is critical since the communication for both offices and clients depends on it.

### Architecture

The center will include a unique architectural component in which its technological ashlar line will be seen, which is a uniform approach to conciling the two buildings with separate programs — as well as separate DPCs and offices — using perforated aluminum skin that responds selectively to determine the ventilation, lighting and energy efficiency. Three floors are used for computer labs and two floors for cooling and electrical building services. The total constructed area is 25,000 m<sup>2</sup> (82,021 ft<sup>2</sup>).

### Telecommunications

The system is built on a CAT6a cable, with a tree-shaped structure comprised of 17 technical rooms connected to the main telecom room by 8 fiber optic links. The architecture of the electronic network system is divided into separate networks for voice, data and security with separate interconnected core servers in order to provide better security against possible network failures.

---

The power installed in La Caixa’s data processing center is one of the largest in Europe.

---

### Security Systems

The security systems are concentrated in four areas: access control of vehicles and people, perimeter and interior intrusion detection, detection of special situations, as well as a closed television circuit and intercom system. For access, user points have been planned with facilities following the 802.3af class 3 standard and voice connectivity through IP Telephony.

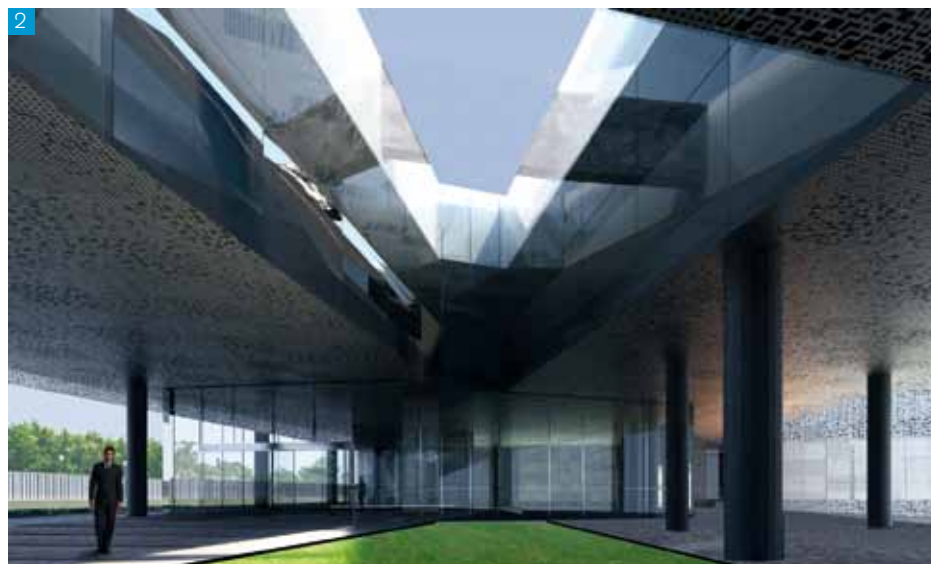
### Energy Efficiency

Designed following certain flexibility and scalability criteria, the system achieves an output of 8 MW of continuity for computer processes supported by UPS dynamics (2N) and 16 MW for the whole building. TIA-942 regulations have been adopted. All integrated systems provide a high level of energy efficiency with a PUE of less than 1.8.

The complex is being built within the Cerdanyola del Valles Technology Park in Catalonia, Spain.

---

1 Main Facade  
2 Access Level Security (K4 impact).





## KUTXA CANCER INSTITUTE

Very few centers worldwide have helicodal tomotherapy accelerators in addition to high-energy accelerators.

