

# ABENGOA



Activity Report 2007



Innovative Solutions for Sustainability



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# Main Figures

## Highlights

Profit and Loss Account (M€)	2007	% Variation (07-06)	2006	1996	% CAGR (96-07) (*)
Sales	3,214.5	20.1	2,677.2	578.8	16.9
Gross Cash Flows (**)	452.4	57.2	287.9	53.8	21.4
Net Profit	120.4	20.0	100.3	16.1	20.1
<b>Significant Variables</b>					
Margin (% Gross Cash Flows / Sales)	14.1		10.8	9.3	
Return on Equity (ROE) (%) (***)	17.0		22.5	10.1	
Gross Cash Flows (k€) / Employees	29.2	38.2	21.2	7.2	13.5
Sales (k€) / Employees	207.7	5.6	196.7	77.7	9.3
<b>Data per share:</b>					
- Earning per share (€)	1.33	20.0	1.11	0.18	20.1
- Dividend per share (€)	0.17	6.3	0.16	0.05	11.8

(\*) CAGR: Compound Annual Growth Rate  
(\*\*) Earnings before interest, tax, depreciation and amortization, adjusted by the works flows done for own fixed assets  
(\*\*\*) Net Earnings / Shareholders' funds

## Business Units and Geographies

Evolution 1996 - 2007	Five Business Units		Engineering Company	
	2007		1996	
Business Units	Sales %	Gross Cash Flows. (*) %	Sales %	Gross Cash Flows. (*) %
- Solar	0.6	2.1	-	-
- Bioenergy	19.1	17.6	-	-
- Environmental Services	23.9	27.4	8.0	8.0
- Information Technologies	18.6	12.4	24.0	14.0
- Industrial Engineering and Construction	37.8	40.5	68.0	78.0
Geography	%	%	%	%
US and Canada	14.9	14.2	-	-
Latin America	19.8	20.8	26.3	-
Europe (excluding Spain)	18.7	15.4	2.8	-
Africa	5.4	3.4	0.9	-
Asia	3.0	2.0	4.2	-
Oceania	0.3	0.4	-	-
Total Abroad	62.1	56.2	34.2	-
Total Spain	37.9	43.8	65.8	-
<b>Consolidated Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	

\* Gross Cash Flows: Earnings before interest, tax, depreciation and amortization, adjusted by the works flows done for own fixed assets



# Our Commitment

At Abengoa, we believe that the world needs **solutions** that will allow our development to be more sustainable. Scientists tell us that **climate change** is a reality, and at Abengoa we believe the time has come to pursue solutions and put them into practice.

More than ten years ago, Abengoa decided to focus its growth on the creation of new technologies that contribute to **sustainability** by:

- Generating **energy** from renewable resources.
- Recycling Industrial **waste** and **water** production and management.
- Creating **infrastructures** that prevent new investments in assets that generate emissions.
- Creating **information systems** that aid in ensuring more efficient management of existing infrastructures.
- Establishing **new horizons** for development and innovation.



To this end, we invest in Research, Development and Innovation, **R&D&I**, **globally** expand the technologies with the greatest potential, and attract and develop the necessary **talent**.

Moreover, through the **Focus-Abengoa Foundation**, we dedicate human and economic resources to promoting social action policies that contribute to social and human progress.

By doing so, we create **long-term value** for our shareholders, contribute to the development of society in the areas in which we conduct our activities, and help to make the world a better and more sustainable place for future generations.

At Abengoa, we believe that the current global economy is not sustainable. Science has reached unequivocal conclusions: climate change is a reality. Given this unquestionable fact, today's society must look towards a new model of economic development based on the efficient use of natural resources and, in particular, the energy, water and waste that we generate.

At Abengoa we took this step more than a decade ago by applying innovative technological solutions. Our objective is to be a major force in the most important areas related to sustainability:

1. In Renewable Energies, we aim to create two global leaders: In the production and commercialization of bioethanol for transport and in solar energy for the production of electricity and sale of associated technologies.
2. In Water, we are creating an international leader in the desalination and water transport market.
3. In Waste Management, we are the leaders in certain markets for zinc, aluminium and associated services.
4. We are creating an international leader in Information Technologies with high added value for efficient management in sectors such as energy, transportation, environment, public administration and global services.
5. In Industrial Engineering & Construction, we are leaders in the market for renewable energy infrastructure, transport systems and electricity.
6. We are creating new horizons for growth by developing businesses with high potential related to other renewable energies such as hydrogen and the management of greenhouse effect gas emissions.

We believe that offering innovative technological solutions and reaching positions of global leadership in these markets will lead to the creation of value in

the long term. Our objective is to maximize the value of the company by generating profitable growth through innovation.

We have already made significant progress: 1) Over the last decade we have provided new solutions for the creation of a sustainable economy; 2) We have businesses, with good prospects for growth, which are technological and market leaders on an international scale; and 3) We have obtained significant and sustained increases in our main financial figures. For example, during the period 1996-2007, Abengoa's revenue has grown at a compound average rate of 17%, the gross operating cash flow has increased by 21% and profit per share has increased by 20%.

Thanks to the efforts of the 20,000 people that make up Abengoa's workforce, we ended the year 2007 with € 3,214 M of revenue (+20.1%), € 452 M of gross operating cash flow (+57.2%), and € 120 M of net profit (+20%). But, above all else, during the year 2007 we were able to consolidate a portfolio of businesses based on sustainability with potential for profitable growth. We are in an excellent position, with prospects for another decade of growth equalling that of the past ten years and opportunities for the creation of value in all of our activities.

Our businesses that we call of horizon one (generators of cash flow and profitability in the short term) include four activities that, in 2007, brought in a total of € 2,374 M in revenue and € 350 M in operating cash flow.

1) **Industrial Engineering & Construction:** we are the second largest international power contractor of electrical installations (ENR report, December 2007), serving more than 1,700 internal and external clients. Profitable growth of this business is on track as in 2007 we were awarded important contracts allowing us to end the year with a portfolio of more than € 6,000 M.

2) **Transmission of electrical energy:** we are one of the main owners and licensees of lines spanning more than 4,500 km in Latin America, with an investment of € 1,400 M. Over the next few years we will have the opportunity to continue growing in several countries, by means of new contracts and by participating in the consolidation of this sector.

3) **Recycling of industrial waste:** we are creating an international leader. We are already leaders in Europe (zinc and aluminium) and in Spain and Portugal (management of industrial waste in general). In 2007 the company "BUS," acquired at the end of 2006, was incorporated into the zinc recycling business and a merger has been agreed with Alcasa for the recycling of aluminium. These two operations enable the creation of value from the beginning and the creation, in Europe, of more efficient businesses. This solid base will enable us to benefit from opportunities for consolidation and growth in countries that will implant more demanding regulations over the coming years.

4) **IT Systems:** we have a leading international position in the provision of information technologies with high added value for the management of sectors such as energy, transportation, environment, public administration, and global services. In 2007, we incorporated two traffic and transport companies acquired in the United States and taken a majority stake in Matchmind (Spain). Over the next few years, we expect organic growth deriving from our clients' requirement for systems and services with a high added value. We shall continue to expand our technological and geographical base by means of acquisitions when these enable the creation of value.

In the businesses that we call horizon two (profitable growth over the next few years) we have two activities:

1) **Bioenergy:** we have an excellent international position in the production and sale of bioethanol and status as the only producer present in the three main markets (United States, Brazil and Europe).

This market has been growing at 25% annually and is expected to continue to grow at a similar rate within the context of expensive oil and government support for biofuels in most countries. In fact, in 2007 the United States approved an "Energy Bill" that envisages multiplying the market by five over the next fifteen years, whilst various European countries have approved legislation in order to fulfil the planned growth targets

In this context, our strategy is to occupy positions in the main markets that are ideal, from a logistic point of view, to increase commercial penetration and prepare us for the second generation of bioethanol, which we have been developing for several years at pilot plants.

In 2007 a new plant in Nebraska was commissioned along with partially a plant in Lacq (France) and the construction of three new plants in the United States and Holland was commenced. We have also entered the Brazilian market with the acquisition of Dedini and we have won a bid to build, with the support of the United States Energy Department, the first second generation commercial plant. Over the next few years we expect an increase in revenue and profitability, despite the volatility of results that characterizes first generation biofuels. But this investment made will allow us to produce the second generation of cellulosic bioethanol as the international leader with regards to operational efficiency and commercial and logistical presence. This, together with the second generation technology that we are developing, will give us a significant competitive advantage in this high growth market.

2) **Water:** we are one of the five largest companies in the world involved in the construction and operation of desalination assets or concessions. It is a market that has been growing at a rate of approximately 10% per year. We are the leader in infrastructure in Spain. In 2007, we began the construction of two large desalination plants in Algeria and one in India. We also have a project in China, which we will start soon. Over the next few years we expect to be

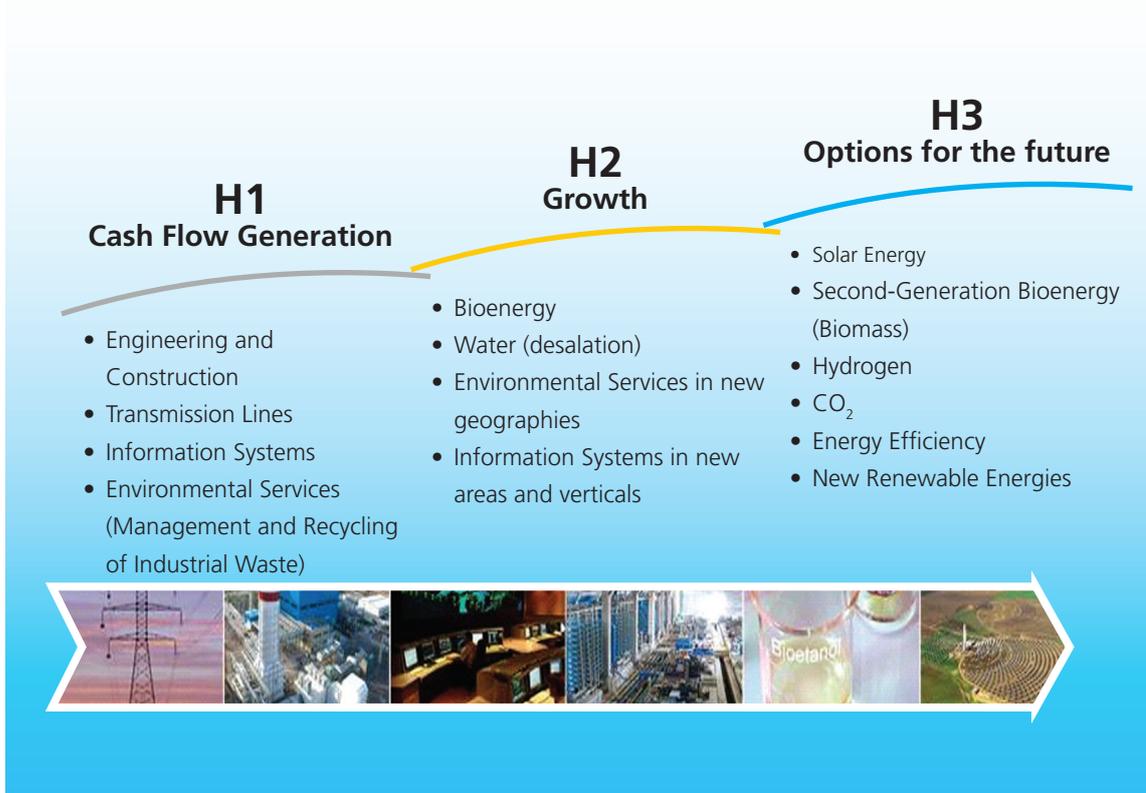
awarded new contracts in various countries as a result of our commercial activities.

In the business of horizon three (generators of future growth) we have started new activities in various markets with high potential. Some of them shall become in the future businesses of horizon two and horizon one:

- Solar Energy: we are one of the world's pioneers in large solar plants connected to the grid. During 2007, the first commercial thermosolar energy tower in the world was put into service. At the end of 2007, 170 MW of solar energy facilities were under construction in Spain, Algeria and Morocco. Over the next few years we expect significant growth given the present portfolio of projects being promoted.

- Hydrogen: we have created one of the pioneering companies in investigation dedicated exclusively to hydrogen technologies as a future energy vector.
- Management of emissions: we have a company that is focused on the management of emission rights and the development of projects for clean development mechanisms. We are also working on pioneering projects related to the capture and sequestration of CO<sub>2</sub> and energy efficiency.

In order to attain these objectives, in 2007 we reinforced the capacities that enable us to achieve profitable overall growth in markets with a significant technological component. Over the next few years, it is essential to continue reinforcing our capacities in the following areas, which are critical for our development:



**R&D&I:** in 2007 we invested € 55 M and we employ 460 professionals that work with research centres and universities in several countries.

**Internationalization:** in 2007, 62% of our business and 56% of our staff were located outside the Spain and we have a strong presence in markets such as United States and Europe and in economies with high potential for growth such as Brazil, China and India.

**Financing:** in 2007, we obtained an additional € 859 M in corporate financing with favourable conditions and arranged non-resource project financing for a total of almost € 12,000 M. This puts us in a better position to deal with the present scenario of increased uncertainty.

**Risk control:** in 2007 we continued to develop system and tools allowing us to identify and manage the financial and operational risks related to our businesses. For example, this year Abengoa carried out an SOX audit in accordance with the criteria of the strictest financial markets.

**IT and management systems:** in 2007 various mobile management systems were implemented that make decision-making, management and control of the businesses in an international context more agile.

**Attraction, Development and Retention of talent:** in 2007, 1,700 new employees were recruited, more than 660 thousand hours of training were provided and our potential executives programme was developed.

**Social responsibility, transparency and communication:** in 2007 we continued our efforts to promote culture through the Focus-Abengoa Foundation, with actions such as the purchase of Velazquez's "Santa Rufina" painting, the implementation of social policies and the promotion of knowledge regarding solutions for sustainability. From the beginning of 2008, we have a new web page that increases the company's level of transparency.

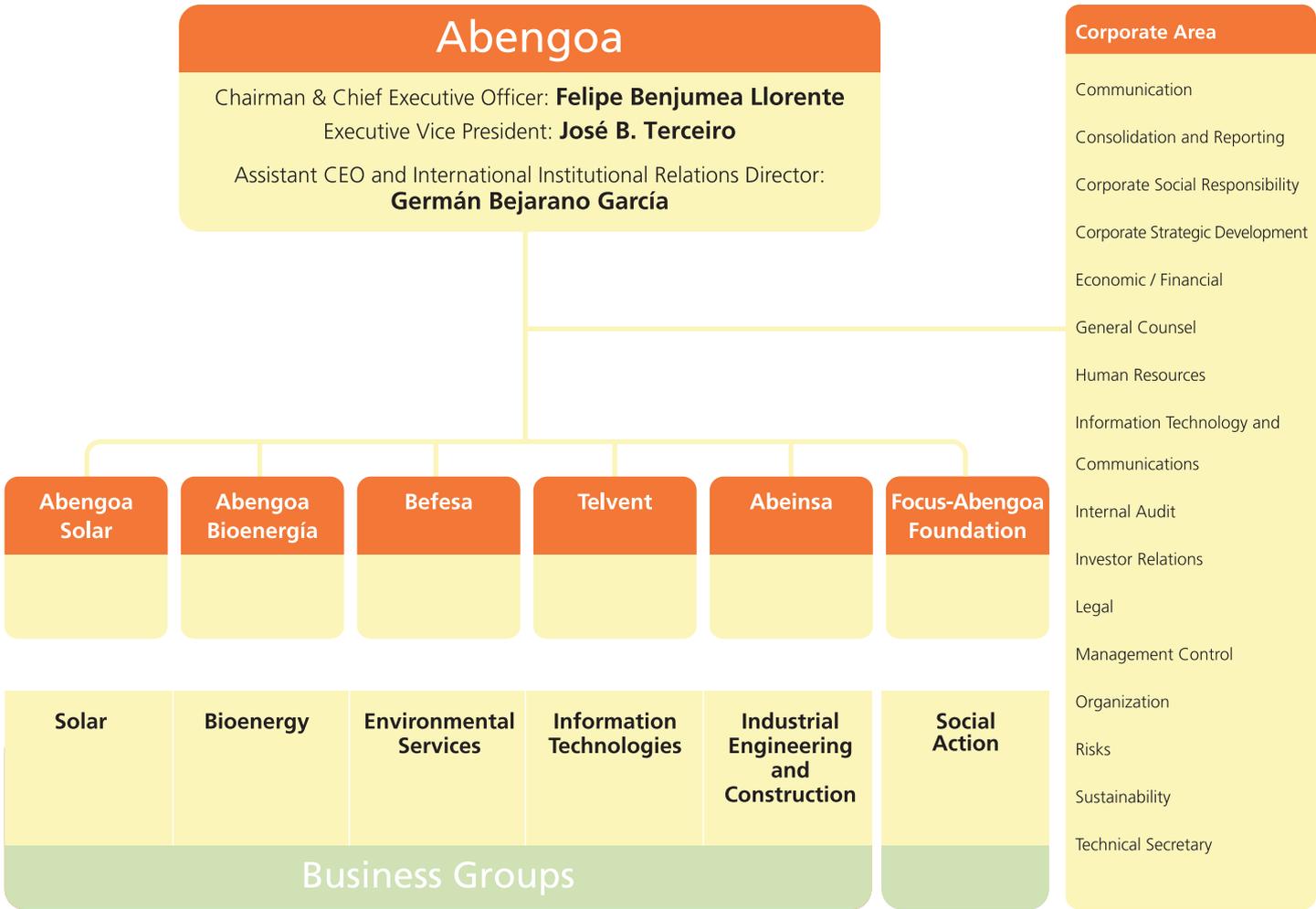
In short, 2007 has been used to reinforce our position in all of our activities, improve our performance and prepare for profitable growth. A significant part of our businesses are stable with high cash flow. In some businesses we are leaders in high-growth markets and other businesses have high potential for growth. Thanks to this position, which we have reached over the past few years, one of our main challenges continues to be choosing between the opportunities for growth that are available to us and assigning our resources to the activities with the greatest potential for the creation of value.

Obviously, there are risks and challenges ahead. In some of our markets the regulations are becoming stricter, financial conditions are becoming less favorable, and detractors of innovation continue to express opinions based on erroneous data about renewable energy. However, the demand for innovative solutions to ensure sustainability will continue to grow and our presence in various different sectors will protect us. If we are capable of successfully innovating and managing our activities, as we have done in the past, we will create value for our shareholders and contribute to looking after the world that we will hand over to future generations.

# Current Organization

Abengoa is a technology company applying innovative solutions for sustainability in the infrastructure, environment and energy sectors while contributing long-term value for our shareholders via management characterized by the fostering of business spirit, social responsibility and transparency and rigor in management.

We are present in more than 70 countries where we operate with five Business Units: Solar, Bioenergy, Environmental Services, Information Technologies, and Industrial Engineering & Construction.



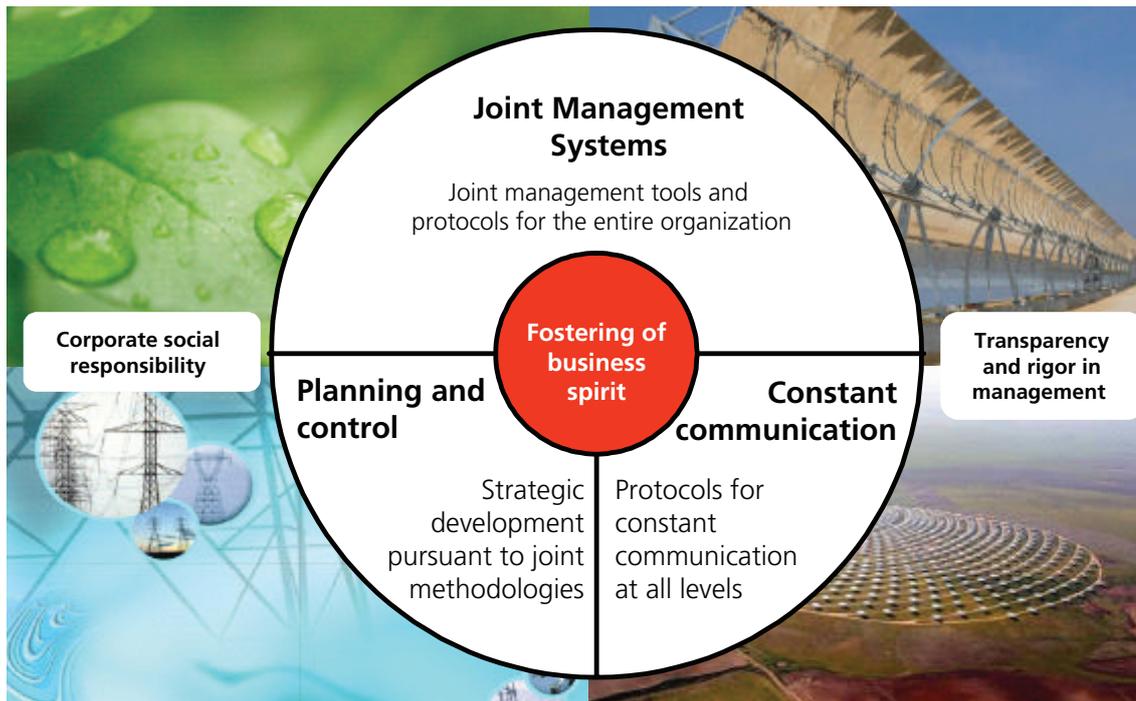
## Our management model

Abengoa's growth is based on five strategic pillars:

1. Creation of new businesses that help to fight climate change and contribute to sustainability.
2. Maintenance of a highly competitive human team.
3. Constant value creation strategy via generation of new options, defining current and future businesses pursuant to a structured procedure.
4. Geographic diversification in markets with the greatest potential.
5. Major investment effort in research, development and innovation activities.

These pillars are supported by a management model characterized by three elements:

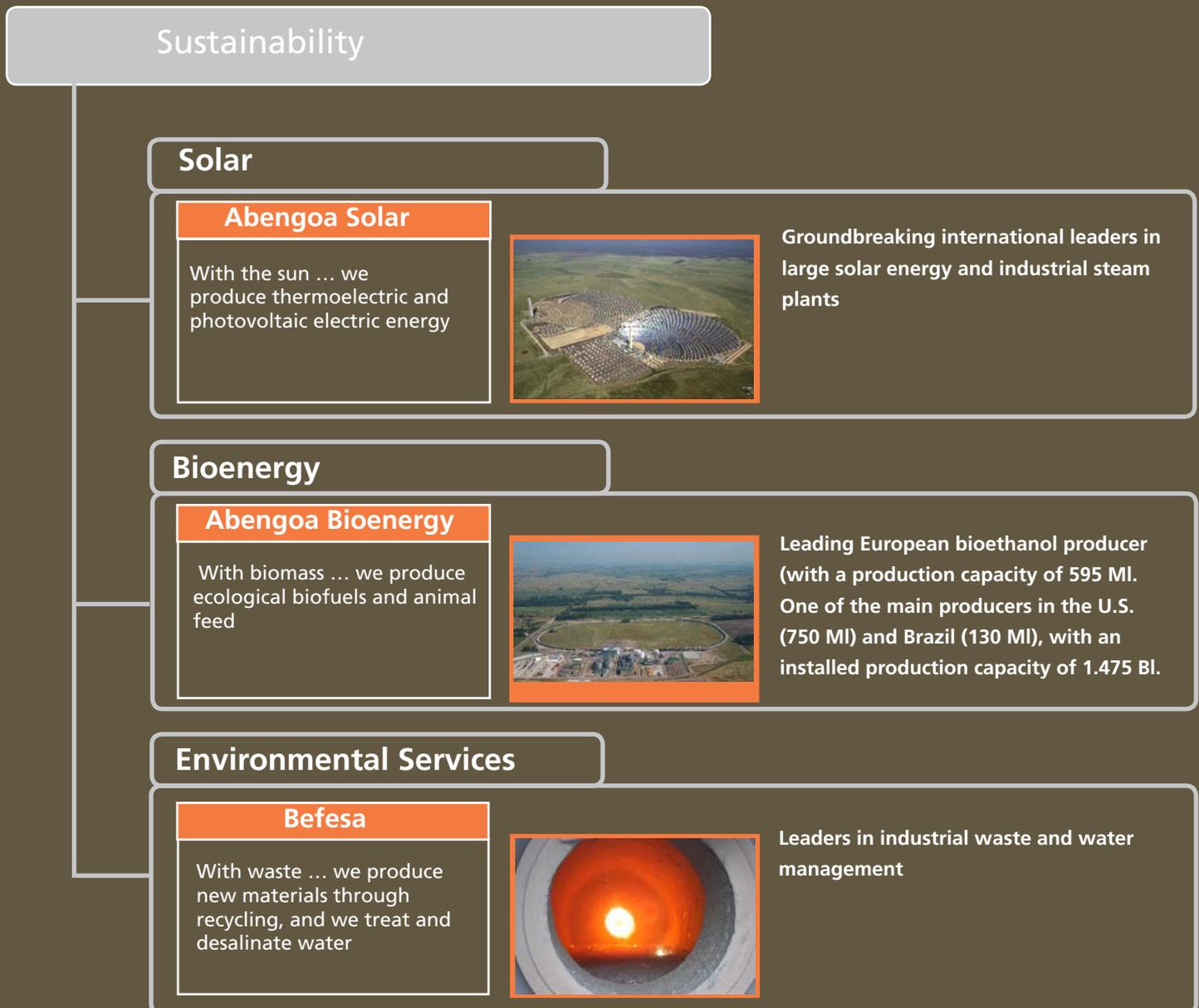
1. Corporate social responsibility.
2. Transparency and rigor in management.
3. Fostering of business spirit.



# About Abengoa

Abengoa is a **technology company** applying **innovative solutions for sustainability** in the **infrastructure, environment and energy** sectors, thus adding long-term value for our stockholders through the **encouragement of entrepreneurship, social responsibility**, as well as **transparency and efficiency in management**.

## Business Groups



## Information and Knowledge Society

### Information Technologies

#### Telvent

With information technologies ... we manage business and operational processes in a secure and efficient way



Forerunners in the development of information technologies for a sustainable and secure world

## Creation of Infrastructures

### Industrial Engineering and Construction

#### Abeinsa

With engineering ... we build and operate conventional and renewable energy power plants, power transmission systems and industrial infrastructures



Operating in 28 countries

## Social Initiatives

#### Focus-Abengoa Foundation

With the development of social and cultural policies ... we contribute to economic progress, social equity and the conservation of the environment in communities where Abengoa is present



An international cultural symbol and an instrument for channeling Abengoa's social initiatives

# Solar

At Abengoa Solar, we develop and apply technologies for generating electrical energy with the Sun. To this end, we promote, build and operate concentrated solar energy and photovoltaic electricity plants and develop and commercialize the technologies needed to do so (R&D&I).

**Groundbreaking international leaders in large solar energy and industrial steam plants**



With the sun ... we produce thermoelectric and photovoltaic electric energy



[www.abengoasolar.es](http://www.abengoasolar.es)

## Solar

In 2007, we completed construction of the world's first solar tower plant, with an installed capacity of 11 MW, as well as the first commercial concentration photovoltaic plant, with an installed capacity of 1.2 MW. These plants are located in Sanlúcar la Mayor (Seville) and are part of the Solucar Platform, which will have an installed capacity of over 300 MW.

In 2007, we began construction for 130 MW in solar plants in Spain, including two 50 MW parabolic trough plants, and a 20 MW tower plant at the Solucar Platform, as well as several photovoltaic plants in Spain.

In 2007 we started construction on our first plants outside of Spain, including the Integrated Solar Combined Cycle plants in Algeria and Morocco, as well as solar industrial steam systems in the United States.

Abengoa is a pioneer and international leader in the development of solar technologies and their application in large-scale electric generation plants.

## Our Business

At Abengoa Solar, like the rest of Abengoa, we develop innovative solutions for halting climate change to ensure sustainability. Specifically, we develop technologies that allow generation of electricity and clean industrial energy with the sun, and we apply those technologies to the plants and facilities we design, build and operate and which, in most cases, we own as well.

At Abengoa we believe that solar energy has the characteristics required for resolving, to a significant extent, our society's need for clean and efficient energy sources. Each year, the sun casts down on the earth an amount of energy which surpasses the energy needs of our planet many times over, and proven commercial technologies for harnessing this energy in an efficient way are available today. Our mission is to contribute to meeting an increasingly higher percentage of our society's energy needs through solar-based energy.



To this end, at Abengoa Solar we conduct our activities using the two main existing solar technologies. First, we work with Concentrated Solar energy (CSP) technology to capture the direct radiation from the sun to generate steam and drive a conventional turbine or to use this energy directly in industrial processes, usually in large plants that make up part of a power network. Secondly, we work with photovoltaic technologies that capture the sun's energy for direct generation of electricity thanks to the use of materials which utilize the so-called photovoltaic effect.

We make use of these technologies in four basic lines of activity. The first activity we carry out at Abengoa Solar is the promotion, construction and operation of Concentration Solar energy (CSP) plants. We currently design, build and operate efficient and reliable central receiving systems (tower and heliostats) and parabolic trough collectors, with or without storage, as well as personalized industrialized facilities for producing heat and electricity. In each case, we use our own technology in both the design and operation of the plant. This activity is currently under development in various geographical locations, including Spain, northern Africa, the Middle East and the United States of America.

Our second activity involves the promotion, construction and operation of photovoltaic plants and facilities. We are currently working on facilities using a wide variety of technologies, including one and two-axis trackers and plants with concentration systems.

Our third activity is research and development for improving current technologies and developing new ones. To achieve this, we have research centers in Madrid, Seville and Denver, in the United States. We believe that in a high-growth market like that of solar energy R&D investment is crucial in order to ensure enhancement of today's technologies. In fact, we have an R&D group with over 20 years of experience in solar energy, with the capability of developing our own technology in our main business areas. The group works in collaboration with the world's main research institutes, including Ciemat, DLR, Fraunhofer, ISE and NREL. Finally, we manufacture and commercialize the technologies we develop, in some cases with third parties. We are currently designing and manufacturing key elements like heliostats and parabolic trough collectors

Progress in 2007

The year 2007 represented a key year in the evolution of our business, paving the way toward high, sustained and global growth of our business:

- In 2007 we started up PS10, our first Concentrated Solar energy (CSP) plant. This plant has an installed capacity of 11 MW and is located at the Solucar Platform in Sanlucar la Mayor (Seville). It is the world's first tower technology commercial facility, and represents a milestone, not only for Abengoa Solar, but for the entire solar energy sector as well.
- The Solucar Platform was inaugurated in 2007 as well. With 300 MW of installed capacity, it will be the largest solar Platform in the world.
- The world's second largest commercial tower, PS20, has reached a height of 165 meters and is heading towards its completion at the end of 2008.
- Construction began on our first two parabolic trough plants, each with 50 MW and located at the Solucar Platform.
- Over the course of 2007 we built up a portfolio of projects under promotion in Spain which will allow us to meet our goals for solar plant construction over the next few years. Within this portfolio several projects have key permits, so we may confirm that construction will be underway in the short term, including the Solucar Platform and two 50 MW plants in the town of Ecija (Seville).
- With respect to photovoltaics, Seville PV, our first plant, completed its first year of production, demonstrating the commercial viability of the low-concentration technology utilized. Construction was also completed on the second Copero plant in Seville, and construction of three other plants is underway.
- Within our international activities, in collaboration with Engineering and Industrial Building Group, the construction of the world's first two Integrate Solar Combined Cycle (ISCC) plants, that integrated a cycle of natural gas with a parabolic trough field, is underway. The plants are located in Algeria and Morocco.
- In the United States, we continued to build systems for supplying industrial steam to our clients throughout 2007. During the second half of the year we completed our largest project to date for Frito-Lay in California.

- In R&D&I, the Solucar Platform became one of the world's main solar energy research centers in 2007. The Platform now has various groundbreaking research facilities which are either operative or under construction, including a high-temperature tower, a parabolic trough plant for direct generation of steam, a Stirling dish facility and diverse photovoltaic concentration technologies.
- Finally, in 2007, Solucar TR, a new parabolic trough design, was created and validated. It allows improvements in production of the previous generation at a much lower cost, and is manufactured by Eucomsa and Comemsa, companies that make up part of the Solar Business Unit.

1. Promotion, construction and operation of Concentrated Solar energy plants.

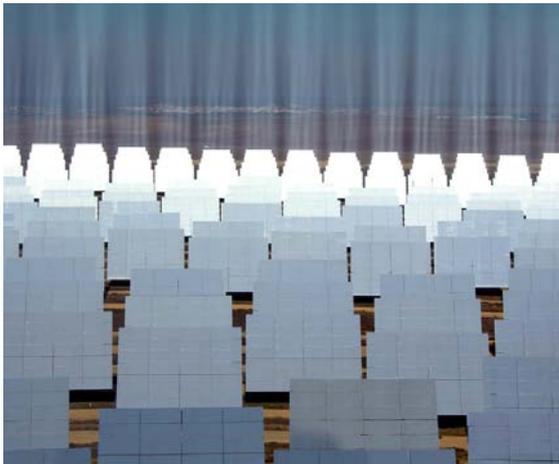
In 2007, the Concentrated Solar energy (CSP) promotion market experienced tremendous growth, which seems to be the prelude for an implementation phase of this technology in various geographical locations. This growth is based on four essential factors:

- The increase in the economic cost of conventional energy sources due to high oil and gas prices.
- Acknowledgment by the societies in which we operate of the hidden costs of fossil energies arising from the emissions they produce.
- The cost reduction of solar energy and increased understanding of available options.
- Approval in various countries as a result of these three factors of regulatory frameworks favorable to the introduction of concentrated solar energy technologies and the support of specific projects.

This has driven the Concentrated Solar energy (CSP) market from one construction project in 2006 to eight solar and two Integrated Combined Cycle (ISCC) plants in 2007. The Spanish market served as a forerunner in 2007 with a regulatory framework that permits guaranteed tariffs for 500 MW. However, significant initiatives in other places have been observed, which lead to optimism regarding the future of large Concentrated Solar energy (CSP) plants.

Within this context, at Abengoa Solar we are strongly committed to the development of the Concentrated Solar energy (CSP) market, and we currently have 11 MW in operation, 160 MW under construction, and several hundred more at the advanced promotional stage:

- PS10, the world's first commercial tower plant in use, and Spain's first plant connected to the power grid, is backed by the premiums set forth by Royal Decree 661/2007. The year 2007 served to demonstrate the commercial viability of tower technology and to place ourselves at the world's forefront in this technology of enormous potential.



geographical locations, including the United States, northern Africa and the Middle East. We are currently constructing Integrated Solar Combined Cycle (ISCC) plants in Algeria and Morocco using gas and solar combined cycle technology, and solar industrial steams systems in the United States.

#### PS10 Plant

Its solar field, with 624 heliostats of 120 m<sup>2</sup> each, is especially noteworthy. It concentrates solar radiation on the receiver that is located at the top of a 120-meter-high tower to produce steam and drive a turbine joined to the electrical generator connected to the power network.

- PS20, the world's second largest tower plant, is currently under construction, implementing a series of improvements over PS10 in key elements such as the receiver.
- Solnova 1 and 3, 50 MW parabolic trough technology plants, each located at the Solucar Platform, construction of which began in 2007 using our own technology and engineering.
- We have five 50 MW plants at a very advanced stage of promotion, three at the Solucar Platform and two in the town of Ecija, as well as two 20 MW tower plants at the Solucar Platform and in Almaden (Ciudad Real), respectively.
- Beyond the Spanish borders, we have teams directing the promotion of projects in various

The plant will generate 24 GW hour of clean energy per year, enough to supply power to 5,500 homes, reducing CO<sub>2</sub> emissions by 6,700 tons a year. The plant also has a storage system of almost an hour in duration which allows management of cloudy spells without having to shut down and then restart the plant. It is, in fact, the world's first solar plant with a built-in storage system.

In June of 2007 the plant excelled in its first operating tests in accordance with the contracts signed with the finance banks, and since then has continued to show even better results. Since operation began, PS10, has not only met electricity production goals, but has also served for us at Abengoa Solar as a learning tool for the next tower technology plants.



**PS20 Plant**

With 20 MW of power, PS20 will be able to supply electricity to 10,000 homes. It will generate 44 GW of power, and reduce CO<sub>2</sub> emissions into the atmosphere by 12,100 tons per year. The plant is made up of 1,255 heliostats and a 160-meter-high tower.

Each plant has 54,000 square meters of collectors. A collector has an opening of six meters and a surface area of almost 150 square meters. The entire facility will take up an area of 120 hectares and will permit production of 115 GW hour of power, which will supply 25,700 homes and reduce CO<sub>2</sub> emissions by 31,400 tons annually.



This plant is backed by Abengoa Solar's accumulative experience in the construction and operation of these kinds of plants, and includes several enhancements in design that will lead to obtaining higher efficiency than at PS10 for this second generation of power plants.

**Solnova 1 and Solnova 3 Plants**

In 2007, we began construction on our first two parabolic trough plants at the Solucar Platform (Seville).

The technology consists of concentrating solar radiation by means of high-precision curved mirrors on a heat-absorbing pipe, through which a liquid flows that reaches high temperatures. This fluid allows steam to be produced which is forwarded to a turbogenerator where it expands in order to produce energy.



### Helioenergy 1 and Helioenergy 2 Plants.

These are Concentration Solar energy (CSP) plant under development in the town of Ecija (Seville), using parabolic trough technology, each with 50 MW.

They will allow power supply to almost 25,700 homes and reduce CO<sub>2</sub> emissions by 31,400 tons per year.

### Almaden Solar Plant

A Concentrated Solar energy plant under development, utilizing tower technology. It will be located in Almaden (Ciudad Real) and will have a nominal output capacity of 20 MW. The promoting company represents a joint venture between Abengoa Solar, Sepides and the IDAE.

It will generate over 40 GW hour of power, reducing CO<sub>2</sub> emissions into the atmosphere by over 12,100 tons per year.

### United States

In 2007 we set up a team in Denver (Colorado) with the capability of offering solar-based industrial steam solutions for clients currently using steam of fossil origin. We thus offer a wide range of options that fully cover industrial and commercial applications, from heating water to generating steam or air conditioning. We install these systems all over the world thanks to the standard modifiable system we designed.

Example: Frito-Lay – Modesto, California  
This is largest operating solar industrial steam system in the United States. It is made up of 5,056 square meters of parabolic trough collectors situated on a piece of land adjacent to Frito-Lay's snack factory in Modesto, California.

The collectors will operate at temperatures of up to 250 degrees centigrade to produce steam. The steam is transferred to a plant where it is used to heat the oil for potato chips and other snacks.

Our system is backed by collaboration from the Energy Commission of California under the PIER (Public Interest Energy Research) Program.

In addition, we are studying the possibilities for developing electrical energy plants in the United States.

### International

Beyond Spain and the United States, we have a team that is developing opportunities in other countries. It has the capability of offering and designing the best technical solution for each market and specific need. Throughout 2007, contracts were signed for two large Solar Combined Cycle (ISCC) plants. These projects represent the first in the world to combine solar energy and natural gas in the same electricity production cycle. By combining both energy sources, we achieve lower natural gas consumption and therefore a reduction in CO<sub>2</sub> emissions into the atmosphere as well.

The projects underway in Algeria and Morocco have made Abengoa forerunners in the design and engineering of combined-cycle hybrid solar fields.