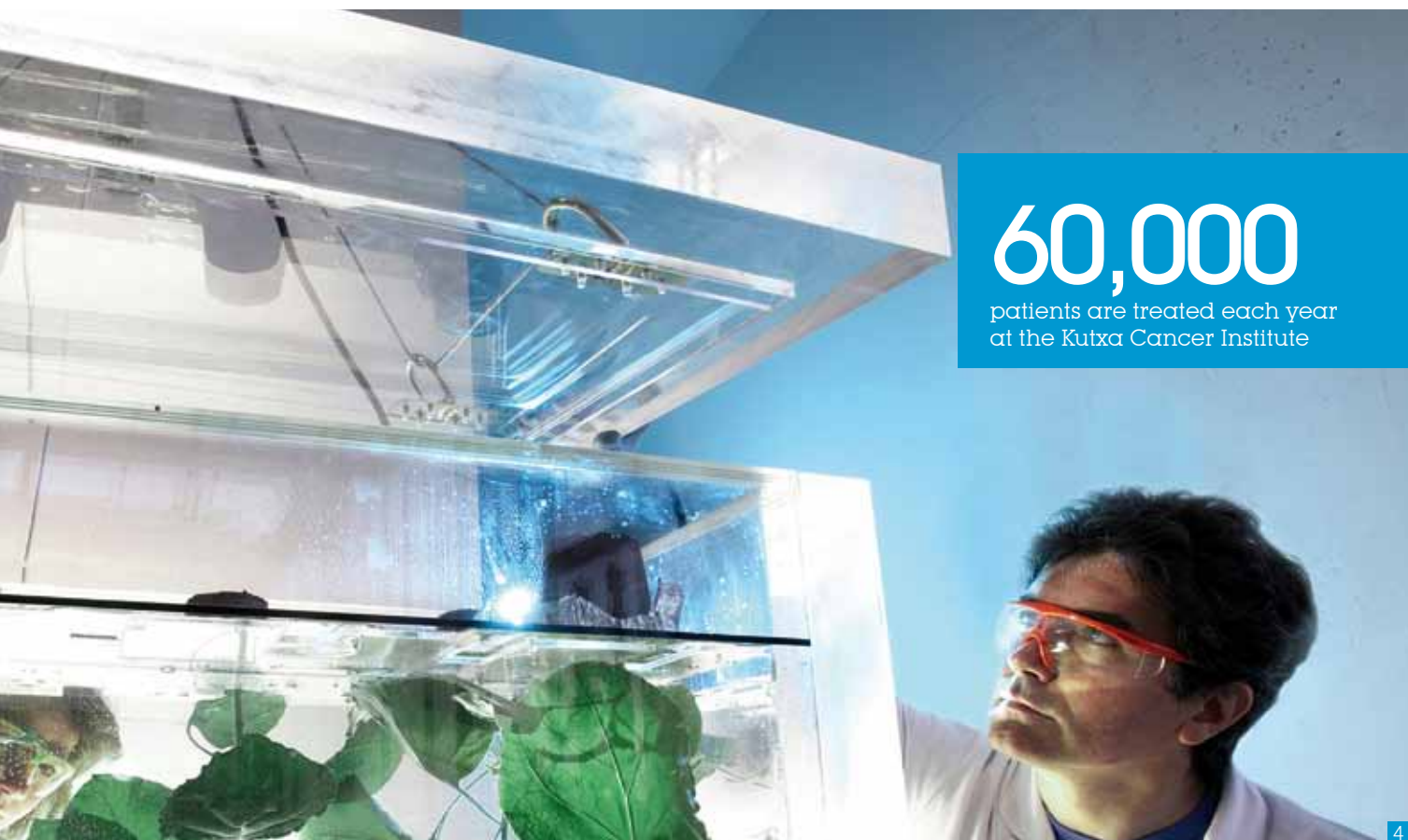
1-2-3 Kutxa Cancer Institute.  
Photo courtesy of Kutxa Social Work.  
4 Genetic Research Laboratory. Photo courtesy of Bayer.



## NEW TECHNOLOGIES FOR THE BATTLE AGAINST CANCER.

Built under strict sustainability criteria while taking its users into consideration (patients, families, doctors, workers), the new building has an area three times larger than the former cancer institute. The center houses a large amount of state-of-the-art medical equipment to prevent and fight cancer, most notably the helical tomotherapy accelerator.

It is an international benchmark for the battle against cancer. Idom conducted the project management of the building, as well as the move and implementation of the cancer institute and the contingency plan of the entire computer system.