**First Integrated Solar Combined Cycle (ISCC) plant, in Algeria**

In the first half of 2007 the foundation stone was laid at the Hassi-R'mel parabolic trough plant. This project is being carried out in conjunction with Abener, part of the Engineering and Industrial Construction Business Unit, Abengoa Solar and NEAL (New Energy Algeria).

The project involves the construction of a hybrid plant with a capacity of 150 MW, of which 20 MW will be supplied from a solar field with over 180,000 m<sup>2</sup> of usable reflecting surface area.



**Second Integrated Solar Combined Cycle (ISCC) plant, in Morocco**

In the second half of 2007, Abengoa, through Abener and in collaboration with Abengoa Solar, signed the contract with the Moroccan client ONE (Office National de l'Electricité), for the construction of a 470 MW hybrid plant using combined cycle technology with a solar field of parabolic troughs of 20 MW.

**2. Promotion, construction and operation of photovoltaic facilities**

The market for promoting photovoltaic technology continued to show very high growth in principal countries, highlighting Europe and, more specifically, Spain, as true driving forces of this growth. Growth occurred in both the market of photovoltaic roofing and covering, as well as facilities connected to the power network.

This growth was made possible thanks to current tariffs in several markets, including Spain. In the latter case, these tariffs allowed construction of plants using conventional and even "old" technologies, for all kinds of businesses both with and without experience and knowledge of the sector, which therefore led to real saturation in the sector. Tougher tariffs are anticipated in 2008, as already announced in Germany and possibly in Spain.

Within this context, at Abengoa Solar we have allocated to photovoltaics a small percentage of our investments, focusing our efforts on developing and testing technologies that will allow us to be competitive in the long term.

Throughout 2007 we promoted and built plants connected to power networks, utilizing the most advanced technologies, both in photovoltaic modules as well as sun-tracking systems to suitably orient panels and obtain higher efficiency and profitability. We are convinced that this strategy will allow us to be competitive in the long run. Thus, in 2007, we made great technological efforts to increase the productivity of current systems.

**PV Seville Plant**

Abengoa Solar created a company with 20% of its shares held by the Institute for Innovation and Development of Andalusia (IDEA) for the construction of PV Seville.

This is the first commercial low-concentration photovoltaic plant in the world. With a power output capacity of 1.2 MW, it is located at the Solucar Platform in Sanlucar la Mayor.

The plant was started up in May of 2006 and since then its operation and exploitation have surpassed the estimated design values. PV Seville has 154 trackers covering 12 hectares of land.

This plant has the capacity to generate 2.1 GW hour of clean energy per year, enough to supply electricity to 650 homes, with CO2 emissions reductions of 1,800 tons each year.



**Copero PV Facilities**

This is a series of ten photovoltaic facilities with a total of one MW built within Emasesa's Wastewater Purifying Station (EDAR) in the El Copero area of the town of Dos Hermanas (Seville). Ownership of the plants is split 50-50% between Emasesa and Abengoa Solar.

The total surface area takes up 93,800 m<sup>2</sup>, where 63 two-axis trackers have been installed, each of approximately 120 m<sup>2</sup>, with a total surface area of 7,686 m<sup>2</sup> and a total power output capacity of 972,720 kWp.

**Photovoltaic plants under construction**

We are currently building three plants, two utilizing two-axis solar tracking systems, each with 1.9 MW, and a 5.7 MW plant which uses a one-axis tracking system (orientation towards the sun in its East-West path).



**3. Supply of key components**

At Abengoa Solar, we develop our own technology, design our plants and we ensure reliable, quality supply of key elements that will determine the cost and production of our facilities. In order to meet this goal, we managed to assure the supply of most key components in 2007:

- For concentrated solar energy plant with tower technology, we design our own heliostats and manufacture them in our own or at third-party facilities. With respect to receivers, we work in conjunction with specialized companies in order to make the designs required for each of our plants a reality.
- For concentrated solar energy plants with trough technology, we design our collectors and they are manufactured for us by Eucomsa and Comemsa, part of the Abengoa group. Cylindrical-parabolic mirrors are made by the Rioglass Solar company with whom we signed a commercial agreement which permits us to guarantee the supply of this key component of much higher quality than in mirrors that are available on the market to date. This translates into lower assembly costs and less breakage in the field. Finally, with respect to receiving pipes, in 2007 we met our needs for the next two years.

### Research, Development and Innovation

At Abengoa Solar, we believe that investment in R&D&I is vital in order to be able to offer the best solar energy-based solutions for contributing to the fight against climate change and ensuring sustainability. This is why we are making high investment efforts in order to lead, through our own resources and by means of agreements with leading institutions, a highly ambitious program in research and development.

Our program has two goals:

1. To lead in the development of the generation and storage technologies we consider most advantageous for the future.
2. To understand all solar technologies to a considerable degree.

Thus, in 2007, our R&D&I area had the twofold objective of improving current technologies and developing more efficient new technologies. In order to reach these goals we set up a group of over thirty people with work centers in Sanlucar la Mayor (Seville), Madrid and Denver (Colorado). We also collaborate with research institutes and specialized universities in each of the technologies we are working on, including Ciemat (Spain), CNRS (France), DLR (Germany) and NREL (U.S.).

In 2007, we made progress in our main projects and launched other new ones:

- Design, testing and validation of new parabolic trough collectors. In Spain, we developed the Solucar TR collector, which significantly reduces manufacturing costs, decreases manufacturing times, simplifies transportation and facilitates and reduces plant assembly costs. To do this, several designs were made, two were selected for producing prototypes that were tested on the test block at Eucomsa, part of the Abengoa Group and, finally, one was chosen as the reference design. Meanwhile, in the United States, and in collaboration with NREL, we are developing another collector based on those we currently use for industrial facilities.
- Enhancement of parabolic trough technologies. In 2007, production began at our demonstration plant at the Solucar Platform, the first parabolic



- trough plant outside the United States. This facility will permit optimization of the technology we will use at our Solnova 1 and 3 and future plants, as well as identify possible improvements in optics and components such as structures, supports, mirrors, ball joints, flexible joints and pipes. In 2007 construction also began on a parabolic trough demonstration plant for direct steam generation. This facility will allow validation of the concept of using water as the heat transfer fluid.
- Improvements in tower technologies. Throughout 2007 construction progressed on the demonstration high-temperature tower with approximately 2 MW of power. This plant is being built based on the experience with PS10 and PS20, and will allow production of superheated steam, leading to significant improvements in turbine efficiency.
- Other generation technologies. As a part of our 2007 R&D efforts, we designed and built several Stirling dishes on the Solucar Platform. Our goal was to obtain direct experience in design, construction and operation with the aim of

validating the potential of this technology for the future. Stirling dishes have the advantage of their modularity, the possibility to be used for distributed generation given that they do not require a turbine; however, costs are currently much higher than those of other technologies.

- Improving storage technologies. Storage is essential for increasing the availability of thermal solar energy plants, to allow increased annual capacity and efficiency in the energy conversion cycle, thus reducing the number of plant start-ups. In 2007, in collaboration with various research centers, we launched a project for developing new energy storage technologies that can be applied to solar plants. Through this project we are working toward validating technologies that are close to commercialization as well as those that will require significant development in the coming years. One of the concepts with potential in which Abengoa Solar has been working over the past few years is storage by means of the latent heat of phase-changing materials (PCM), such as molten salts in tanks with different temperature stages (the Distor concept) and electrical storage.
- Photovoltaic concentration, in which we continued to work on low, medium and high concentration photovoltaic systems. In 2007 the production of various concentration systems installed on the Solucar Platform was analyzed, including low concentration systems and high concentration systems via dish as well as point focus. A research program was also started up that focuses on developing concentration systems for the future.
- In 2007 the photovoltaic laboratory was started up. This is where we test and measure the performance of all types of photovoltaic systems under real operating conditions using different tracking systems. The project aims to create an experimental tool for analyzing the energy production costs of different technologies and configurations, preventing and solving problems during the life of the photovoltaic systems, and identifying optimal technologies and configurations for different kinds of facilities. The photovoltaic laboratory was installed on the Solucar Platform, with the infrastructures and equipment needed to measure and analyze photovoltaic devices and systems.



#### U.S. Abengoa Solar R&D Activities

In the year 2007 we launched our first research projects in the United States from our facilities in Denver (Colorado) and in collaboration with the most relevant U.S. research centers.

In thermosolar technology, we were selected by the U.S. Department of Energy to execute three R&D projects:

- Development of more efficient parabolic trough collectors in continuation of the work we are doing with NREL.
- Development of advanced reflecting materials.
- Utilization of molten salts as the heat-bearing fluid in parabolic trough collectors in combination with thermal energy storage.



# Bioenergy

Abengoa Bioenergy is its holding company. The Business Unit is dedicated to the production and development of biofuels for transport, bioethanol and biodiesel, among others that utilize biomass (cereals, cellulosic biomass, and oleaginous seeds) as the raw material. The biofuels are utilized for ETBE production (gasoline additive), or for direct blending in gasoline or gas oil. Given that they are renewable energy sources, biofuels reduce CO<sub>2</sub> emissions and contribute to the security and diversification of the energy supply while reducing the dependency on fossil fuels utilized in the transport sector and helping towards compliance with the Kyoto Protocol.

**Europe's largest bioethanol producer (157 million gallons production capacity) and one of the largest producers in the US (198 million gallons), and Brazil (35 million gallons), with a total of 390 million gallons production installed capacity.**

An aerial photograph of a bioenergy processing facility. In the foreground, there are several large white storage tanks, a green-roofed building, and a large circular pond. A long line of black trucks is parked in a curved lot. The background shows a vast, flat landscape with green fields and a line of trees under a clear sky.

From biomass... we produce ecologic biofuels,  
renewable energy, and animal feed.

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

## 2007 Summary

2007 has been a year of changes in all aspects, in global cereal markets, in the legislative scope, and in our business strategy and our new global vision. But also, we have been rewarded for our correct fulfillment of our activities, perseverance and commitment with the environment and sustainable practices that we carry out in all areas in our company.

In legislation it is worth pointing out the new Energy Bill approved by the US Congress in December. This law is highly beneficial for Abengoa Bioenergy, in a sense that it provides for dramatic increases in the objectives set for 2022 by this country's government, for the use of biofuels, additionally setting the guidelines for the expansion of a national pipeline distribution network. On the other side, the European Commission established its own objectives in the 2003/30/EC Directive that are being incorporated gradually by the different Member States. This new approaches adopted by the Administrations have as ultimate aim to obtain a low energy dependence on imported oil, and to reduce emissions of greenhouse effect gases to the atmosphere.

During 2007 our projects in Europe and USA have progressed as scheduled and the new plants in Lacq, France and Nebraska have started to produce bioethanol. Additionally, we have completed the expansion of our Bioetanol Galicia plant, in Spain, to a final installed production capacity of 52 million gallons per year. Our other projects in Illinois and Indiana, and UK and The Netherlands have also made significant progress, and we have started the construction of the plants in Illinois and The Netherlands. Finally, entering the Brazil market, after the acquisition of Dedini Agro, has contributed with two new bioethanol plants from sugar cane, with increase our global potential and our business opportunities.

Cereal, our main raw material in Europe and the US, has experienced a great increase of prices in all global markets. In Abengoa Bioenergy, we have been able to confront this scenario by successfully modifying the production processes in two of our facilities in Spain, in La Coruña and Cartagena, switching from wheat and barley to corn. On the other hand, Brazil uses sugar cane as practically the sole raw material.



We have started analyzing and optimizing our processes to obtain a greater yield in production.

In Abengoa Bioenergy we intend to establish a leadership position in the bioethanol industry and to remain one of the largest producers in the world. One of our main objectives is to develop leading edge processing technology for bioethanol production and co-products, carrying out the best and most efficient operating practices. This year, our efforts have been rewarded by obtaining R&D grants by both, the Spanish Government (I+DEA Project), and the US Government (DOE), for researching the complete bioethanol life cycle, raw materials production, and biotechnology; and for the design, construction, and operation of a commercial scale cellulosic bioethanol plant in the state of Kansas, USA, respectively.

On top of the numerous inherent environmental benefits of biofuels, our activities throughout the years have been carried out within a sustainability framework, always keeping our respect for the environment, human rights as one of our maxims. This has been reflected by the different awards and received during 2007, where it is worth pointing out the 2006-2007 Prince Phillip Award to Renewable Energies and Energy Efficiency; the recognition for the Greater St. Louis Top 50 award, presented by the St. Louis Regional Chamber and Growth Association (RCGA) in conjunction with Deloitte & Touche USA; and the Annual Product Stewardship Award, for the safe transportation of hazardous materials by rail BNSF Railway. Furthermore, we contribute to research and development with universities and R&D centers cooperating in several research projects.

**Our Business**

Abengoa Bioenergy remains as a leader in the development of New Technologies for the production of biofuels and the sustainability of raw materials, investing a great amount of resources in R&D. But also, our Trading activities position us as a services company which provides global solutions, with great marketing capabilities, and commodities management, based on our global production capacity and operational efficiency, which prove to be a strong foundation that provides reliability and critical mass, key for the optimum performance of our activities.

Our activities can be grouped in 4 major areas:

- Grain Origination
- Production
- Bioethanol and DGS Marketing
- New Technologies

The combination of Abengoa Bioenergy's international marketing and cellulosic bioethanol technology capacities and the local agricultural, production and marketing capacities will result in very significant synergies that will allow the attainment of important growth levels in the world's bioethanol market together with the technology that will allow the achieving of lower costs per gallon of bioethanol.

Our Business Unit comprises the management of the following companies:

- Abengoa Bioenergy, S. A.
- Abengoa Bioenergy San Roque, S. A.
- Abengoa Bioenergy Nuevas Tecnologías, S. A.
- Abengoa Bioenergy Belgium, N. V. / S. A.
- Abengoa Bioenergy Brazil
- Abengoa Bioenergy Corporation
- Abengoa Bioenergy Engineering & Construction, LLC
- Abengoa Bioenergy Germany GmbH
- Abengoa Bioenergy of Kansas, LLC
- Abengoa Bioenergy of Illinois, LLC
- Abengoa Bioenergy of Indiana, LLC
- Abengoa Bioenergy of Nebraska, LLC
- Abengoa Bioenergy Netherlands B. V.
- Abengoa Bioenergy New Technologies, Inc.
- Abengoa Bioenergy Trading B. V.
- Abengoa Bioenergy Trading, LLC
- Abengoa Bioenergy UK, Ltd



- Abengoa Bioenergy U. S. Holding, Inc.
- Abengoa Bioenergy France, S. A.
- AB Bioenergy Hannover, GMBH
- Biocarburantes de Castilla y León, S. A.
- Bioener Energía, S. A.
- Bioetanol Galicia, S. A.
- Ecoagrícola, S. A.
- Ecocarburantes Españoles, S. A.

Grain Origination

Acquiring grain as raw material (wheat, barley, and corn) for our plants, to produce bioethanol and DGS, is a crucial step for the successful outcome of our operations.

Throughout our history, we have accumulated a wide experience in different fields, both in large cereal purchases in the market, and second, in establishing contracts directly with the farmers, therefore ensuring the cereal supply to the business group plants. We also hold a great knowledge of the applicable legislation to operate within the EU and US Government.

Production

We produce our main product, bioethanol, in our facilities in Europe and the United States, and now also Brazil. From cereal grain (and sugar cane), by means of chemical processes and treatments, we obtain bioethanol to produce ETBE (a component of

all gasolines), or for direct blending with conventional gasolines to produce biofuels, mainly e85 (a blend of 15% gasoline, and 85% bioethanol). As a secondary product resulting from the production process of bioethanol, we obtain the so called DGS. This is a highly proteic compound resulting from the extraction of the starch from the cereal grain. It is an excellent nutritional complement as feedstock for cattle.

Currently we own 10 bioethanol and DGS production facilities throughout Europe, the United States, and Brazil, which give us a total installed production capacity of approximately 1,475 million gallons annually. Additionally, we have several others in project and under construction in Europe and the U.S.

Marketing of Bioetanol and DGS

In Abengoa Bioenergy we have corporate offices in key spots for bioethanol global trade, located in Rotterdam, The Netherlands, with direct access to the Europoort and exports, and in St. Louis, U.S.A., in the heart of the main area for cereal crops and cattle breed of the country, from where we assist the generated demand in the European and North-American bioethanol and DGS markets.

Markets' fluctuations, the different political circumstances of the various geographical areas in which we operate, and other factors that have influence in our activities, either at originating raw materials, or in the production process of our products, are meticulously analyzed from a global point of view, in order to obtain a greater yield of our processes, within a sustainability scope, holding the respect for the environment, human rights, and the community as one of our maxims.

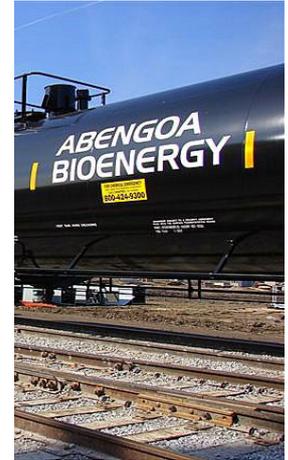
New Technologies

One of our main objectives In Abengoa Bioenergy it's to become a leading innovator in the Bioenergy industry. Our mission is to develop leading edge processing technology for bioethanol production and co-products. In order to achieve this goal, we are continuously developing our production and optimization technologies, with the best and most efficient operating practices.

Our team of in-house engineers and scientists coordinated with other R&D centers, universities, and

industrial partners to develop innovative processes to increase bioethanol yield in dry mill facilities, improve DGS quality, develop new animal feed products, and develop lignocellulosic biomass technology for bioethanol and co-products production. As part of our business strategy ABNT will generate and capture intellectual property to license technology to third parties under facility management agreements.

The U.S. Department of Energy (DOE) has awarded Abengoa Bioenergy a financial assistance grant up to \$76 million to design, construct, and operate a first of a kind commercial facility to produce bioethanol from lignocellulosic biomass, in the state of Kansas, which proves the confidence the Government of this country has on our excellent ability to perform our activities, on our commitment to quality, and on sustainability, that we have been demonstrating in our other facilities in the past few years.



**2007 Evolution**

**General Summary**

The meaning of our work...

The substitution of fossil fuels by biofuels has several immediate advantages: first of all, it involves a diversification of energy sources; second, the energy dependence is reduced, with the corresponding commercial balance improvement. Additionally, the use of biofuels favors the development of rural areas, giving third world countries a great potential. Finally, it offers a significant reduction in greenhouse effect gases (GHG) emissions. Altogether, we are facing a phenomenon which greatly improves the planet's environmental sustainability, thus the future for upcoming generations.

	2006	2007	% Growth 2006-2007
Europe	326	393	21%
USA	286	302	6%
Brazil	-	7,046	-
<b>Total</b>	<b>612</b>	<b>7,741</b>	<b>1,165%</b>

**Abengoa Bioenergy Global Staff Growth 2007**

There are multiple greenhouse effect gases (GHG) sources, the most relevant ones can be found in fossil fuels combustion in transportation, in the generation of electricity employing fossil sources, and in the destruction of the rainforest. These gases emissions are related to the development associated to a traditional model based on fossil fuel combustion, and in little efficient consumption and production patterns, from an energy point of view. Keeping in mind that 25% of these emissions correspond to the transportation sector, the greater use of biofuels has special importance to reach the global emission reduction objectives that governments from main countries and legislating internationally, and that was unanimously expressed in the political intentions in the Global Convention for Climate Change (UN), celebrated in Brazil a few weeks ago.

Within this scenario, Abengoa Bioenergy is committed to sustainability through the development of new technologies for biofuel production from biomass, in a first phase by the cereal/lignocellulosic biomass hybrid concept, and in a second phase by means of autonomous plants that will generate bioethanol, electricity, and other energy forms and co-products exclusively from cellulosic and/or lignocellulosic raw materials.

What has occurred in our operations markets...

High prices and fluctuations have been constant in the commodities markets during 2007. The growth in energy and soft commodities consumption from emerging economies (India, China, oil producing countries, such as Russia, Iran, Mexico...), the inability of producing countries to increase production, in particular the OPEP, the geopolitical instability, and the American dollar weakness have caused the WTI barrel to reach \$100 per barrel in the futures markets.



At the same time, cereal markets have suffered from the consumption pressure exerted by emerging countries and the poor harvests in producing countries such as Ukraine, Russia or Australia, which has in general pushed prices to historical records. Despite the increase in the demand for bioethanol in Europe, we have seen a slump in the prices of bioethanol mainly as a result of the low price of sugar, and these prices have only recovered right at the end of the year. In the United States, a new Energy Bill has been approved in a scenario of over-capacity and has contributed to a more than 40% hike in the price of bioethanol in only three months.

In the United States and the legislative arena, following the enactment of the Energy Bill, we can say that a new era in terms of energy is born, an era focused on diminishing energy dependence on foreign sources and improving energy efficiency. The new Energy Bill is extraordinarily favorable to Abengoa Bioenergy's sustainability strategy, as it combines a conventional corn-based bioethanol production market that will have to double at least in the next 5 years to 15 billion gallons a year at the same time as it also provides a market for at least another 21 billion gallons a year for the production of bioethanol from renewable materials to improve the life cycle of basic petrol by at least 40%, thus giving a total target market of 36 billion gallons for an obligatory minimum blend by 2022. The scale of the market, the implicit growth compared with current levels (multiplied by five) and the time-window defined (a 15-year horizon) allow us to put forward an investment scenario for the sector that will in all likelihood make it possible to achieve the ambitious goals and challenges defined by the US Congress and the Senate.

Similarly, as this process has been closely monitored by other countries or organizations such as the European Union, it is foreseeable that future legislation will be enacted in line with that currently adopted in the United States, which clearly establishes the principles governing the current industry and, at the same time, boosts the development of new technologies allowing the extensive use of biofuels sustainably. In this scenario and thanks to its enhancement potential, bioethanol takes on particular significance over other equally renewable sources. In Europe, several countries have adopted new legislation at the local level to introduce obligatory minimum targets and the introduction of mixture targets of up to 10% by 2020 are expected to be approved in the course of the coming year, in line with the political will expressed by the Council of the European Union in 2007. The Union is also expected to approve a sustainability policy aimed at improving efficiency and life-cycle management that will definitely trigger major investments in new technologies in the same way as has happened in the United States.

In Brazil, the revolution of making the country self-sufficient in energy terms has begun to bear fruit: all new cars sold and registered in Brazil are now flexible vehicles able to run on 100% bioethanol. The domestic demand for bioethanol is rising dramatically and is expected to remain at high levels for the next 10 years until fossil gasoline is almost entirely replaced in the energy pool (nowadays, bioethanol represents over 40% of the petrol consumed in Brazil). Therefore, the industry is facing a tremendous challenge in terms of the domestic market, and a very important challenge also in the export markets with the opening-up of the US and EU markets and the growing demand for fuel from South-East Asia.

#### What we have done and what we are doing ...

In this scenario of the struggle against Climate Change and our urge to improve the sustainability of our model, we continue to generate environmentally-friendly growth options aimed at improving the life-cycle model of our products/processes. The company continues to invest huge amounts of resources in its programs for the development of new technologies for producing bioethanol from biomass, a program started over 10 years ago and the basis of all our business strategy.



In this development of our hybrid model (cereal-sugar cane/cellulose biomass), we have this year succeeded in achieving several major milestones that have encouraged us to continue with our program: one important milestone has been the recent announcement of the successful production of bioethanol from lignocellulosic biomass in our technological program at the pilot plant for the conversion of lignocellulosic biomass built for the purpose in York, Nebraska, in collaboration with the US Department of Energy (DOE). In addition, we have signed a new co-operation agreement with the US Department of Energy, in the amount of \$38 million, for the design and development of what will be the world's first commercial-scale plant for bioethanol production from cellulosic biomass. This biomass facility will process 700 tons of biomass a day to produce 44 million liters of bioethanol a year, as well as other forms of renewable energy in the form of steam and electricity. The biomass facility will also have a conventional bioethanol plant next door to produce 330 million liters from cereals, which will allow both installations to enjoy the synergies of a combined capacity of over 400 million liters. This is the hybrid concept mentioned above and strategically pursued by the company to deploy its latest technology at its existing first-generation plants on three continents. Furthermore, the company also announced the signing of a 35 M€ development agreement with the Spanish Government as part of the Cenit Program to advance in the technology for producing bioethanol by biomass gasification and catalytic synthesis as well as in the exploration of new energy crops and enzyme mixtures for the production of second-generation bioethanol.

2007 has also been a year of consolidation and organic growth. In United States, we successfully started operations in August at the plant in Ravenna, Nebraska. This is Abengoa Bioenergy's largest facility with a production capacity of 335 million liters and uses approximately 1 million tons of cereal. Furthermore, we have kicked off the construction work for two new bioethanol plants in the United States with an overall capacity of 670 million liters following the successful raising of finance on the American market.



In Europe, we have completed the works to expand our cereal plant in Galicia (BG) up to a capacity of 150 million liters. During 2007, we have continued to build our cereal facility in France which is scheduled to start operating in 2008, although some operations have already started using wine-based alcohol. Construction work has also continued at the Biodiesel Plant in San Roque with capacity to produce 200,000 tons a year starting from raw vegetable oils that will come on-line at the end of 2008 and, finally, building work has started in Holland and the United Kingdom for what will be Europe's two largest bioethanol production facilities with a capacity of 480 million liters a year each.

On top of these projects developed organically, we have to add our penetration into the Brazilian market through the purchase of Dedini Agro, one of Brazil's largest companies in the cultivation and processing of sugar cane and in the production of bioethanol and sugar. It also has two production plants in the state of São Paulo that currently operate at a level of production costs that are among the most competitive in Brazil and the world, thanks to their excellent location, the expertise of their personnel and the direct control over a considerable part of the croplands through long-term contracts.

In conclusion, our leading position vis-à-vis the technological challenges needed to be successful in the second generation of biofuels, the thrust in favor of sustainability adopted by society world-wide, our geographical diversity with a presence in United States, Europe and Brazil, and the advanced technology of our facilities that gives us the flexibility to process different raw materials at our production plants, all allow us to maintain our unique position with regard to the challenges we feel the world energy market will pose in the transport sector in the years to come.

#### Evolution by Activities

The different activities in which our business is involved, have traditionally been developed in Spain, Europe, and the US. After the acquisition of the Brazilian company, Dedini Agro, we have gained a strategic position in the world's main production and consumption market of bioethanol for transportation. Hence, becoming the sole company in the world established in all three major bioethanol global markets. Furthermore, we are analyzing other possibilities in other continents.

#### Grain Origination

In 2007 the global cereal sector has been affected by the tremendous rise of grain prices compared to those of the previous year, despite a record increase in production.

This drastic rise has been caused mainly by the following factors:



- Growing influence of financial investors in cereal future markets.
- Great demand increase in emerging countries with great consumption capacity, such as China and India.
- Drastic global grain stocks reduction, creating a sense of supply problems.
- Significant increase in the cost of transports due to increasing oil prices.

Even in this relatively adverse scenario, our subsidiaries in charge of acquiring raw materials for our plants were able to supply over 800,000 tons of grain Europe (wheat, barley, and corn), and 51 million bushels (corn) in the United States, within the free market, and by means of the Energy Crops and Set-aside Lands programs promoted by governments.

Production

**Europe**

The main milestones achieved by our operations during 2007 in Europe have been of various types, such as the expansion of some of our existing facilities, the launching of several new projects and, above all, the successful switch over of raw materials to be processed due to the fluctuations in the grain markets.

We have successfully completed the expansion of the installed production capacity in our Bioetanol Galicia facilities, located in La Coruña, Spain, by 16%, reaching a total of 52 million gallons annually.

During 2007 we have seen our first European plant outside the Spanish borders produce bioethanol. The Abengoa Bioenergy France wine-alcohol plant, located in Lacq, France, started its operations in the month of February, producing 13 million gallons using this raw material. Within the same facilities, we have continued the construction of the cereal plant, which is estimated to start operating during 2008, which will finally sum up to a total installed production capacity of 67 million gallons per year.

Our European activities will increase significantly with 2 new projects launched in 2007. The construction of 2 bioetanol plants in the Europoort, in Rotterdam, The Netherlands, and in Stallingborough, United Kingdom, each with a final installed production capacity of 127 million gallons of bioethanol per year, that together with the new plant in France, and the 3 currently operating in Spain will reinforce Abengoa Bioenergy's leadership as Europe's largest bioethanol producer, and one of the largest in the world.

2007 has been a year of rapid increase of grain prices, mainly wheat and barley, our main raw materials in Europe, affecting, therefore, our operations. In our continuous effort to improve our operations within a sustainability scope, we have worked to develop the necessary technologies that would enable us to switch over of raw materials in 2 plants in Spain, in La Coruña and Cartagena. The switch process concluded successfully, and now both plants operate using corn, instead of the original wheat and barley.

Abengoa Bioenergy has been awarded the 2006-2007 Prince Phillip Award to Renewable Energies and Energy Efficiency. These awards give recognition to those Spanish companies that achieve business excellence and have proven to be outstanding in their trajectories. Among our objectives is to achieve leadership in technology and capacity of bioethanol production world-wide, to provide an alternative sustainable energy source for the transport sector. By our activities, not only do we strengthen the energy sector, but also we seek for the improvement of the environment and we contribute to the creation of new opportunities for sustainable rural development by stimulating energy crops and the creation of agro-industries, thus contributing to the maintaining of jobs and income in rural areas



**Europe Operations Results 2007**

	Ecocarburantes Españoles	Bioetanol Galicia	Biocarburantes de Castilla y León	Abengoa Bioenergy France	Total
<b>Bioethanol (m<sup>3</sup>)</b>	115,394.0	146,747.4	84,655.7	27,944.8	<b>374,741.9</b>
<b>DGS (t)</b>	122,489.1	113,538.0	100,261.9	–	<b>336,289.0</b>
<b>Exported electricity (MWh)</b>	146,000.3	165,672.8	122,446.2	–	<b>434,119.3</b>

**United States**

As well as in Europe, we have made a great effort in North America to expand our activities through the Midwestern states (Kansas, Illinois, Indiana, Nebraska), and reinforce and improve the quality of the processes in our 3 existing plants. Additionally, we have undergone tasks of improving our employees' qualification and training at all company levels.

In July our new plant in Ravenna, Nebraska, our biggest plant to date, started operating, with an installed production capacity of 88 million gallons of bioethanol per year, using corn as raw material. This plant is designed to recycle all waters of the processes, which at the end are treated and reverted back for reutilization, thus consuming less water, and obtaining a minimal pollution, and therefore, a minimal environmental impact.

During the past year we have started the construction of 2 new plants, similar to the one in Nebraska, of 88 million gallons each, in the states on Indiana and Illinois, which will reinforce Abengoa Bioenergy's position in the US bioethanol market as one of the country's largest producers.

We have undergone continuous improvements and developments in our existing facilities. Such is the case of our plant in York, Nebraska, where in October we celebrated the Grand Opening and first production of cellulosic bioethanol, in order to progressively eliminate the use of grain as raw material, one of our main goals in the long run, that will prove the bioethanol industry as one of most sustainable and environmentally friendly.



In the Colwich plant, Kansas, we celebration the 25 years of bioethanol production from this facility, one of the oldest continually operating dry mill bioethanol facilities in the country, using corn as raw material.

As in the past few years, we have continued the development of a strategy towards the potential of our employees, a key basis of our activities. We have collaborated and participated with local colleges to develop training partnerships, focused towards our industry and the world of renewable energies. Also, we have continued implementation of internal competency, development and compensation programs at all company levels that strengthen and protect key employee base.



**United States Operations Results 2007**

	ABC Colwich	ABC Portales	ABC York	Abengoa Bioenergy of Nebraska	Total
<b>Bioethanol (m³)</b>	92,565.0	83,344.0	212,270.0	135,642.0	<b>523,821.0</b>
<b>DGS (t)</b>	77,619.0	67,732.0	163,178.0	98,361.0	<b>406,890.0</b>



## Brazil

Brazil is one of the world's major bioethanol markets with an annual production of 4,625 million gallons (2006). The consumption of bioethanol is expected to continue to grow strongly thanks to the success of the fuel flexible vehicles that represent 90% of the number of vehicles sold in Brazil and that allow the use of gasoline or bioethanol without distinction.

In September Abengoa Bioenergy has closed the acquisition of 100 percent of the capital of Dedini Agro, one of the largest bioethanol and sugar companies in the Brazilian market, and has assumed control of its operations. Dedini Agro owns two production facilities in the state of São Paulo, currently operating with highly competitive production costs not only in Brazil but also in the rest of the world, thanks to the excellent location of the plants, the experience of their workers, and the fact that they have direct control of a significant part of the crop lands through long-term contracts.

The facilities are located in the cities of Pirassununga and Sao Joao de Boavista with sugar cane milling capacities of 3.4 and 2.3 million tons/year respectively. The company cultivates nearly 100,000 hectares to process this quantity of cane. Dedini Agro foresees a production of 537,700 tons of sugar and 35 million gallons of bioethanol in the sugar cane harvest season of 2007/2008.

With this acquisition, Abengoa Bioenergy becomes the only company in the world to be present in the world's three major bioethanol markets: the United States, Brazil and Europe. Following the integration of Dedini Agro, Abengoa Bioenergy expects to attain significant increases in production at the existing facilities in Brazil, develop at least one new facility, and achieve more effective international marketing of the bioethanol produced in Brazil thanks to Abengoa Bioenergy's existing trade networks. Furthermore, Abengoa Bioenergy will be able to apply the cellulosic bioethanol technology it is developing to the sugar cane husks to achieve a medium-term increase in production and more efficient cost reduction.

## Marketing of Bioethanol and DGS Bioethanol Europe

In 2003, the EU Directive 2003/30/EC came into effect, currently implemented in the legislation of most of the Member States, whose objective is "to promote the use of biofuels for transportation as a substitute of diesel and gasoline". Its basic aims were:

- The Member States will establish indicative national objectives of marketing and commercialization of biofuels. As reference values for this objectives the directive set 2% by 2005, and 5.75% by 2010, calculated over the energy contents of all gasoline and diesel commercialized in the transportation markets and the end of the specified years.
- Biofuels can be used in its pure state, blended with gasoline and diesel (5% limit in biodiesel and bioethanol), or in derived products.

In the same way, the EU Directive 2003/96/EC authorized the Member States to establish exemptions, or a reduced type, of the fossil fuels special tax, applicable to biofuels, which is currently in force in several countries. The European Commission has verified that the 2% 2005 objective has only been reached by Sweden and Germany, and that the 2010 objective will hardly be accomplished.

The European Commission considers that the indicative objectives and the fiscal incentives, on their own, were not enough to achieve the biofuels commercialization goals established by the directive. Several Member States, France, Italia, Austria, The Netherlands, Germany, Slovenia, and the Check Republic, have already approved legislation whose mandates include biofuels and gas and diesel. The United Kingdom, Spain, and Poland are currently incorporating such legislations in 2007 and 2008. However, in some of these countries, this mandate has meant the elimination of the fiscal incentives.

During 2007, by means of our commercialization activities, national - and internationally, and our experience acquired throughout the years in this type of business, we have become one of the main bioethanol managers and suppliers in the continent. We have successfully distributed approximately 120 million gallons of bioethanol in Europe.

Most of the commercialized bioethanol comes from our plants in Spain and Europe, but additionally, we have obtained 13 million gallons from third party producers, which increases our supply capacity, gives us control over the bioethanol business at continental level, and grants a clear international renown of our company's potential.

Additionally, besides bioethanol trading, during 2007 we have worked in the development of a distribution network for e85 (85% bioethanol, 15% gasoline) in Europe, mainly in Spain and The Netherlands. This network is a key step for bioethanol expansion and, although still in its early stages, it will soon become a reality in most areas, providing biofuels to the final consumer throughout the Spanish and European geography.



### Bioethanol United States

The American bioethanol market has been affected by 2 key factors in the industry, the price increase in raw materials (corn), and the increase in bioethanol supply in the market.

Advancing in our trading strategy, and along with our practices in Europe, we have signed cooperation agreements with third party bioethanol and DGS producers, which contribute to a bigger business volume, and a greater reaction capacity.

The growth rate of bioethanol demand has not been able to keep up with production expansion for a number of reasons. Regulatory issues have prevented much of the Southeast from blending bioethanol. Issues relating to vapor pressure and volatility that cause bioethanol blends to violate state EPA regulations are slowly being waived and states such as Florida and Georgia are now just beginning to blend bioethanol.

Other limitations on the growth of bioethanol demand in discretionary blending markets are



related to logistical issues. The oil/gasoline industry has historically been serviced by pipeline, truck, and barge. On the other hand, bioethanol is transported by railcar, from its origin in the central plains of the US, to destinations nationwide. The expansion of bioethanol is therefore directly linked to the expansion of its logistical infrastructure.

In 2007 we have operated and marketed over 132 million gallons of bioethanol, of which 53 million came from third party producers under long-term agreements. Additionally, we have Signed Third Party Marketing agreements for bioethanol, in the form of e85, and for distillers grains with different North American companies.

The new Energy Independence and Security Law of 2007 passed on December provides for dramatic increases in vehicle fuel economy standards and in the usage of renewable fuels from both traditional grain starch feed stocks, and from advanced feed stocks such as cellulose.

For the second time in just two years the United States' Congress passed groundbreaking energy legislation that requires historic increases in renewable fuel usage as well as in vehicle efficiency standards. The new law increases the Renewable Fuel Standard (RFS) for 2008 from the 5.4 billion gallons, which were required under the existing RFS, to 9 billion gallons, and increases total program requirements from 7.5 billion gallons annually to 36 billion gallons by 2022. Importantly, nearly two-thirds (21 billion gallons) of this 36 billion gallon total will come from advanced biofuels such as cellulosic bioethanol.

This new law results in a great perspective of our business for the upcoming years. It's extremely supportive of our long stated goal to make commercial scale cellulosic bioethanol production a reality. It moves bioethanol beyond just a blending component in gasoline and elevates it to a fuel in and of itself. The law will provide market incentives to rapidly bring cellulosic bioethanol production to commercialization, insuring that a market exists for bioethanol produced from facilities using cellulosic technologies, and it will further Congress' stated goal to lessen U.S. dependence on imported energy.

**DGS Europe**

2007 has been a year of high prices in all cereals, also soy, a basis for calculating the price for DGS. Therefore one could think of high price sales opportunities. However, having closed operations before hand has rendered relatively lower prices, since most operations were already closed by the end of the year, when soy prices were at their peak.

During this year we have accumulated sales for over 345,000 tons of our main co-product, DGS, which is increasingly being accepted as feedstock for cattle.



**DGS United States**

DGS Sales and Marketing volumes in the US have increased substantially in the past year and continue to provide strong contribution to company revenues. Distiller's grains production in the US has increased over 75% from 2006 to 2007. We have actually increased production at rates higher than the industry average topping an 80% annualized increase. Inclusion rates in feed rations, both domestically and internationally in all animal species has increased significantly as nutritional value and sustainability of quality supply continue to redefine the animal feed landscape. Abengoa Bioenergy is a leader in quality control and customer service, participating in numerous university feeding trials and serving on various committees within the industry.

In 2007 we have closed sales for over 425,000 tons of DGS, and we have notoriously increased our logistics and trading activities with third party producers, and consumers.