# 60,000

patients are treated each year  
at the Kutxa Cancer Institute

4



3

## SECTOR OF BIOTECHNOLOGY AND MEDICAL TECHNOLOGY

Medical technology is an emerging sector in which Idom is well-positioned thanks to some R & D projects involving medical devices.

Several projects have been performed for the BioRegió Foundation of Catalonia, most notably focused on development plans for contract manufacturing in the sector. Idom has also participated in the conceptualization of the International Center for Scientific Debates.

In Aragón, a strategic plan and business plan have been developed for the new technology park and biotechnologies.



## NUCLEAR SAFETY IS PROVIDING SOLUTIONS

### ITER INTERNATIONAL EXPERIMENT

Nuclear fusion research is accelerating its pace for the gradual reduction of fossil fuel usage.

### VANDELLÓS II NUCLEAR POWER PLANT

The safety in current power plants is presented as a request for public opinion, to which engineering can provide comforting answers.

In recent years, a broad social consensus has been created regarding the need for fusion energy.

**Future: Fusion Energy**

The collaboration with ITER, an international experimental reactor, includes a history of over 6 years of work ranging from civil engineering of the facilities to advanced analysis of the nuclear reactor core.

**Present: Fission Energy:**

Idom has worked in eight Spanish power plants and the Brazilian plant Agra to resolve issues related to safety and longer life, and these plans are currently operating.

# TOKAMAK

## ADVANCED STUDIES AND DEVELOPMENT

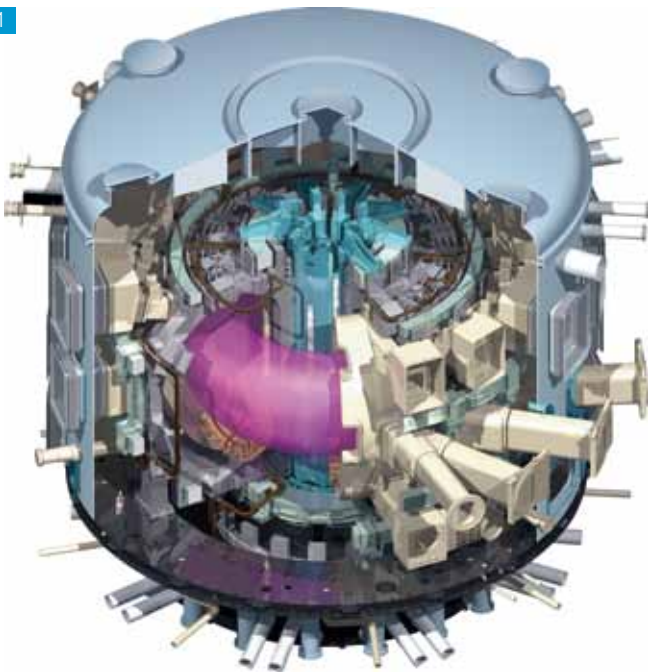
Idom is dealing with several aspects of the final design of the chamber in which fusion is produced from the particles.

The experimental nuclear fusion reactor is based on the Russian design called Tokamak, which is a toroidal chamber surrounded by magnetic coils within which reactions occur that produce energy.

### Design of the Vacuum Vessel

The vacuum chamber of the reactor is a metal, toroidal structure that is extremely complex due to its geometry, the required tolerances, and the numerous entry and exit ports. Idom is working on its design, which has been going on for years and is currently in the prototype phase.

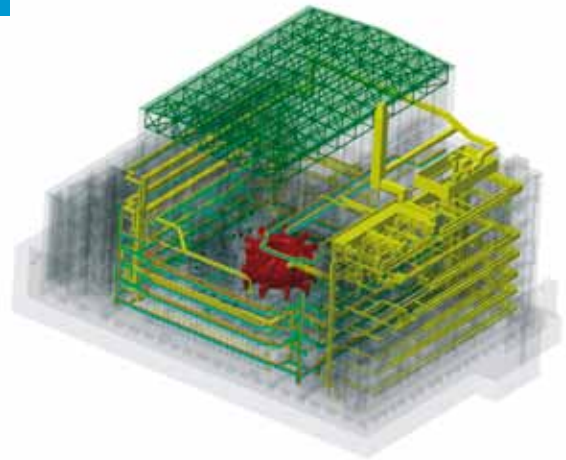
1



### Possible Earthquakes

What would happen if Tokamak were subject to the tremor of an earthquake? The earthquake analysis conducted by Idom contemplates the interaction between the field and the Tokamak building and the design of the interface that will support the reactor's 23,000 tonnes.