**Production Plants**

Europe

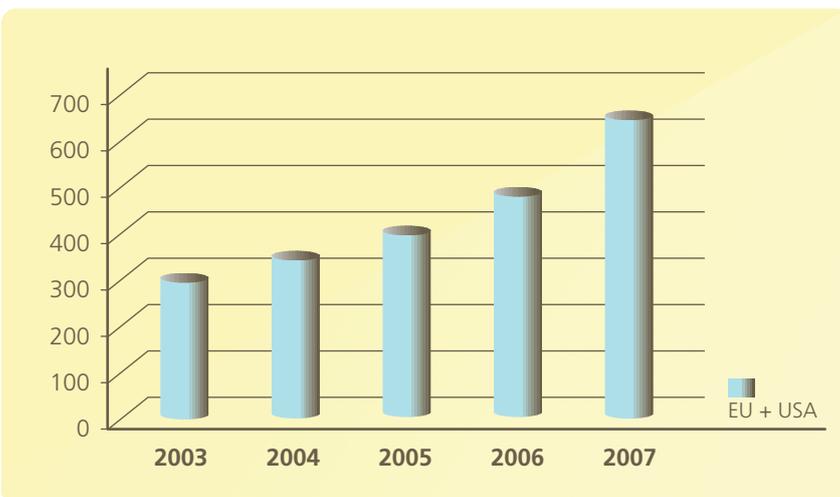
**Ecocarburantes Españoles**

- Began operating in the year 2000.
- Property of Abengoa Bioenergy (95%) and IDAE (5%).
- Annual installed production capacity of 40 million gallons of bioethanol
- Annual installed production capacity of 110,000 tons of DGS.
- 300,000 tons of cereal consumption annually.

Ecocarburantes Españoles, S.A. is the owning company of the bioethanol production plant in Valle de Escombreras, in Cartagena, Murcia, Spain. This company is owned 95% by Abengoa Bioenergy, S.A., and 5% by the Instituto para la Diversificación y Ahorro Energético IDAE (Institute for the Diversification and Energy Saving).

Most of the CO<sub>2</sub> produced in the process of transformation from cereal to bioethanol is sold to third party facilities, located close to the plant, preventing such companies from producing their own carbon dioxide, obtaining greater yield from bioethanol production, and reducing emissions to the atmosphere.

**Accumulated Sales Growth (in M€) of Bioethanol, DGS and Electricity**





The excess in electricity generated during bioethanol production, considerably higher than the plants own consumption, is returned back to the national electricity network, with the corresponding profit.

**Biocarburantes de Castilla y León**

- Began operating in the year 2006.
- Property of Abengoa Bioenergy (50%) and Ebro Puleva (50%).
- Annual installed production capacity of 53 million gallons of bioethanol
- Annual installed production capacity of 120,000 tons of DGS.
- 585,000 tons of cereal consumption annually.

The plant, property of Biocarburantes de Castilla y León, S.A. in Babilafuente, Salamanca, Spain, with an annual bioethanol production capacity of 53 million gallons, of which 1.5 million will be obtained from the conversion of cereal biomass in bioethanol by the means of a new technology under development by Abengoa Bioenergy New Technologies.

Additionally, electricity is generated during the process which powers the whole plant and the excess is reverted to the national electricity network.

**Bioetanol Galicia**

- Began operating in the year 2002.
- Property of Abengoa Bioenergy (90%) and XesGalicia (10%).
- Annual installed production capacity of 52 million gallons of bioethanol
- Annual installed production capacity of 120,000 tons of DGS.
- 340,000 tons of cereal consumption annually.

Additionally, during 2007 we have incorporated the new Bioetanol Galicia Novas Tecnoloxías. This company has a main objective of promoting renewable energies in Galicia, developing advanced technologies for producing biofuels and electricity using lignocellulosic biomass.

This plant will be the first of its kind around the world with the possibility of producing bioethanol from biomass, in particular from cereal straw, with the technology of Enzymatic Hydrolysis.

As with the other Spanish plants, and according to the applicable legislation, the generated electricity that is not used in the bioethanol production process is reverted to the electricity network.

**Abengoa Bioenergy France**

- Phase 1 began operating with wine alcohol in second half 2007
- Phase 2 to start operating with grain in 2008
- Property of Abengoa Bioenergy (64%) and Oceol (36%).
- Annual installed production capacity of 66 million gallons of bioethanol
- Annual installed production capacity of 145,000 tons of DGS.
- 500,000 tons of grain consumption annually.
- 13 million gallons of wine alcohol consumption annually.

Abengoa Bioenergy France is the company owner of the bioethanol production plant in France (first in Europe outside the Spanish borders), owned 64% by Abengoa Bioenergy, and 36% by Oceol, grouping of the main regional agricultural corporations and industries

This plant is located in the Petro-Chemical complex in Lacq, Pyrénées Atlantiques, France, and will use corn and other lower quality plant alcohols. The total projected production capacity is 66 million gallons of bioethanol per year, 53 million using corn as raw material, and 13 million using lower quality alcohols.

#### United States

##### **Abengoa Bioenergy Corporation - Colwich**

- Acquired in 2001
- Owned 100% by Abengoa Bioenergy Corporation
- 25 million gallons of bioethanol production capacity annually
- 78,500 tons of DGS production capacity per year
- 9.5 million bushels of corn and sorghum combination consumption per year

This site is one of three USA operations owned 100% by Abengoa Bioenergy Corporation. The plant is running at 100% of capacity, and continues to prove excellent efficiency and consistent operations. The output capacity is 25 million gallons of production annually, via continuous cook and batch fermentation process. More than 50% of the CO<sub>2</sub> produced is captured and refined by an on-site customer. The plant employs 48 highly trained professionals.

This facility is one of the oldest dry-milling bioethanol projects in the USA, with 25 years of continuous operations. None of the Distiller's Grains is dried in the process, with 100% of this by-product sold in its natural state. Both corn and sorghum grains can be processed simultaneously and 50% of the energy requirement is provided from recovered methane gas supplied by a local municipal solid waste landfill.



##### **Abengoa Bioenergy Corporation - Portales**

- Acquired in 2001
- Owned 100% by Abengoa Bioenergy Corporation
- 30 million gallons of bioethanol production capacity annually
- 83,500 tons of DGS production capacity per year
- 10 million bushels of sorghum consumption per year

The facility was expanded in 2006, doubling the production output using continuous cook and batch fermentation processing with two separate distillation and dehydration operations. None of the Distiller's Grains is dried in the process, with 100% of this by-product sold in its natural state. Both corn and sorghum grains can be processed simultaneously. The production capacity is 30 million gallons of bioethanol annually, and the plant employs 48 highly trained professionals.

**Abengoa Bioenergy Corporation York**

- Acquired in 2001
- Owned 100% by Abengoa Bioenergy Corp
- 56 million gallons of bioethanol production capacity annually
- 167,000 tons of DGS production capacity per year
- 20 million bushels of corn consumption per year

The plant is running at 100% of capacity, and continues to prove excellent efficiency and consistent operations. More than 50% of the CO<sub>2</sub> produced is captured and refined by an on-site customer. The facility provides utility and logistical support to the adjacent ABNT biomass pilot plant. The plant capacity is 56 million gallons of production annually, via continuous cook and batch fermentation process, and currently employs 58 highly trained professionals.



**Abengoa Bioenergy of Nebraska**

- Owned 100% by Abengoa Bioenergy
- Operations Start-up year 2007.
- 88 million gallons of bioethanol installed production capacity annually
- 240,000 tons of DGS production capacity per year
- 32 million bushels of corn consumption per year

Abengoa Bioenergy of Nebraska, LLC is operating in Ravenna, Nebraska (USA). This company is owned 100% by Abengoa Bioenergy. The plant has been constructed starting in 2005 and commissioned in July 2007. Operations are running at 100% of design with annual production capacity of 88 million gallons via continuous fermentation. The plant employs 60 highly trained professionals. The facility is Abengoa Bioenergy's largest operation and the first in the USA using the continuous fermentation technology. The project includes a double loop rail track providing for loading and simultaneous shipping of 2.7 million gallons in 95-car unit trains.

This plant is designed to recycle all waters from the processes, which at the end are treated and reverted back for reutilization, thus consuming less water, and achieving minimal pollution, and therefore, minimal environmental impact.

Brazil

**Abengoa Bioenergia Brazil - Pirassununga**

- Acquired in 2007
- Owned 100% by Abengoa Bioenergy
- 21 million gallons of bioethanol production capacity per year
- 3.2 million tons of sugar production capacity per year
- 3.4 million tons of sugar cane consumption annually

**Abengoa Bioenergia Brazil - São João da Boavista**

- Acquired in 2007
- Owned 100% by Abengoa Bioenergy
- 15 million gallons of bioethanol production capacity per year
- 2.1 million tons of sugar production capacity per year
- 2.3 million tons of sugar cane consumption annually

The current process of producing bioethanol from sugar cane returns the so called “bagazo”, which is the remaining plant residue from the cane once the sugar has been extracted. We are undertaking research to identify the most profitable method to produce electricity using this residue to power the plants and the excess turned over to the electricity grid.

## New Projects

### Europe

#### Abengoa Bioenergy Netherlands

- 100% owned by Abengoa Bioenergy S.A.
- Operations to start in Q4 2009
- 127 million gallons bioethanol per year production capacity
- 1.2 million ton cereal consumption per year
- 360,000 tons DGS production annually
- 400,000 tons CO<sub>2</sub> fluid and gas supplied to industry and regional greenhouses

Abengoa Bioenergy Netherlands B.V. has started construction activities for the Rotterdam-Europoort facility in September 2007. The 127 million gallons per year facility starts operations in Q4 2009. The plant is being built by Abener, a fully owned subsidiary of Abengoa S.A. that has already constructed several bioethanol plants. AB Netherlands will employ directly around 75 employees.

#### Abengoa Bioenergy UK

- Owned 100% by Abengoa Bioenergy
- Operations to start in 2010
- 127 million gallons bioethanol per year production capacity
- 380,000 tons of DGS production capacity per year
- 1.1 million tons cereal consumption annually

The Abengoa Bioenergy UK plant has entered the detailed design and development phase to deliver an installed plant capacity of 127 million gallons of bioethanol. The plant will be installed at Stallingborough on the South Humber bank, UK and come on stream in 2010. It will be the first plant of its kind in the Humber area. The facility includes the production of bioethanol and DGS and has embedded electrical generation with the capacity for electricity export. The location will provide the headquarters for ABUK where a team of 73 professional people will provide the support and services to deliver products to customers

#### Bioener Energía

- Owned 50% by Abengoa Bioenergy, and 50% by EVE (Ente Vasco de la Energía).
- The construction will start at the end 2008
- 53 million gallons bioethanol per year production capacity
- 176,000 tons per year of DGS designed production capacity
- 527,000 tons per year of grain designed consumption

Bioener Energía, S.A. is located in Zierbana, Bilbao, Spain. This company is owned 50% by Abengoa Bioenergy, and 50% by EVE (Ente Vasco de la Energía). The plant has obtained the environmental permit and it will start the construction at the end 2008. The plant will employ around 65 highly trained professionals. The plant includes a cogeneration of 40.4 MW.

### United States

#### Abengoa Bioenergy of Indiana

- Construction began in year 2007
- Operations to Start-up year 2009
- 88 million gallons of bioethanol installed production capacity annually
- 300,000 tons of DGS production capacity per year
- 32 million bushels of corn consumption per year

ABI was funded and began construction in 2007. Abener/Abencs will take 24 months to engineer and build the facility, with startup coming in 2009. When operational, ABI will have 63 employees.

ABI will consume corn and produce bioethanol and distillers grains. ABI will have the capability of drying all or any portion of the distillers' grains it produces. The plant is located on the Ohio River, which provides access to the entire eastern half of the US as well as world-wide export markets.

ABI is incorporating Vogelbusch, continuous fermentation technology. It will be a replica of ABNE.



**Abengoa Bioenergy of Illinois**

- Construction began in year 2007
- Operations to Start-up year 2009.
- 88 million gallons of bioethanol installed production capacity per year
- 300,000 tons of DGS production capacity per year
- 32 million bushels of corn consumption per year

ABIL was funded and began construction in 2007. Abener/Abencs will take 24 months to engineer and build the facility, with startup coming in 2009. When operational, ABIL will have 63 employees.

ABIL will consume corn and produce bioethanol and distillers grains. ABIL will have the capability of drying all or any portion of the distillers' grains it produces. The plant is located on the Mississippi River, which provides access to the entire eastern half of the US as well as world-wide export markets.

ABIL is incorporating Vogelbusch, continuous fermentation technology. It will be a replica of ABNE and ABI.

Biodiesel

Biodiesel is a renewable and biodegradable biofuel which is obtained by means of the reaction of a light alcohol - bioethanol or methanol-with any type of oil or fat, vegetable or animal, by means of a chemical reaction denominated transesterification, and from which products like biodiesel or methylic ester of fatty acid (Fatty Acid Methyl Ester, FAME) and glycerin are obtained.

Biodiesel does not contain sulfur and, with respect to the diesel derived from petrol, the gas emissions from the greenhouse effect (CO<sub>2</sub>, among others), carbon monoxide (CO), particles (PM) and other polluting products all decrease. In addition, it is totally apt for its use as fuel, replacing, total or partially, petrol in diesel engines, with no need to convert, adjust or regulate the engine of the vehicle; likewise, it increases the lubricity of the engine and the point of ignition, therefore reducing the danger of explosions by gas emanation.



The conversion technology chosen by Abengoa Bioenergy for the development of its plants is that of the company Desmet-Ballestra, leader in the sector of vegetable oil treatments and production of biodiesel. This technology uses crude vegetable oils for the production of biodiesel, and its main differentiating characteristic, with the rest of existing technologies, is the flexibility of the design of the plant for the processing of any type of vegetable oil. The vegetable oils that will be used are mainly soybean, rapeseed and palm, or fractions of the latter.

**Abengoa Bioenergy San Roque**

- Owned 100% by Abengoa Bioenergy.
- Operations will start on October 2008.
- 200,000 tons of biodiesel installed production capacity per year
- 18,500 tons of Purified Glycerin designed capacity per year
- 205,000 tons of vegetable oil designed consumption per year

Abengoa Bioenergy San Roque, S.A. is located in Algeciras Harbor, Cádiz, Spain. This company is owned 100% by Abengoa Bioenergy. The plant will start the commissioning on June 2008 and the provisional reception would be on October 15. It will employ 45 highly trained professionals.



Abengoa Bioenergy San Roque has signed a contract with Cepsa to construct, operate and maintain the biodiesel plant, with the condition to sell them a minimum of the installed capacity. The biodiesel produced in this plant will be blended with diesel in a 5% proportion in Cepsa's refinery.

## Research and Development and Innovation

### R&D&I Strategy

The mission of Abengoa Bioenergy New Technologies is to develop and demonstrate new technology solutions through science and innovation to achieve Abengoa Bioenergy's Strategic Business Plan Objectives, which include:

- Develop and commercialize price competitive biomass technology.
- Increase co-products add value and develop new co-products.
- Improve current dry mill technology.
- Promote development of energy crops.
- Develop final use programs.

We are focusing our efforts in the processes of enzymatic hydrolysis, and gasification and catalysis, to identify new raw materials as a source for carbon. In the process of enzymatic hydrolysis we have developed a simulation model to research the fractioning and conversion of lignocellulosic biomass, which has served as a basis for the hybrid production plant proposed to the DOE. Currently, we are carrying out the optimization of the units of production in order to get the necessary information for the design of an industrial scale biomass plant in Hugoton, Kansas, USA.

As for the gasification and catalysis processes, during 2007 we have launched the catalysts research programs, included in the I+DEA project. Additionally, we have made technoeconomical and environmental designs, and sustainability models, for thermo-chemical process. In Spain, our activities have been focused in projects for the use of forest biomass residues, and a gasification plant has been designed for vapor production, integrated within a bioethanol from biomass production plant. In order to develop the proper catalyst for the conversion of synthesis gas into bioethanol, this year we have launched an ambitious program in which we combine existing catalysts with new technologies and catalysis concepts.

We have also worked in the development, evaluation and validation of new processes for and increasing value of our co-products, obtained in bioethanol production from cereal, resulting in greater nutritional values.

In our pilot plants, we have developed improvements in the bioethanol production processes, obtaining greater bioethanol/ cereal yields. At the same time, we are experimenting we new enzymes for evaluating further yield increases and less environmental impact.

Raw material represents between 60% and 70% of the total biofuel production cost, and 30% to 40% of the life cycle greenhouse effect gases emissions, according to Concaew. As a result, we have developed programs in order to reduce the economical and environmental impacts of the raw material destined for biofuel production, and to identify and develop alternative species for the use of first and second generation production technologies. Additionally, we have launched programs for the evaluation of other resources potential, such as forest, industrial and agricultural residues, and for the use of several types of cereal obtained from different types of seeds.

Aware of the environmental benefits obtained from the use of biofuels, we are carrying out demonstration programs for the use of e85 and e95, and other studies of blends of bioethanol-diesel to develop stable blends that comply with existing gasoline and diesel engines characteristics.

Furthermore, we have been performing demonstration tests on all types of commercial engines, on several captive fleets.

Another concept on which we are strongly focusing our efforts is that of the Biorefinery, by which we intend to obtain market value products from biomass. Currently, we are developing a conceptual model, and carrying out market research for potential products. Given the required consumption for the production of bioethanol from biomass, and to carry out the biorefinery processes, we have launched different projects for the selection of the proper enzymatic blends, and for designing the necessary processes engineering to produce these on-site.

**Projects**

Starch Program

Pilot plant experiments were conducted to validate the yield improvements identified in 2006. Due to the price of corn and bioethanol, process improvements are being evaluated using EBITDA model rather than purely bioethanol yield. One of the process improvements has been partially implemented in the York facility; however, due to volume demands of the plant, complete implementation and evaluation are pending. Work will continue to validate other process improvements using the EBITDA model in 2008.

In addition to process improvements, pilot plant experiments were also conducted to evaluate new enzymes and their impact on yield improvements. Work is in progress to implement better performing, lower cost enzymes in plants.

ABNT is also evaluating dry corn fractionation technology as front-end processing for bioethanol plants. Initial York Pilot Plant evaluations started in 2007 and will continue in 2008.

ABNT has designed a document management system for the security, control and standardization of research documents. Implementation should be complete by first quarter 2008. All of the analytical procedures were evaluated using classical gage reliability and reproducibility methods and documented results in the Procedure Management Database.



Co-Products

Novel processing methods have been developed to enhance the nutritive content and value of distiller's co-products. Positive results were obtained in work conducted at Kansas State University and then validated in the Pilot Plant. A provisional patent application is in draft.

Biomass Enzymatic Hydrolysis

## a) Process Development

ABNT developed an Aspen Plus simulation model for the fractionation and conversion of lignocellulosic biomass to bioethanol and co-products. This model forms the design basis for a commercial hybrid cereal and biomass production facility which will be constructed under scope of the US DOE award.

ABNT entered into a Cooperative Development Agreement with the Idaho National Laboratory to develop a rapid NIR method model for analyzing chemical composition of wheat straw.

## b) Biomass Pilot Plant Construction and Operation

Construction of the York biomass pilot plant was completed in July 2007. The first batch of bioethanol was produced from wheat straw on September 19. Testing and optimization of various unit operations are ongoing to generate data for designing the commercial biomass bioethanol facility to be built in Hugoton, Kansas. Fractionated biomass materials will be produced for co-product development.

Energy Crops

Milestones achieved:

- Jerusalem artichoke and sweet sorghum agronomic development for different edafo-climatic conditions. Logistics and storage studies. Cost analysis
- Development of a tool able to trace the cereal consumed in the bioethanol production facilities associating GHG emissions, primary energy consumption and sustainability criteria for every stage in the provisioning process
- Externalities derived from the use of cereal as energy crop.
- Launch activities related with species selection, varieties improvement and agronomic development of crops as cardoon, reed, prickly pear, treelike tobacco, paper sorghum, pawlonia, poplar

Raw material represents between 60-70% of the production cost of the bioethanol production processes. In addition, in the cultivation and



distribution phase GHG emissions represents 30-40% of the emissions of the whole LCA of the bioethanol production. The capacity for the production of raw material in a sustainable and usable manner will indicate the maximum potential for bioethanol production in both locally and global basis.

For this reason, ABNT has launched an ambitious program with the following main objectives:

- Reduce economical and environmental impact of the raw material used in the bioethanol production
- Identify and promote the development of alternative species (woody or herbaceous) for the use of both first and second generation conversion technologies
- Identify and evaluate the potential of other resources (agricultural, forest and industrial residues) for bioethanol production
- Understand for each selected specie, its production potential, optimal cultivation techniques, storage and logistics alternatives and cost associated to these operations (both economical and environmental)

Biocarburantes de Castilla y León

Construction of the plant is approximately 85% complete. ABNT and Abener are working with a European supplier to re-design the feedstock preparation system and supply the necessary equipment. It is expected that the feedstock preparation system will be completed by early summer 2008. In order to make up some lost time, commissioning of utility systems and some down stream unit operations will commence in the spring of 2008.

### Gasification and Catalysis

- Launched programs for catalysts development, included in I+DEA project.
- Work in catalysts testing in own managed laboratories, either slurry or fixed bed reactors.
- Work in process design and linked techno-economic-environmental assessments of thermochemical process.
- Started to work in projects for residual forest biomass in some areas of Spain, combined with pilot facilities to develop the bioethanol synthesis technology.
- Gasification plant design for steam production, to be included in a biomass bioethanol facility.

The technology for bioethanol production from biomass via thermochemical processes is being developed based in an integrated approach, so that actions are targeted in process design, catalyst research and reactors studies in a parallel scheme, taking into account the overall sustainability from an integrated criteria.

With the goal of developing an appropriate catalyst to convert synthesis gas into bioethanol, a wide research program has been set up and launched in 2007, this is composed by several subprograms, combining the existing catalysts families, and very new high throughput techniques with the more traditional ones, and introducing very new concepts in the catalytic systems.

Simultaneously, two testing laboratories are available to assess the advance and status of the research, and to know and most properly develop the synthesis process. In these reactors, catalysts prepared in the research programs are being tested.

The final goal of the G&C project is to develop an overall technology to convert biomass into bioethanol and, therefore, the whole process is being modeled with chemical process design software. These tools are used as well to assess the techno-economical and environmental performance of the technology, considering current status and the potential for improvements.

As a more advanced step in the biomass gasification technology development, a biomass gasifier will be included in the industrial enzymatic hydrolysis plant developed in Kansas, in order to supply heat and steam to the facilities. This project will enable the acquisition of real knowledge about the gasification process in an industrial approach, as well as improving the life cycle emissions of the product.

### Biorefinery

#### Biorefinery concepts

- Launched programs for biorefinery concepts development included in biosynergy project
- Started market analysis for potentially marketable products to be obtained from different biomass fractions

#### On-site enzyme production

- Started the selection of enzyme mixture optimised for the enzymatic hydrolysis of lignocellulosic biomass
- Engineering process design of an on-site enzyme production facility.

Biorefinery is understood as a further stage in the development of technologies based on biomass as feedstock with the optimization of the combination of biological, thermo-chemical, and chemical processes getting advantage of synergies between technologies, and aiming to produce a complete range of products, using a wide range of feedstock.

With the goal of developing a competitive process for bioethanol production from biomass by means of the integration of different process technologies (cereal, gasification and enzymatic hydrolysis), side-streams valorization (biopolymers, fine chemicals production) or integration up-wards or downwards the bioethanol production chain (e.g.: enzyme production) ABNT has launched a R&D program whose main objectives for 2007 were:

- Develop integrated concepts combining first and second generation technologies (including both thermochemical and biochemical pathways) for bioethanol production.
- Develop custom-made enzymatic mixtures and associated production strains to be used in the enzymatic hydrolysis of biomass
- Integrate enzyme facilities with existing bioethanol production plants for the production of tailor made enzymatic cocktails using selected hosts organisms.
- Identify and select potential value-added products able to be derived from

#### Fleet Demonstration (e-diesel, FFV, e95)

The main activities we have developed in this field are:

- Defined bioethanol-diesel blends and additives capable to maintain stability over the time for each European climate.
- Definition of bioethanol-biodiesel-diesel blends without additives for being used as fuels
- Logistics needs study for every fuel resulting of blending bioethanol with diesel or gasoline
- Start-up of fleets with bioethanol-diesel blends in Europe
- Start-up of fuel stations dispensing bioethanol
- Bioethanol final uses project promotion. Develop of engines and burners to the market penetration of motorbikes, electrical generators and trucks.

Bioethanol is an excellent fuel to be used in engines that usually run on gasoline. It is well known its good performance in bioethanol-gasoline blends with bioethanol content up to 15%. Abengoa Bioenergy New Technologies is setting up programs to demonstrate the performance of higher bioethanol-gasoline blends (e85 and e95), and bioethanol-diesel blends to be used in compression engines. E-diesel is a blend of bioethanol and diesel that could be used in diesel engines without modifications, in order to improve the environmental performance of the engines and to increase the bioethanol market. ABNT is working in the following areas:



- Fuel development: It is necessary to develop time-stable mixtures able to accomplish with all the needs for both diesel and gasoline engines
- Engine testing. Fuel are tested in all commercial engine technologies, therefore in both gasoline and diesel vehicles.
- Fleet demonstration, after having finished the bench development and engine testing of the fuel ABNT launch demonstration programs in captive real fleets

#### Renew

Milestones achieved:

- Preliminary conceptual design of the thermochemical process for bioethanol production from biomass
- Technical, economical and environmental assessment carried out.
- Developed a laboratory for synthesis catalysts testing, as well as a complete testing program.

The Renew project is an integrated project funded by the 6<sup>th</sup> Framework Program of the European Commission. Coordinated by Volkswagen it joins together some of the main actors of the European automotive industry, oil industry, biofuel producers, technology developers and research centers in a consortium composed by 33 partners from 9 different European countries. It has a total budget of 19.8 M€.

The project is focused on the thermochemical route for biofuels production. Several technologies for the production of diesel, DME and bioethanol are assessed, considering common criteria, technical, economical and environmental. Our main tasks have been the conceptual development of its thermochemical concept for the production of bioethanol, assessment, and the development of a laboratory for catalysts testing.

Biosynergy

Milestones achieved:

- First biorefinery concepts evaluated under technical, economical, environmental criteria
- Analysis of different pre-treatment options

Biosynergy aims to use biomass for the synthesis of bio-products – chemicals and/or materials – together with the production of secondary energy carriers – transportation fuels, power and/or CHP – through the biorefinery approach. The research is focused on the development of advanced and innovative fractionation and conversion processes combining both biochemical and thermo-chemical pathways, and process development from lab-scale to demonstration at pilot-scale.

The coordinator of the project is ECN and the Consortium is formed by companies such as DoW Europe, VTT, Biorefinery.de, CRES, Universities of Aston and Delft.

The objective of Abengoa Bioenergy activities is to generate data necessary for the evaluation of various options for physical or chemical fractionation of pretreated feedstock and post-treated materials. These data are necessary for developing process configuration and selecting appropriate equipment for the biorefinery plant. They are also needed to develop a conceptual design of a biorefinery plant that converts agricultural residues of energy crops into bioethanol and value-added co-products.



Strategic Singular Project in Energy Crops (PSE)

Milestones achieved:

- Externalities associated to the use of the cereals as energy crops
- Tool able to trace the cereal entering in the conversion facilities and calculate primary energy consumption and GHG emission in the production and provision chain
- First batch of cereal varieties optimized for bioethanol production selected
- Agronomical development of Sweet Sorghum and Jerusalem Artichoke (crop techniques, harvesting periods and techniques, sugar yield and so on)

Abengoa Bioenergy, Ecoagricola and Abengoa Bioenergy New technologies are taking part in this project, awarded by the Spanish Government to develop energy crops for different applications (heat, electricity and biofuels). The Consortium is formed by many different partners from the energy sector.

## New Projects

### I+DEA Project

Milestones achieved:

- I+DEA project has been approved for funding. The budget approved is 28.3 M€
- The Consortium is formed by 25 partners
- 27 research centers carry out part of the research work.
- 29% of the overall budget is for the subcontracting of R&D centers and Universities

Abengoa Bioenergy New Technologies is leading this multidisciplinary consortium which main objective is to generate knowledge for the use of bioethanol as fuel.

Specific objectives included in the project are:

- Develop energy crops for both the current technology and second generation technologies
- Develop enzyme mixtures for the enzymatic hydrolysis process that reduce the impact of this stage in the overall operating cost
- Catalyst selection and design and integration of the gasification and catalytic bioethanol synthesis process
- Develop bioethanol market through e10, e85, e100, e-diesel and bioethanol-biodiesel-diesel blends.

The consortium is formed by important companies, as Syngenta, KWS, Oryzon Genomics, Cepsa, Derbi, Ros Roca and Idiada, investing large amounts of money for the development of bioethanol as fuel.

### Hybrid Project

Milestones achieved:

- Received DOE phase-1 contract award; \$38 M
- Staffed and mobilized ABHK Project Office
- Signed land and water options
- Obtained approval of the starch / biomass hybrid plant Proforma
- Obtained approval of the project pre-construction and EPC Master Schedule.

- Completed enzymatic hydrolysis and biomass gasification simulation model
- Selected Vogelbusch to provide starch plant process specification
- Assigned and mobilized 3rd party Architectural / Engineering consulting firms.

Abengoa Bioenergy New Technologies is leading this project execution effort. Its main objective is:

- Design, construct, and operate a 100 million gallons per year biomass and starch hybrid commercial plant.

Specific project objectives include:

- Demonstrate commercial viability of the biomass to bioethanol conversion process
- Ensure technologies developed are capable of deployment to existing and future plant sites

ABNT has been assigned to design, construct and operate the DOE large Biorefinery demonstration plant. The DOE award will partially fund the project. The biorefinery will be collocated with a starch bioethanol plant, to form a hybrid complex in Hugoton, Kansas.

The biorefinery will have a conversion capacity of minimum 700 dry metric tons/day and consist of two parts: an Enzymatic Hydrolysis (EH), and a Gasification part. The EH part will convert biomass (400 dry metric tons/day) to bioethanol, lignin, and biomass animal feed. The Gasification part will convert 300 tons per day biomass to syngas, which will be combusted for steam generation. The steam will be used internally in the biomass facility, with the excess being sold to the adjacent starch plant.

The hybrid plant is segmented by process areas, including (1) biomass origination and collection - ABT; (2) biomass handling – ABNT / ABT; (3) biomass pretreatment – ABNT; (4) biomass enzymatic hydrolysis – ABNT; (5) biomass gasification – ABNT; (6) grain handling – ABNT; (7) starch plant – Vogelbusch; and, (8) Fractionation and oil extraction – ABNT. Hybrid or combined plant areas include distillation, dehydration, and evaporation, utilities, and plant infrastructure.



# Environmental Services



Befesa is an international company specialized in industrial waste management and water management and production. We manage more than 2.5 million tons of waste a year, of which 1.2 million tons are utilized to produce new materials by recycling, thereby eliminating emissions of more than two million tons of CO<sub>2</sub> per year. Our desalination capacity is one million cubic meters per day, sufficient to supply a population of 4.5 million.

**Leader in industrial waste and water management**

A large industrial furnace, likely used for recycling or waste treatment. The interior is a bright, glowing orange-red color, while the exterior is a grey, textured concrete. The furnace is viewed from a low angle, looking into the opening.

With waste ... we produce new materials  
through recycling, and we treat and desalinate  
water

[www.befesa.es](http://www.befesa.es)

## Summary 2007

In 2007, Befesa managed more than 2,600,000 tons of industrial wastes of which more than 1,270,000 tons were recycled, thereby preventing the emission of more than two million tons of CO<sub>2</sub>.

-Some 130,000 tons of aluminum-content wastes were recycled, resulting in production of 92,572 tons of aluminum alloys. The 230,000 tons of salt slag generated in the process were recycled in-full, with the company thus achieving "zero-discharge" aluminum waste recycling process.

-Some 496,562 tons of steel powder were recycled with the production of 187,090 tons of waelz oxide, and 118,765 tons of zinc were returned to the production process, thereby avoiding the need for mining of said mineral.

-We have treated 144,492 tons of stainless steel powder with the recovery of different metals such nickel and chrome, avoiding the need for mining of said mineral.

In the water sector, the company's desalination capacity is one million cubic meters, sufficient to supply a population of more than 4.5 million. We executed wastewater treatment and reuse, potable water supply, and irrigation system installation works that contribute to a more sustainable globe.

## Evolution of the Year 2007

### General Balance of the Year

This has been a great year for Befesa, both due to the economic results achieved and the consolidation of all of our businesses, making us European leaders in the recycling of industrial waste, and in an international referent in generating and managing water.

Our aluminum waste recycling unit continues to lead not only nationally, but throughout Europe, managing 130,000 tons of different aluminum waste throughout the year. The work has been completed on the extension of our salt slag recycling plant in Valladolid, an activity in which we are the only company in Spain and the United Kingdom to offer



the service, and we will have the capacity to treat 230,000 tons. Our machinery and technology sales division has developed projects in different countries such as Bahrain, Iceland, Oman, Russia and Spain.

With Qualitas Equity Partners we have signed an agreement to integrate our aluminum waste recycling activities in a joint company. Befesa will put in the companies of the aluminum business unit, and Qualitas will contribute Aluminio Catalán (Alcasa). This operation will give a company with a turnover of more than 300 M€, the third largest company in the European aluminum recycling market, which will achieve the critical mass it needs to give its customers a comprehensive service throughout Europe, also to continue to develop our plan of sustained growth.

Our steel waste recycling and galvanization business recycled in 2007, an amount of 496,562 tons of residual common steel powder from electric arc and smelting process, avoiding the extraction of some 216,000 tons of mineral and returning around 118,765 tons of zinc to the productive cycle. Also, another 144,337 tons of steel powder from the stainless steel industry were valorized, recovering their content of materials of important economic value, such as nickel or chromium.

After signing the agreement at the end of last year for the purchase of 100 percent of the shares of the B.U.S Group AB, the largest European recycler of steelworks waste, our steel and galvanization business now has eight plants in Spain, France, Germany and Sweden. This year has seen the successful integration process of the companies, and the best possible use has been made of the structural, organizational and operational synergies of the said integration. For this operation to purchase the B.U.S Group AB, we received the Best of

European Business award from the CNN chain, IESE Business School and the firm Roland Berger Strategy Consultants, in the category of "Mergers and Takeovers – Medium-sized Companies".

In August 2007, a second furnace came into operation in the Befesa Valera plant in Gravelines, in the north of France. With the start-up of this furnace, its treatment capacity has expanded to 120,000 tons a year of stainless steel powder. If to this we add the other similar furnace in the Landskrona plant (Sweden), our total installed productive capacity is 185,000 tons a year, a sufficient volume to treat all the stainless steel powder generated in Europe. Furthermore, the modernization project of our factory in Asúa-Erandio, concluded successfully in September of last year, has materialized this year in an increase in steelworks powder treatment capacity.

During the year, the company treated 1,330,654 tons of hazardous and non-hazardous wastes a 3.7 percent increase on the previous year. Deba (Guipúzcoa) industrial waste transfer center was brought into operation in 2007. This completed our positioning on the peninsula that will allow us to improve the service provided for our customers in the Basque Region. Moreover, in December 2007, we closed the acquisition of Tratamiento y Concentración de Líquidos, S.L. (TRACEL), a company providing integral management services for liquid wastes (hazardous and non-hazardous), from different production process in Spain, at an 18,000 tons per year capacity treatment plant.

The activities of our industrial cleaning division are becoming more and more consolidated by participating in the main stopped of the petrochemicals sector in the country. Our collection, transport and elimination activity of materials with PCB has strengthened its position by increasing the tons managed with respect to last year by 20 percent. Furthermore, this year we have created the Soil Decontamination division, offering integral technical solutions to the problem of soil contamination.

Our current projects up and running in water generation and management provide sufficient water to supply 2.5 million people in regions such as the north of Algeria, India China and Spain. We have also contributed to social development in disfavored



regions such as Nicaragua, and soon Angola, with the construction of basic supply and hygiene infrastructures, to improve the conditions of hygiene-health and the availability of drinking water. In Spain, we are still contributing to the development of the rural environment by giving greater territorial balance with different actions in modernizing irrigation, which also suppose considerable savings in structurally scarce hydrous resources.

Our foreign activities in the water business have passed from a business of opportunities to a consolidated business in regions, based on the definition of markets and geographies of interest, consolidating our structure to be able to give continuity to contracting in the selected areas: Maghreb, Latin America, India, China and the United States. In the domestic market, in addition to our already consolidated presence in the National Irrigation Plan of the Ministry of Agriculture and the Water Plan of the Ministry of the Environment, the forthcoming launch of the National Plan of Water Quality must enable our significant growth thanks to this market, which requires strong technical specialization and the inclusion of new technologies.

In Latin America, we are consolidating our activity particularly in the treatment of waste management in Argentina, Chile, Peru and Mexico.

This year, we have developed several programs of corporate social responsibility, which imply an active contribution to the sustainability and social

and economic progress of the communities where we operate, through the application of innovative technological solutions that not only play in favor of the interest of the company itself and in achieving its strategic objectives, but also influence the improvement of the social, labor and environmental surroundings.

### **Our business and evolution of the business units**

Befesa provides solutions for managing industrial wastes and managing and generating water, while taking into account our social responsibility to contribute to creating a sustainable world, by developing activities of aluminum waste recycling, steel waste recycling and galvanization, environmental services to industry and the integral water cycle.

#### Recycling of aluminum waste

The most significant destination of aluminum waste recycling is to produce and sell alloys to the car industry and the construction sector. This activity contributes particularly to reducing CO<sub>2</sub> emissions in the primary aluminum sector. To carry out such activities, we have four plants, in Biscay, Valladolid, Barcelona and Poland.

The year 2007 was characterized by the stability of the prices of the raw materials close to their maximum values, as a result of growing demand in the world and the increase in energy costs. Aluminum was not oblivious to these conditions, and the year was characterized by stability of maximum business figures. In this context, we continued with our leadership in aluminum recycling, not only in Spain, but also in Europe.

We therefore continue to consolidate stable agreements in the medium and long term with customers and suppliers that guarantee us a stable framework of growth and profitability. On the other hand, we have continued with the restructuring program and investments aimed at guaranteeing a suitable cost structure, that is so necessary for achieving optimal profitability levels environmentally stable in the long term. All of the actions undertaken



this year were aimed at increasing the productivity of the different plants, reducing energy costs and improving the service to our customers.

Therefore, in Befesa Aluminio in 2007 we recycled nearly 130,000 tons of different aluminum waste and achieved a figure of 92,572 tons of production and 92,405 tons of sale of alloys, avoiding the direct emission of 1,250,000 equivalent tons of CO<sub>2</sub>, regarding to the primary aluminum production.

As important events, we must stress that in the past month of October, an agreement was reached with the Qualitas Investment Fund for the integration and merger of the respective aluminum recycling businesses (Befesa Aluminio and Aluminio Catalán), taking a decisive step in creating value and seeking leadership. Furthermore, this year saw the disinvestment and sale of the minority share held in the company Deydesa 2000, S.L.



### Salt slag recycling

We have a model for the comprehensive recycling of aluminum waste: on the one hand, we are developing technologies to improve waste management and treatment, and on the other, our current situation makes us the only operator in the world without solid waste in our productive process. We recycle aluminum without generating new waste in the recycling process, thus perfectly closing the cycle. Our salt slag recycling plants are an example of efficiency and sustainability.