2



### Unexpected Loads

It is also necessary to anticipate external impacts (for example, an airplane) and internal impacts (for example, the falling of a heavy component). The explosion and impact analysis performed by Idom studies the dynamic response of the system to such changes and establishes the structural requirements to support them.

### Overall Analysis

Idom is also conducting an overall optimization of the project's critical structures, including the unique seismic isolation system that holds 38,000 tonnes in the Tokamak complex.

© ITER

1 Design of the Vacuum Vessel  
2 Studies of Unexpected Burdens on the Tokamak Complex  
3 Tokamak Model. Comparison with Human Figure.



## ITER, INTERNATIONAL PROJECT

CHINA, EUROPEAN UNION, INDIA, JAPAN, KOREA, RUSSIA, US

The large-scale scientific experiment aims to demonstrate, for the first time in history, the feasibility of nuclear fusion as an energy source for the future.



# 5,000

million euros is the estimated cost for construction, which may take up to ten years.

# $Q > 10$

Goal: to produce 500 MW – ten times more energy than what is consumed in the generation process.

ITER will be the first fusion reactor to produce a net energy gain. It will be built in Cadarache, France for 5,000 million euros (6,810 million dollars) within 10 years.

The goal of ITER is not commercial but rather experimental: to test the key technologies for fusion and advance its development up to the maturity level necessary for commercial use.

Idom is taking part through Fusion for Energy (the European agency that channels the involvement of EU countries in ITER) in the structural optimization of the Tokamak complex, and in the mechanical design of the vacuum chamber (vacuum vessel).

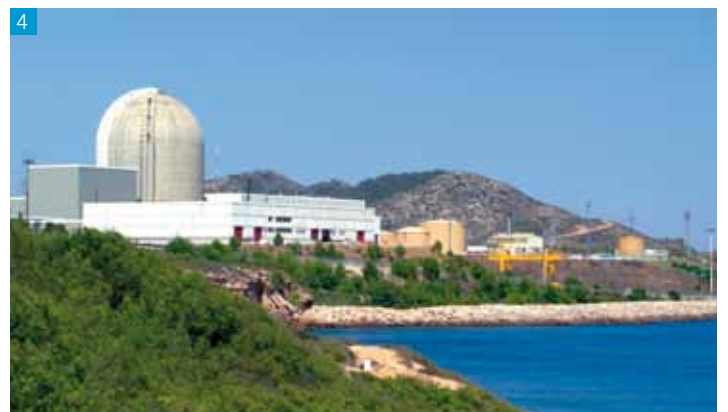
## VANDELLÓS II

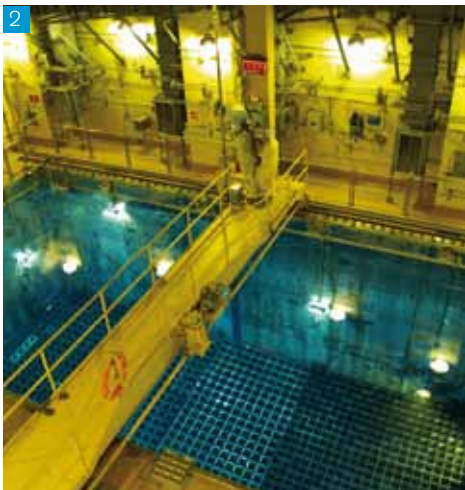
### NEW NUCLEAR SECURITY SYSTEM

In August 2004, there was a break in the water system of essential services which the National Nuclear Safety Council classified as an "accident" (level 2 of 7, according to the International Nuclear Event Scale). As a result, an action plan for improving safety management was developed, which extended to all plant systems. The plan was put together with the support of several teams comprised of experts from Spain and other countries.

Since mid-2005, Idom and ANAV have been in charge of implementing a new nuclear safety system. These responsibilities include the conceptual definition of the new technological safeguards system from the diversification needs of the cold focus where residual heat dissipates from the reactor in case of a normal or accidental shutdown, the development of basic and detailed engineering, equipment procurement, construction and installation of the new system as well as modifications in the control room and in more than 10 existing safety systems. Basically, this is the most important project for the Spanish nuclear sector since the replacement of steam generators in several nuclear power plants throughout the country.

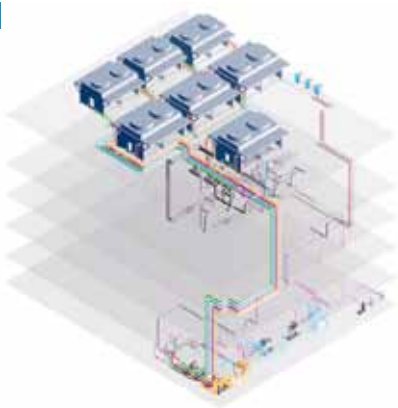
The new security system is autonomous and can even operate without the other systems unrelated to safety. It consists of a closed circuit of fresh water that uses forced draft cooling towers to evacuate the heat to the atmosphere so that it is independent of the ocean water circuit; the latter continues to operate although it has ceased its safety missions.





The Nuclear Safety Council has inspected every step of the new security system project: from the analysis prior to the design, manufacture, installation and implementation.

3



- 1 Foreground: Water Cooling Towers
  - 2 Fuel Pools
  - 3 Scheme of Cooling Tower
  - 4 General View of the Power Plant
- Photo courtesy of ANAV





# HOW WE ARE ORGANIZED

Our desire for technical excellence and our proven management skills point toward the same goal: add value to our client's project.



472

Number of New Clients

1,475

Number of Repeat Clients

2,403

Number of Members

2.55

Million Euros in Training

8.84

Million Euros in Innovation

297

Million Euros in Revenue

### How We Are Organized

Idom is structured around three functional areas that coordinate with each other to provide the best customer service, professional development of the firm and an optimal management of knowledge; these three cores include technical areas, geographic areas and support areas.

Idom is organized in an open and flexible manner and places initiative in front of control, its embodied values in front of written rules, leadership in front of mere management, and humble training process before proud practice.

### Innovation

The key elements of 2009 were: actively promoting innovation by acquiring new skills and knowledge, incorporating new technologies, developing new products and performing in new markets.

Idom views innovation as an ongoing and systematic effort to do new things or use new methods, accepting significant challenges that bring value to clients, companies and the society. Idom believes that the proactive creation of services that are innovative, differentiated and of high value to the client is key for the configuration and competitiveness of the company.

Consequently, the definition of a coordinated system of action has widened in 2009, which, while maintaining flexibility, has allowed for the balance of the company's activities, the systematic construction of their future activities and the professional projects of their members.



## Technical Areas

Each of Idom's professionals is assigned to a technical area whose management ensures the excellence of its members, promoting the knowledge of their specialty and the formation of rigorous thinking habits. The technical areas are:

### 1 Civil Engineering

**Óscar Rico**

Area with extensive experience in the planning and development of large civil infrastructure, in both linear and hydraulic works, proven by thousands of projects involving highways, railways, ports, airports, unique structures, supply buildings, and drainage and purification for clients in both public and private sectors.

### 2 Project Management

**Álvaro Rey**

Multidisciplinary teams working in project management and construction, with extensive experience in all areas of construction, capable of carrying out projects that are complex due to their size, technical expertise, physical distance, cultural differences, or other features that particularly complicate the management process.

### 3 Environment

**Rafael Sagarduy**

The meticulous and often demanding environmental legislation requires specific solutions to ad hoc problems involving waste, contaminated soil, air emissions or discharges that occur in municipal or industrial activities. Idom provides expert advice from various experiences both locally and internationally.