A large part of the aluminum secondary industry uses salt melting liquids to separate and recover the metal aluminum from the slag and scrap used as a raw material. The waste resulting from this process collects the impurities from the original slag and scrap, mixed with the salt melting liquid. This waste is called salt slag and is characterized by a low content in aluminum metal and a high content in salts. Likewise, it is classified as hazardous due to its high reactivity with water, with the consequent production of toxic, potentially inflammable gases.

In Befesa, we collaborate with sustainability through two plants designed specifically to treat this waste. The plant in Valladolid (Spain) has a capacity of 150,000 tons/year, the investment having been culminated to increase its capacity by 15 percent, whereas the plant located in Whitchurch (United Kingdom), has a capacity of 80,000 tons/year. We also deal with smaller amounts of other wastes from the aluminum primary and secondary industry, such as aluminum slag, aggregates from grinding aluminum slag. In 2007, we treated a total of 230,000 tons of waste converted entirely into raw materials useful for industry (aluminum, melting liquid salts and aluminum oxide).

It must be stressed that in the last year, the saline slag recycling activity has avoided the extraction of 190,000 tons of non-renewable raw materials, at the same time avoiding the spillage of 230,000 tons of hazardous waste.

### Sale of machinery and technology

Our technology division gives technical support to the plants of the business unit and is also engaged in designing, building, assembling and starting up "turnkey" installations for the aluminum and zinc industries. This division has a long list of references from more than 100 installations in 40 countries. Its main products are the automated lines for producing aluminum ingots, casting wheels, truck loaders, rotating furnaces, slag coolers and the installations for slag treatment.

The main activities of this period were:

- Design and construction of two 22-kilogram ingot casting lines for the company Alba, in Bahrain. The first belt was brought into service this year, bringing in automatic pile handling and robotized labeling
- Design and manufacture of a third ingoting line for Nordural, in Iceland. This line, with a production of 27 tons an hour, includes the treatment of the refrigeration water and was delivered in September 2007. Complementary to this, the customer asked us to adapt all the innovations to the first of its belts, supplied in 1998.
- Design and manufacture of two ingoting lines with trailer-loader for Sohar, in Oman. These lines, with a productivity of up to 30 tons an hour, will be started up in 2008. Sohar, with Alcan as its technological partner, wishes to make this plant an example of quality, productivity and sustainability in the sector.
- Modernization of the profile grinding installation in our Valladolid plant. As a result of this project, productivity has been increased and the quality of the prepared material has been improved. The excellent scrap treatment levels are allowing us to access certain alloys, which had previously only been made with primary aluminum.

- Modification of the slag grinding installation in our Valladolid plant. The aim of this project, in addition to increasing productivity, is to minimize the losses of metal from the treated product. All gains in metal yield from the material have large associated energy savings. The separated non-metal does not have to be cast, nor does its corresponding melting liquid. Nor is any further treatment needed of the incremental salt slag. In this project, just as in the last, the powder suction has been improved and the filters have been replaced, and the working conditions have been improved and the emissions reduced.
- Design, manufacture and commissioning of a slag compacter for Podolsk, Moscow (Russia). Satisfied with our work, the customer has asked us to reform their slag grinder, in a project we have started and which will be completed in 2008.
- Design of an automatic ingot casting system. The possibility has been considered of installing it in our Erandio plant, but in any case the objective is to have a new product in the department. This kind of format, which we had not chosen up to now, is very common for the new casting.



### Steel Waste Recycling and Galvanization

Our steel waste recycling and galvanization business develops the treatment and recycling activities of common steel and stainless steel, as well as the recycling and treatment of waste from galvanization. These activities prevent the useless loss of tons of these metals, reducing the waste and contributing to reducing the extractions of zinc and other minerals from nature. Likewise, it includes an area of service activity and commercialization of manufactured products (permits and waste management), and logistics, which deal with giving services to the three areas of activity mentioned above.

It has six productive plants in Europe engaged in treating and revaluing the wastes generated in the manufacture of common and stainless steel: one in Spain, Befesa Zinc Aser, S.A. (Asúa-Erandio, Biscay); two in France, Recytech S.A. (Fouquierés-lez-Lens) and Befesa Valera S.A.S. (Gravelines); two in Germany, Befesa Zinc Duisburg GmbH. (Duisburg) and Befesa Zinc Freiberg GmbH. & Co. KG (Freiberg); and one in Sweden, Befesa ScanDust AB, (Landskrona). This division also includes another two factories located in the Biscay region: Befesa Zinc Sondika, S.A., which recycles zinc waste from the galvanic industry to achieve zinc oxide, and Befesa Zinc Amorebieta, S.A., which does the same with metal waste and zinc scrap for the manufacture of raw zinc ingot, electrolytic zinc and fine zinc ash.

Befesa, through Befesa Zinc Aser, is the only company in Spain that offers the integral collection and treatment of steelworks powder for revaluation, offering an optimal environmental solution for treating steelworks powder.

In the present period, our plants in the steel waste recycling section have treated a total of 640,899 tons of dry steelworks powder, from which 496,562 tons, come from the main European factories engaged in the manufacture of common and stainless steel, and a large number of casting works. The last 144,337 tons come from the main stainless steel factories of the continent. This tonnage increased by 552.6 percent over 2006, as a direct consequence, in the first place, of the contribution of the plants of the former Group B.U.S, brought into Befesa Zinc in late 2006, and, in a second term, as a result of the increased capacity achieved in Befesa Zinc Aser following the change in September of the same year, of the waelz furnace for another with a new design and larger size, with which it was possible in 2007 to process 48.5 percent more waste.

This treatment volume gave 187,090 dry tons of waelz oxide, of which 99,457 tons correspond to the purified product (D-L.W.O. ). This is an increase of 369 percent over the production level registered in the previous year for the two reasons given above. The stainless steel powder recycling plants also made 71,282 tons of metal alloys of high commercial value, having self-generated 57,745 MWh of electrical energy in the productive installation in Sweden.

This year, Befesa Zinc Sondika has recycled 10,508 tons of different zinc residues mainly from the galvanizing industry. This company has closed raw materials purchasing agreements with domestic and foreign suppliers, highlighting the 4,725 tons of zinc mattes acquired in the period, of which 30 percent have been supplied by Befesa Zinc Amorebieta and the rest by different galvanizers and intermediaries. The production of zinc oxide (ZnO) this time amounted to 10,239 tons, whereas sales reached 10,449 tons.

Befesa Zinc Amorebieta recycled 11,055 tons of zinc waste in the year. The total volume of manufactured products and sub-products amounted to 10,900 tons and sales rose to 11,200 tons. In this period,

the company made a large commercial offer aimed at diversifying the zinc ingot sales markets, having focused the product distribution on the galvanizing and brass markets.

In 2007, our steel waste recycling and galvanizing business unit invested in fixed assets with a value of over 28.7 M€. In order of importance, the most important actions carried out in the period includes the installation of a second furnace in the Befesa Valera plant for a total 18 M€; the construction of a new covered, enclosed warehouse in Befesa Zinc Freiberg, with a maximum capacity of around 25,000-30,000 tons, for use as a station for unloading railway carriages and lorries, and for storing coke and waste with high zinc content, with an overall investment that amounted to approximately 3.5 M€.

Also noteworthy in this chapter is the adaptation of machinery and steelworks powder covered store enclosure of Befesa Zinc Aser, along with the construction in the same plant of a lime silo of 200 m<sup>3</sup> and a new powder and steam uptake system on the slag extraction line.





In the same way, we must mention the introduction of different improvements in the sediment chamber in Befesa Zinc Duisburg, which tend, on the one hand, to modernize the current gas cooling system, and on the other to minimize the diffuse emissions of powder particles in this area.

By Resolution of 24th July 2007, of the Vice-Councilor for the Environment of the Basque Government, Integrated Environmental Authorization was granted to Befesa Zinc Aser for the development of the activity of treating and recovering waste with zinc and lead content in the municipal terminal in Erandio (Biscay).

**Industrial Waste Management**

Our integral industrial waste management system is specialized in giving environmental services to industry, with the objective of recycling and revaluing, bringing in the latest technologies to design specific solutions for each customer and sector with respect to the environment. The activities we develop are waste management and industrial cleaning, desulfurating, plastics management, PCB management and soil decontamination.

Industrial wastes

This activity includes the management, transport, treatment and temporary storage of hazardous and non-hazardous industrial wastes for revaluation, recovery, reuse or final controlled deposit, and environmental assessment.

As waste managers, we offer different possibilities for carrying out suitable waste management. We have waste treatment installations to minimize or eliminate the pollutant load, such as the centers in Palos and Nerva, where in the year we stored more than 600,000 tons.

As transfer centers, distributed around the country, in order to serve small and large waste producers,



we have centers in Ajalvir (Madrid), Alovera (Guadalajara), La Puebla de Alfinden (Zaragoza), Paterna (Valencia), Deba (Guipúzcoa) and Lucena (Cordoba), where we handled more than 80,000 tons in the year.

In the field of non-hazardous industrial waste management, we have facilities in Torija (Guadalajara), Utrera (Seville), Gador (Almeria) and El Cerrato (Palencia); and classification and pre-treatment plants in Ajalvir (Madrid) and Alcalá de Guadaíra (Seville). In the past year we managed more than 400,000 tons.

As final facilities in the management of hazardous waste, we have the safety deposits in Cartagena (Murcia) and Nerva (Huelva), which handled more than 50,000 tons in 2007.

We must stress the opening in the year of the Deba Centre (Guipúzcoa), a new transfer centre with a capacity to manage 25,000-30,000 tons a year. This allows us to increase our geographical position with new facilities in order to give our customers greater service.

#### Cleaning

Our industrial cleaning division develops its activities in the area of industrial services through a broad offer that includes the suction and driving of solids, liquids and silts, high pressure cleaning work, the application of water at very high pressures for demolition operations, cutting and specialized cleaning, changes of catalyst beds, cleaning tanks and pipes, managing and treating wastes in the facilities of the customers themselves, and tank cleaning services in refineries and large oil facilities.

Our customers are large companies such as oil companies and multinationals of the chemical and electrical sector, and small companies, individuals and municipalities. The situation of the industrial cleaning market is characterized by the tendency towards outsourcing services not directly related to production, by a stricter legislative and regulatory environment and by a productive model that seeks to be more agile and flexible. We have therefore



continued with the development of a strategy designed to consolidate a business model capable of supplying specialized industrial services and adapting to market needs. The cleaning division is therefore purchasing the latest process and technologies available, and adapting them to the specific needs of the customers.

This market consolidation has led us to be present in the main stopped of the petrochemical sector in the country, with a dynamic organization to satisfy the needs of the large customers of the petrochemical, paper, cement, energy and steel sectors. We have also started an international development that allows us to capitalize on the experience gained in projects carried out in Spain. An evolution is expected towards a model in which specialization consolidates the position of the company in the large customer segment.

This year, we have developed "turnkey" projects in fields where we have great experience. Our growth has been based on offering specialized services, for which we have invested in equipment and processes of advanced technology. The growth has been especially strong in the areas of activity of mechanical cleaning, catalysers, mobile plant, chemical cleaning, special cutting and our international presence in automated tank cleaning.

### Plastics

Befesa Plásticos specializes in the manufacture of special low density polyethylene dross by recycling the film used in greenhouse coverings. The commercialized dross is used for obtaining different applications, particularly including the manufacture of films for construction (weatherproofing and protections), large sacks and rubbish bags, signaling mesh, pipes for irrigation, electrical and telecommunications conducts, injected materials such as pots, baskets and bottle sleeves and the achievement of modified asphalts. Our production capacity and the constant, even quality of our dross, make us the leading supplier both in Spain and in the European Union, exporting 80 percent of our total production.

As part of our active commitment in caring for and improving the environment, we have consolidated the agricultural plastic waste integral management service (Girpa). This service provides to the company, on the one hand, with the necessary raw material for its productive process, and on the other, it gives a very attractive, rigorous integral waste management service (guarantee of traceability, issue of waste management certificates, organization, amongst other things) for our customers.

In 2007, we recycled 12,500 tons of used film and water pipes, strengthening our position as the European leader in the sector of low density polyethylene recycling.

### PCB

In Befesa Gestión de PCB, we are specialized in giving effective solutions to the collection, transport and elimination of transformers, condensers and materials contaminated with PCB. With this activity, we recover all of the reusable materials and we eliminate polluted materials, with the most advanced technology.

In 2007, we strengthened our leading position in the national PCB market. We treated more than 3,600 tons of apparatuses and materials polluted with PCB, which is a 20 percent increase over 2006. We are therefore, the reference company in treating PCB in



the electrical sector. This year, we are continuing with the contracts for the management of this waste with Iberdrola, Endesa and HC Energía.

We also handled equipment from companies and institutions from a large variety of productive sectors of all the autonomous communities, such as Afesa, Global Steel Wire, Tubacex. We also reactivated the line of importing equipment polluted with PCB from Argentina, an activity carried out in co-operation with Befesa Argentina since the year 2000, and imports continue from Portugal.



### Land decontamination

This division offers integral technical solutions to the problem of land contamination, within the framework of "Royal Decree 9/2005, of 14th January, establishing the list of potentially polluting activities for the land and the criteria and standards for the declaration of contaminated lands". As an innovative company in this field of action, in early 2007 we created this division to develop all of our actions with respect to polluted lands, dedicated exclusively to the environmental engineering of the subsoil, which allows us to offer an integral and immediate service for the study and correction of the problems derived from land pollution, treatments on site, off site and all complemented by the treatment plants, the transfer and waste pre-treatment centers, and the safety deposits for hazardous and non-hazardous wastes (Nerva and Cartagena centers).

This year, numerous land research and diagnosis actions have been carried out, for prime customers from different sectors of industry (refinery and petrochemical, steelworks, real estate development and construction, energy, chemicals, amongst others), and different land decontamination actions such as bio remedying, in situ treatment, digging and management.

### Desulfuration

In Befesa Desulfuración in Barakaldo (Biscay), we are engaged in producing sulfuric acid and oleum (a compound rich in  $SO_3$ ) from waste sulfur recovered from the plants of the petrochemical sector. We have a plant that allows us to solve the environmental problems of the oil plants by applying the cleanest and safest process.

In 2007, we achieved a production of 301,800 tons of equivalent acid, with an associated generation of electrical energy of 77,100 MWh, which, after deducting self-consumption, supposed surplus sales of 49,700 MWh.

As regards the origin of the sulfur, the supply is maintained from Repsol Derivados of 77 percent, the rest coming from France. The sulfur supplied in liquid form remains at 23 percent of the total.

### Water

Our water business activities have to areas:

-We create hydraulic infrastructure that:

- Generate water: by desalinating sea water, by reusing urban waste waters, by modernizing irrigation to reduce its consumption.
- Protect our rivers and coasts: by purifying the urban and industrial waste waters.
- Avoid emissions: with the renewable energy of our hydraulic units.
- Contribute to social development: by making water drinkable and enhancing the rural and agricultural medium with the irrigation.

-We manage water in a sustainable manner:

- By providing supply and municipal cleaning.
- By promoting and operating all kinds of hydraulic infrastructures.
- With information and control systems that help to take decision on the integral water cycle.
- By maintaining and preserving the desalinating plants.

We are therefore specialized in desalination, water treatment, supply, cleaning, hydraulic and environmental actions, treatment of industrial waters for the private sector, covering the areas of process waters and services, waste waters, reuse and recycling and sewage sludge treatment. We cover the domestic and foreign market with a stable presence in the United States, Mexico, Nicaragua, Ecuador, China, India, Algeria and Morocco.

This year, we have still been one of the leaders in the domestic and foreign market of large desalination plants. In Algeria, this year we have achieved the financial closure of the Temclem-Honaine desalination plant, whereas the one in Skikda is under assembly work to start the pre-commissioning in February 2008. These actions make a joint investment of \$343 M, and during their 25 years in operation, they are expected to bring in income of over \$1,812 M in water sales. The Chennai desalination plant, the construction of which was started this year with an investment of € 91 M, will bring in income from water sales of close to € 827 M, also in its 25 years of operation.



Considering too the desalination plant in Bajo Almanzora (Almeria, Spain), also in full production, and the one in Qingdao (China), currently under financial closure, the projects we have up and running have the capacity to produce more than 500,000 m<sup>3</sup>/day, an amount that would be sufficient to provide drinking water to a population of over 2.5 million people.

The lines of our strategic plan, the selection of products to open new geographical markets abroad, and the focusing on the National Irrigations Plans and the Water Plan in Spain are giving their fruit with high, continuous growth, having increased our sales by more than 30 percent over the previous year. Abroad, we have practically doubled sales as the execution of the projects contracted in previous years has already been launched, supposing approximately 40 percent of the total for the business unit.

The recurrent incomes that will provide the operation and maintenance of the concessions (between 15 and 25 years) of large desalination plants, three in Spain, two currently in operation, and five abroad that will come in progressively after 2008, will contribute to assuring the stability of the sales figures in the coming years.



### Main actions 2007

#### Desalination

- Desalination plants in Algeria. The financial closure has been performed on the desalinating plant in Tlemcem-Honaine, and the execution of the Skikda plant is still underway, which will begin to operate in 2008. The contracts, under the form of integrated products, are developed through the Spanish consortium Geida, and include operation for 25 years, with a total production capacity of 300,000 m<sup>3</sup>/day.
- Desalination plant in Bajo Almanzora (Almeria). The work has started on this plant, adjudicated by the Ministry of the Environment through the state company Acuamed. The contract includes the construction for 73 M€, and its operation and maintenance for 15 years. The plant desalination process is inverse osmosis and it will have the best and most efficient energy recovery technology currently available, isobaric chambers. The planned capacity is 60,000 m<sup>3</sup> of water a day, equivalent to 20 cubic hectometers a year. These works give benefit to a total 15 municipalities, reaching 15 percent of the population of the province of Almeria and an area of more than 12,031 hectares of agricultural production.



- Sea water desalination plant in Minjur (India). After having achieved the financial closure under the DBOOT mode (Design, Build, Operate and Transfer) the work started on this plant, which is intended to supply Chennai, a city in the state of Tamil Nadu (India). The plant will have a capacity of 100,000 m<sup>3</sup>/day and is expected to start producing water to supply more than 500,000 inhabitants in the third quarter of 2008. The investment amounts to 91 M€, of which 77 percent will be financed without recourse by a syndicate of local banks. During its 25 years in operation, the plant is expected to bring in income of over 827 M€ with water sales.
- Operation of the desalination plants in Almeria and the New Canal in Cartagena. This year, we continued operating the two plants, desalinating more than 26.5 million m<sup>3</sup> intended, on the one hand, for supplying the city of Almeria, and on the other, for the hydraulic system of the Mancomunidad de Canales del Taibilla, which is responsible for supplying drinking water to the primary network (high), to 77 municipalities in Murcia, Alicante and Albacete. This volume of water is sufficient to cover the needs of more than 360,000 people.



reducing its initial transporting capacity of 10m<sup>3</sup>/s as water is derived to irrigate the 16,500 ha of the new irrigable area, benefit 11,834 users.