### 4 Industry & Energy

**Ignacio Rey**

A couple of Idom's best characteristics include its global perspective when dealing with industrial projects and its ability to solve any type of issue raised by the client (financial, technical, safety, environmental, esthetic, communication, etc.), thanks to the close collaboration of the firm's engineers, architects and consultants.

### 5 Information Systems

**Íñigo San Emeterio**

Idom's system consulting services have two distinguishing characteristics: they are performed by functional specialists with extensive knowledge of the needs of organizations and they rely on Idom's commercial independence as a guarantee that the best solution is that which best suits the needs of each client.

### 6 Advanced Analysis

**Alberto Vizcargüenaga**

Advanced engineering that deals with challenging projects from a growing diversification of disciplines (applied mechanics, structural design, electronics and control, etc.) which allow the teams to put forward their creativity by applying schemes of cross innovation and hybridization.

### 7 Architecture and Construction

**Jesús María Susperregui**

In the current social context, there is a clear need to address architecture in multidisciplinary terms. Architectural activity requires creative energy and passion, economic sense, strength and love for technical risks, and perspective of the client, of the public and of what constructs culture. Basically, it is a concept that integrates high levels of complexity, thus enriching the architectural response and consequently, the provided service.

### 8 Consulting

**Luis Ramos**

A global consulting firm that solves regional and corporate competitiveness issues from a strategic perspective linked with practical solutions. Our expertise as consultants is universally accepted among businesses and governments for making decisions on both their investments and actions to improve competitiveness.



## 9 Innovation

[Xavier Ayneto](#)

"Innova" emphasizes Idom's knowledge, technical skills and management in the field of business innovation and technological development while offering the firm's customers a broad portfolio of advanced and multidisciplinary professional services to provide comprehensive support for innovation and technological development.

## 10 Operations & Logistics

[Charles Kirby](#)

Development of efficient and flexible supply chains by taking advantage of globalization opportunities, with an approach based on strategic and business analysis and technical capacity to implement solutions. We work with both the public and private sector from logistics to infrastructure design and support services.

## 11 Telecommunications

[Juan José Bermejo](#)

Our mission is to capture the technology, telecommunications and security systems of our clients' projects. From technological consulting and project management to project design and implementation support, we have experience in various sectors including administration, telecommunications, railways, airports, highways, ports and utilities.

## 12 Chemical and Petrochemical Refining Industries

[Juan Carlos Latasa](#)

From diagnosis and auditing to start-up assistance of the facilities, as well as the basic engineering of support service areas, detailed engineering, engineering of the property and technical assistance in the implementation of projects, while collaborating with some of the world's top technologists of petrochemical refining industries.

## 13 Urban Planning

[Antonio Fernández](#)

Idom's work in the area of urban planning is characterized by the integration of various disciplines — architecture and urbanization, economics and management, geography, engineering, social and environmental sciences — into a global vision while encouraging creativity and innovation in ideas following sustainability criteria.

## 14 Transportation

[Juan López Redondo](#)

In any type of transportation (passenger, freight), area (urban, intercity, outskirts) or scale (local, regional, national or international), Idom is a top leader in specialized technical assistance for planning, design, installation, implementation, operation and maintenance of work, and transportation services and operations for the mobility of goods and people.

## 15 Iron and Steel Industry

[Andoni Borjabaz](#)

From the earliest processes of steel production to the lamination and finishing of various products, levels of quality, and formats, while working for the world's largest producers and collaborating with the world's leading technologists and suppliers, Idom performs projects involving expansion and construction, masterplans, feasibility studies, and more.

## 16 Integrated Services & Nuclear Energy

[Miguel Navarro](#)

"Seridom" is one of Idom's technical areas which was created to conduct industrial projects, incorporating the necessary management and supplies to start up commercial operation. TurnKey Services provide coverage of all the phases of each project, including engineering, procurement, monitoring and inspection of equipment, construction and installments, and implementation of the plant.

In the nuclear sector, Idom participates by performing complex projects using multidisciplinary teams in the power plant throughout the entire development. Idom provides innovative management and recruitment arrangements in the "cost + fee" sector to coordinate and improve the flexibility of operations while following strict safety requirements.





## Geographic Areas

Management units that are much more than just ordinary offices. Far from being mere delegations of central organizations, geographical areas are groups of independent professionals whose mission is to serve both local and global markets while constantly providing and dedicating their personal support and technical expertise to meet the needs arising from any node in the “network” of professional groups. Among the 31 geographical areas that are currently involved, the main ones are as follows:

**1 Abu Dhabi (and Middle East)**  
[Miles Shephard](#)  
PO Box 59977  
Al Bateen  
Tel.: +971 50 824 56 13

**2 Brazil, São Paulo**  
[David Moncholi](#)  
01454-000 São Paulo - BRAZIL  
Avenida Cidade Jardim 400 – 20º andar  
Edifício DACON  
Tel. & Fax: +55 11 3818 8996

**3 Morocco, Casablanca**  
[Néstor Cruz](#)  
20000 Casablanca - MOROCCO  
62 angle Boulevard d'Anfa/Bd. Moulay Youssef  
Forum Abdelaziz 10º appt. 104  
Tel.: +212 5 22 29 37 71  
Fax: +212 5 22 29 37 79

**4 Mexico, Mexico City**  
[Francisco Pi](#)  
Paseo de la Reforma 404 - Piso 5  
Colonia Juárez - Delegación Cuauhtémoc  
Tel.: +5255 5208 4649  
Fax: +5255 5208 4358

**5 Poland, Wrocław**  
[Marcin Warda](#)  
54-424 Wrocław - POLAND  
Ul. Muchoborska 6  
Tel. & Fax: +48 71 785 45 97

**6 Portugal, Lisbon**  
[Joaquim Nunes Barata](#)  
1600-100 Lisbon - PORTUGAL  
Rua Gral. Firmino Miguel, 3 B r/c  
Tel.: +351 21 754 87 00  
Fax: +351 21 754 87 99

**7 Romania, Bucarest**  
[Cornel Curelea](#)  
011783 Bucarest - ROMANIA  
Str. Brazilia, 16 - Ap. 1, Sector 1  
Tel.: +4021 231 07 01  
Fax: +4021 231 13 34

**8 United Kingdom, London**  
[Fernando Pérez Fraile](#)  
London SE1 3QB - UNITED KINGDOM  
Unit 17G The Leathermarket - 106a Weston Street  
Tel.: +44 207 397 5430  
Fax: +44 207 357 9690

**9 United Kingdom, MEREBROOK**  
[Nigel Huish](#)  
Derbyshire DE56 2UA - UNITED KINGDOM  
Suite 2B, East Mill, Bridgefoot, Belper  
Tel.: +44 177 382 99 88  
Fax: +44 177 382 93 93

**10 United States of America, AEC**  
[Randy J Lipps](#)  
Richmond VA 23230 - USA  
5540 Falmouth Street - Suite 300  
Tel.: +1 804 282 3811  
Fax: +1 804 282 3652

**12 Barcelona****José Rivera**

08028 BARCELONA  
Gran Vía Carlos III, 97  
Tel.: +34 93 409 22 22  
Fax: +34 93 411 12 03

**13 Bilbao****Alberto Tijero**

48014 BILBAO  
Avda. Lehendakari Aguirre, 3  
Tel.: +34 94 479 76 00  
Fax: +34 94 476 18 04

**14 Canary Islands****Juan Luis Santana Perera**

35002 LAS PALMAS DE GRAN CANARIA  
Viera y Clavijo, 30 - 1º  
Tel.: +34 928 43 19 50  
Fax: +34 928 36 31 68

**15 Granada****Abraham Carrascosa**

18200 Maracena - GRANADA  
Rosálía de Castro, 2 - 2º C  
Tel.: +34 958 40 40 77  
Fax: +34 958 41 11 72

**16 Madrid****Rafael López González**

28034 MADRID  
Avda. Monasterio del Escorial, 4  
Tel.: +34 91 444 11 50  
Fax: +34 91 447 31 87

**17 Murcia****Paqui García**

30004 MURCIA  
Polo de Medina, 2 - 1º, ofic. A  
Tel.: +34 968 21 22 29  
Fax: +34 968 21 22 31

**18 Palma de Mallorca****Ramón Ramírez**

07003 PALMA DE MALLORCA  
Avda. Conde Sallent, 11 - 4º  
Tel.: +34 971 42 56 70  
Fax: +34 971 71 93 45

**19 Pamplona****Ángel Vázquez**

31003 PAMPLONA  
Navarro Villoslada, 16  
Tel.: +34 948 23 50 73  
Fax: +34 948 23 82 61

**20 San Sebastián****Mikel Guerra**

20018 SAN SEBASTIÁN  
P. E. Zuatzu - Edif. Donosti - Zuatzu kalea, 5  
Tel.: +34 943 40 06 02  
Fax: +34 943 39 08 45

**21 Santiago de Compostela****Rafael Espinosa**

15703 SANTIAGO DE COMPOSTELA  
Avda. de Lugo, 151 - 153  
Tel.: +34 981 55 43 91  
Fax: +34 981 58 34 17

**22 Seville****Alfonso Levenfeld**

41927 Mairena de Aljarafe - SEVILLE  
Exposición, 14 (PISA)  
Tel.: +34 95 560 05 28  
Fax: +34 95 560 04 88

**23 Tarragona****Manel Santiago**

43001 TARRAGONA  
Plaça Prim, 4-5 Pral. 1a  
Tel.: +34 977 252 408  
Fax: +34 977 227 910

**24 Valencia****Pablo Benlloch**

46002 VALENCIA  
Barcas, 2 - 5º  
Tel.: +34 96 353 02 80  
Fax: +34 96 352 44 51

**25 Vitoria****José Luis Fernández Garrido**

01008 VITORIA  
Pintor Adrián Aldecoa, 1  
Tel.: +34 945 14 39 78  
Fax: +34 945 14 02 54

**26 Zaragoza****Ramón López Laborda**

50012 ZARAGOZA  
Argualas, 3  
Tel.: +34 976 56 15 36  
Fax: +34 976 56 86 56



## Areas of Support

The mission of these functional units is to provide support for professional groups so that they are able to concentrate on achieving the firm's goal: adding value to the client's project.

### 1 Innovation and Technology

José María Asumendi

### 2 International Development

Tomás González

### 3 Economics and Finance

Miguel Renobales

### 4 Corporate Development

Rafael Cámara

### 5 People

Manu Sarabia

## International Development

The internationalization process is one of Idom's strategic commitments and is carried out through the firm's strong position in the Spanish market.

The area of international development is a tool for achieving this objective, which is mainly used in two distinct ways: firstly, through the identification of service export opportunities that can be provided by technical areas, and secondly, through the generation of new initiatives which can grow into new Idom offices after their feasibility has been analyzed.

The area of international development is also considered an internal baseline for consulting, counseling, and accompaniment in the initiatives that develop both the technical and geographic areas, enhancing their autonomy and coordinating the firm's international activities.

## We Are Professionals

People that know Idom quite well have described us as "a company with a soul," referring to the deeply rooted values within the firm's life for over 50 years. The service attitude, respect for free enterprise and a drive for professional development are just a few of these core values. From this perspective, the firm's growth and

---

Despite the economic slow-down, Idom created more than two hundred job opportunities in 2009 alone.

---

prosperity is seen as a way for each person to reach their professional accomplishments. Consequently, Idom aims to enhance each person's development, as well as create new opportunities for professional development. For this reason, the firm is composed of various systems of counseling, training, evaluation and compensation.





Published by:

IDOM

Comments may be sent to Gabriel Vilallonga:

[gve@idom.com](mailto:gve@idom.com)

Legal Deposit:

M-

Graphics designed by:

Mario Nieva

Portraits photographed by:

Amaia Santamaría

Sears Portrait Studios

English translation by:

Salton Group

Cover: BTEK. Photographed by:

Aitor Ortiz

Printing Press:

Gráficas Monterreina



[www.idom.com](http://www.idom.com)

BTEK, Technology Interpretation Center  
Architect: ACXT  
Photographed by: Aitor Ortiz