#### Irrigation

- Canal de Navarra irrigable area. The consortium formed by the Caja de Navarra and Befesa, amongst other companies, is continuing with this work. The contract includes both the construction and the operation of the infrastructures of the irrigable area of the Navarre canal in its first phase, that is, to the river Aragón, a tributary of the Ebro. The consortium that will do the work will forward the cost of 180 M€, and later the administration and the irrigators will pay a tax for its use for 30 years. This type of financing is given the name of "toll in the shadow". This first phase will cover an extension of 23,619 hectares of irrigation.
- Xerta –Sènia irrigation. Regs de Catalunya recently adjudicated the adaptation for the irrigation of the section of canal from Xerta – Sènia in Tarragona. The canal, built 26 years ago in a semi-circular section to supply water from the river Ebro to the Sagunto steelworks, and currently disused, will be rebuilt to have a telescopic rectangular section,

#### Hydraulic works and large conducts

- Jorf Lasfar (Morocco). The work on the driving unit was completed in late 2007 for the company Maroc Phosphore. It included the driving of sea water to supply the cooling and the rest of the services of the new phosphoric acid production lines and the factory complex in Jorf Lasfar, a town on the Moroccan Atlantic coast, some 150 km south of Casablanca. The work has a canal to transport 75,000 m<sup>3</sup>/h of sea water, connection between deposits, a driving station with three motor pump units of 7,500 m<sup>3</sup>/h each (which may be doubled), and the network of concrete conducts with metal sleeve to distribute 45,000 m<sup>3</sup>/h from the pumping station to the production lines.
- New safety reservoir and raising station on the ETAP in Torrealta (Murcia-Alicante). This is still being done for the Mancomunidad de Canales del Taibilla, an organization of the Ministry of

the Environment. Its purpose is to extend the installations that supply raw water to the ETAP (potable water treatment plant) in Torrealta, so that it has sufficient storage capacity to guarantee the supply of drinking water in the event of short stoppages of a maximum of between 126 and 171 hours in the canal from where the water is taken. Given the capacity of the ETAP, 9,000 m<sup>3</sup>/h, two new semi-underground reservoirs will be built with a joint useful capacity of 756,000 m<sup>3</sup>, and a raising station with a nominal flow of 9,500 m<sup>3</sup>/h.

- Font Santa pumping and driving station (Barcelona). Aigües Ter Llobregat (ATLL), adjudicated us with the construction of the Font Santa Pumping Station and a section of the conduct that will connect it to the Trinitat Distributing Unit, to connect the two networks that supply drinking water to the metropolitan area of Barcelona (Ter and Llobregat systems), thus guaranteeing supply indistinctly from any point of the network with water from either system. To do this, 2,000 liters of water will be raised each second at 57 meters water column. The project supposes an investment of more than 20 M€.
- Improvement of the supply to the city of Cáceres from Portaje reservoir. The General Water Board adjudicated this work to us with an investment of over 40.4 M€. The aim is to satisfy the supply needs of 150,000 additional inhabitants in Cáceres and another 13 municipalities in the province, by building 3 pumping stations within the framework of acceptable environmental impact, and more than 65 km of conducts designed to transport a maximum flow of 1,500 liters per second.

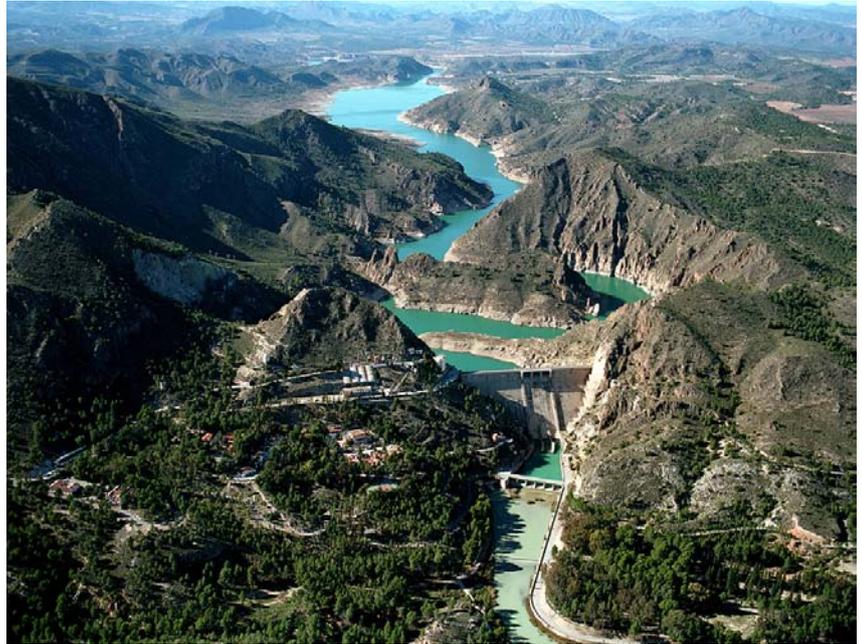


#### Supply and drinking water

- Extension of the "El Conquero" potable water treatment plant (ETAP) (Huelva). With these works, adjudicated by the state company Hidroguadiana, the plant will increase its capacity from the current 45,000 m<sup>3</sup>/day to some 90,000 m<sup>3</sup>/day, including, amongst other processes, a treatment consisting of ozonization and remineralization. This will respond to the increase in the population of the city of Huelva and the plant will be adapted to the quality parameters required by current legislation for water for human consumption.
- Supply to the Ojá-Tirón system (La Rioja). We are building the necessary infrastructures to resolve the supply problems in this area, which includes water uptake, the drinking water treatment plant, the network of conducts to distribute it with a length of more than 200 km, 145 km of new pipes, four pumping stations and all the complementary installations, to guarantee the operation of the system to supply a population that is expected to reach 76,000 inhabitants in 2025. This was adjudicated by the state company Aguas de la Cuenca del Ebro.



- Supply from the Cenajo Reservoir. Section III. ETAP (Murcia). Aguas de la Cuenca del Segura have adjudicated us the preparation of the project and performance of the work of the Cenajo ETAP (potable water treatment plant), of 6 m<sup>3</sup>/s, and a regulating tank of 12,000 m<sup>3</sup> for 33.8 M€. Both actions are framed in a much broader project, the object of which is the distribution to the municipalities of the Mancomunidad de Canales del Taibilla of 131 hm<sup>3</sup> of water for human supply, from the Tajo-Segura transfer.
- Systems of drinking water and sewers of the cities of San Juan del Sur and Boaco (Nicaragua). The two contracts, of great social content and financed by the Spanish government through FAD Funds, were adjudicated in 2007 by the Nicaraguan company, Empresa Nicaragüense de Acueductos y Alcantarillados Sanitarios (Enacal), for over 18 M€. The projects include the construction of both water uptakes, drinking water plants, drive lines and distribution systems, pumping stations, regulating deposits, collectors and waste water treatment plants. These actions will benefit some 66,000 inhabitants, improving the hygienic-health conditions of the population, guaranteeing the supply of drinking water in the dry season, and enhancing the tourist development of the area.
- Supply of waters from the river Cunene (Angola). Adjudicated by the National Water Directorate of the Ministry of Energy and Waters of the Head Office of the Republic of Angola, to resolve the problem of supply in the south of the province of Cunene. The work includes the water uptake system from the river, seven pumping stations, 100 km of conducts, two raised deposits and four on the surface, and this is the largest infrastructure project undertaken in the region. The investment of the adjudication of the works amounts to \$110 M.



#### Treatment and reuse

- EDAR Meco (Madrid). The work continues for the Canal de Isabel II, with a capacity to treat the waste for a population of 58,686 inhabitants, with activated mud treatments at half load with nitrogen and phosphorus biological elimination. The surplus muds will be treated by thickening, anaerobic digestion and mechanical dehydration with centrifuges. The project also contemplates the construction of a reinforced concrete interceptor that will take the waters to the treatment plant, and a section of the purified water outlet emission unit into the river Henares.



- Several treatment plants in Castilla – La Mancha. Aguas de Castilla-La Mancha adjudicated us two tenders of the project and work for a total amount of over 25 M€: on the one hand the EDAR (wastewater treatment plant) and collectors in Mocejón (Toledo), which, with a capacity to treat the waste of 100,000 inhabitants, will serve six municipalities; and on the other, thirteen treatment plants in the province of Albacete. Both actions will contribute to solving the problems of cleaning that are derived from the sharp growth in population and the absence of infrastructures in some centers.
- EDAR El Campello (Alicante). Adjudicated by the Public Entity of wastewater treatment of the Valencia Community, the EDAR will have a capacity of 4,000 m<sup>3</sup>/day in two lines that can be expended to three, it will treat the waste waters of the residential areas to the north of this tourist municipality on the Mediterranean coast. The treatment will be biological by reactor, with micro filtration membranes and later disinfection, so the waters could be reused for irrigation. The action also contemplates the collectors of the EDAR for taking in the wastewaters, and seven pumping stations.

#### Industrial water

- Lixivate plants for the Environmental Complex of Montalbán (Cordoba). The construction of this plant for the Cordoba Provincial Company of Waste and the Environment, where the waste is treated that is produced in 52 municipalities with more than 450,000 inhabitants, will have a capacity for treating 29,000 m<sup>3</sup>/year by MBR (Membrane Bio Reactor), ultra filtration and finally, an inverse osmosis phase that will allow the lixiviate to be reused in other activities such as washing vehicles and irrigation waters.
- Lixivate plant in "La Paloma" (Madrid). This is located in the bio methane installation of the same name, located in the Environmental Complex of Valdemingomez, the current disposal unit for the community of Madrid. It is designed to treat a flow of 110 m<sup>3</sup> a day by pre-treatment with filters of different gauges, biological treatment by aerobic process with anoxic area, an ultra filtration system, ending with an inverse osmosis process.
- Lixivate plant of the Waste Classification Plant in Zaragoza. With the same treatment process as the previous one, and with a capacity for a flow of 200 m<sup>3</sup> a day.
- Reformation of the waste water treatment plant in the Gijón factory of Arcelor –Mittal (Asturias). This action includes the installation of a new physical-chemical, treatment line that will allow the different flows of the steel production processes to be treated, specifically the flows of the blowing process (estimated volume of 30 m<sup>3</sup>/hour), the circuit purging process (estimated volume 40 m<sup>3</sup>/hour) and the slag damping process, producing 3 batches/day at 60 m<sup>3</sup>/batch.
- Abener – Abengoa Solar. (Sanlucar La Mayor, Seville). Design and construction for the PS-10 of the process water treatment plant (PTA) with inverse osmosis technology and electro deionization (EDI), to supply water to the cooling plants, mirror washing and to supply ultra pure water for the high pressure boiler. Design and construction of the effluent treatment plant (PTE) by physical-chemical treatment and sewage sludge dehydration system.
- Abengoa Bioenergy (Murcia). Reformation of the existing effluent treatment plant of the Ecocarburantes Españoles factory in Cartagena, consisting of making a primary treatment before the neutralization tank and increasing its biological treatment capacity.

In this time, Agua y Gestión continued to manage the Municipal Services in El Ejido (Elsur) Almeria, and the Servicios de Agua Baena de Córdoba in San José del Valle, Barbate y Vejer in Cadiz, of Herrera in Seville, of la Puebla de D. Fadrique y Ugijar in Granada, and Zafra in Badajoz, giving a total of more than 200,000 inhabitants. Moreover, the dung water treatment activity continues with the operation in the treatment plant in Vilches (Jaen), this year having managed 64,200 m<sup>3</sup> of pig slurry.



## Latin America

We are present in the following countries: Argentina, Chile, Peru and Mexico, where we manage industrial waste and develop environmental engineering activities.

### Befesa Argentina

Our most significant works carried out in 2007, were the conditioning of waste with PCB for the companies Cican and Bridgestone Firestone and the certification of the destruction of the waste with PCB of the customers Coca Cola Femsa, Metrovías, Establecimiento Elaborador de Alimentos Sacaan, Hilados Nylon and Obras Sanitarias de Mar del Plata.

Furthermore, we have works currently under way and services, such as:

- Oil services  
Plant Operation Alfa Laval and US Filter Plant, La Plata refinery, Repsol YPF. We are working with two horizontal centrifuges installed in the effluent treatment plant (US Filter). These plants work 24/365.  
  
Slop Oil unit, Tank 265, La Plata Repsol YPF refinery. We continue to operate the plant set up by us for hydrocarbon recovery. In 40 months of operation, we have processed 88,220 m<sup>3</sup> of product, giving Repsol YPF 80 percent of water with HC, six percent of solids and 14 percent of livian HC in specification as sub products. This project involves 20 people and work is done 24/365.
- Transport, incineration, inertization and final disposal  
This service includes transport, incineration and final disposal in a security landfill of maintenance wastes, paint slops, cataphoresis silts, oils and empty containers. Our main customers are Daimler Chrysler, Ford, Peugeot – Citroën, Toyota Argentina and Volkswagen.
- Campana inertization plant and final disposal  
We have optimized the operative management by purchasing equipment to allow us to improve the compacting in the final waste disposal work in Celda de Campana.

- Pacheco Incineration Plant  
Following the policy of reducing operative risks, we increased the covered storage area by building a secondary storage warehouse for solvents, which allows any event or contingency to be isolated and controlled. Our laboratory in the plant is in a stage of expanding the services offered internally, to be able to begin to offer services in the industrial market in the future.
- Oil industry  
The services we give are transport, incineration and final disposal in a security landfill of maintenance wastes, coking carbon, insulations, spent catalysts and contaminated lands.
- Pharmaceutical laboratories  
The services we give are transport, incineration and final disposal in a security landfill of expired medicines, products off specification, raw material packaging, amongst other things.
- Chemical industry  
The services we give are transport, incineration and final disposal in a security landfill of maintenance wastes, mud's from effluent plants, raw materials off specification. Our main customers are Rohm & Haas and TFL.

### Befesa Chile

In July 2007, we started work on the construction of the centre for handling hazardous and non-hazardous industrial wastes (CMR) in Antofagasta II northern region of Chile, 1,500 km from the capital Santiago. The work is 30 percent advanced and includes the construction of a non-hazardous waste deposit, a hazardous waste deposit, a storage area for voluminous solid industrial wastes, a guard's hut and weighbridge, laboratory, hazmat building, hazardous waste store, non-hazardous waste store, administration building, lorry weighbridge, stabilization and solidification plant and solution handling plant. Operations are expected to start in March 2008.



### Befesa Perú

2007 was the fourth year in operation of the safety deposit of Befesa Perú, during which our activities were consolidated. The managed waste increased by 21 percent, exceeding 12,500 tons, and the portfolio of customers, which now lies at 256 companies. This all supposed sales increased by 28 percent.

Our activities have also been consolidated with regard to collecting and transporting hazardous wastes, as a way to approach the waste generating industries, in order to develop comprehensive services with greater added value. This has allowed us to attend new companies in the sectors of hydrocarbons (Petroperú), mining (Doe Run, Milpo and Southern Perú), chemicals (Merck, Basf and Farmex) and electricity (Luz del Sur – Pseg). The first activity is also being given in industrial waste recycling, having recycled 51 tons of cylinders.

Following the development plan of the infrastructure and the efficiency of our installations in the safety deposit, pressing and grinding equipment has been purchased; the safety of the operations has been increased by intensifying the signaling, improving the fire fighting equipment, implementing an air supply system in confined spaces, gas measuring equipment, improvement of the storage of inputs, materials and equipment. All of this aimed at the sustainability of our activities with the implementation in the deposit of a pilot treatment plant for the water generated, and which once treated can be used for irrigating green areas.



### Befesa México

Since 2001, in Befesa México we have been promoting the introduction of industrial waste management activities with the referent of promoting, building and operating a centre for treatment and final disposal of hazardous industrial wastes, and complementary activities including the correction of environmental liabilities and industrial cleaning.

In this year, we managed to complete the construction of the confinement vessel, which is being built by taking advantage of a natural pit, using the best techniques to guarantee the sealing required by current regulations. An access road has been built for heavy vehicles, and the systems for drainage and lixivate collection, which will be treated in the lixivate plant. The total filling volume is 450,000 m<sup>3</sup>.

In addition to the industrial and administrative installations, a road has also been built to connect the city of Zimapán with the plant for heavy vehicles, with a length of over 14 km, including the construction of two bridges with lengths of 64 and 18 meters.

## Research, Development and Innovation

### R&D&I Strategy

Our R&D&I strategy is aimed at creating value and developing new technologies to carry out our activities in a sustainable manner. In Befesa we have a strategic R&D&I plan with the following objectives:

- To be leaders and technologically competitive in the aluminum and galvanized steel waste recycling.
- To develop new technologies for industrial waste management.
- To be leaders in desalination technology and technologically competitive in the treatment and reuse of wastewaters.

This strategy supposes a permanent commitment and is used as a vehicle for the continuous improvement and consolidation in technological leadership in waste treatment and generating and managing water.

In our aluminum recycling business, the R&D&I activities seek to improve our operating processes, the quality of our products, the development of new technologies and new business opportunities.

The projects developed by the steel recycling and galvanization business unit are focused on designing and building installations that allow us to improve our activity and research to achieve new materials from our products.

In the case of integral waste management, the new technologies must be adapted to the continuous evolution of environmental legislation, to prioritizing the management methods based on the hierarchy marked by reuse, recycling and revaluation as opposed to elimination treatments, and diversification towards new environmental markets, and increasing the number of treatable wastes.

With regard to our strategy for the sustainability of the integral water cycle, our plan is focused on optimizing the energy efficiency of the desalination and reuse of wastewaters, minimizing their costs and environmental treatment, and the optimization of the hydraulic infrastructures under considerations of



sustainability and the development of management systems for resources (natural and those generated and regenerated) bearing in mind droughts and the quality of the water, in addition to the floods.

Many of our projects are developed in collaboration with institutions and universities such as Euskoiker Foundation and the Bilbao Senior Technical School of Industrial Engineers, forming part of the activities carried out by the Aula Befesa in training and research; or with subsidies and/or co-operation with the Ministry of Industry, Trade and Tourism, the Regional Government of Andalusia's Department of Innovation, Science and Enterprise, CDTI, Inasmet, Valladolid University, the Program for Nurturing Technical Research (PROFIT), Andalusia Technological Corporation, Inatec Laboratory, Insesca and Alcan, amongst others.

## Research and Development

### Improvements in aluminum casting (Mecoal)

The objective of this project is the enhancement of the automatic casting or ingoting lines sold by the technology department. One of the most important aspects to be resolved was the elimination of the external cavities in the ingots. Several laboratory tests were performed for this, simulations of the solidification process with the Procast program, and a prototype was tested in the foundry. The systems for eliminating the cavities may be heating or cooling of the upper surface and shaking this surface, either with air or by mechanical means. The mechanical means were chosen in our processes, dealing with suitable refrigeration of the ingoting lines. This R&D project is of great interest for improving our technological offer, and concerns basic metallurgy unknown in the market that requires it, so it is open to patenting. In 2007, the ingot demolding system was patented that was developed last year in an earlier phase of this project.

### Pilot plant for the energy-chemical use of the waste gases from the process

Starting with the results achieved in the previous phase of the project concluded last year, this second stage is intended to study the continuous use of the current of gases from the Waelz plant for absorbing the CO<sub>2</sub> needed in the regeneration of the lixiviant bleach, used in the waelz oxide washing process. As a final objective, the continuous production is pursued of a final product (D-L.W.O.®), of a quality similar to the present, through the self-consumption of the bicarbonate-carbonate achieved from the waste gases, with the consequent minimization of the CO<sub>2</sub> emissions into the atmosphere.

### Obtaining of new products from purified waelz oxide (D-L.W.O.®)

On the basis of experimental tests and trials performed some years ago, to achieve zinc oxide (ZnO) of great purity (99.99%) from double lixivated waelz oxide (D-L.W.O.®), using a bleach containing ammoniac and ammonia carbonate as a lixiviant agent, the lines of research have been expanded with other acid and basic lixiviations, in order to achieve new products of greater added value, such as the



mentioned zinc and/or zinc metal oxide the current finished product (D-L.W.O.®), as raw material in the new process.

### Project to design and build an installation for zinc oxide pelletization

This year, Befesa Sondika concluded this project, intended to achieve an 80 percent reduction in the scattered emissions of solid particles generated in the fabrication of zinc oxide, during the operations involving the transfer of the product from the silos to the sacks, big-bags or tank trucks. By mixing the end product with liquid agglomerates in a pelletization plate under controlled conditions, the diffuse emissions of material into the atmosphere is minimized, and, after the opportune drying process, a more compact, easier-to-handle pelletized zinc oxide is achieved, improving the output of the process and giving the product greater added value. In 2007, the project was completed with the optimization of the drying phases, in order to keep the final properties of the product stable, and the company is now awaiting industrial approval of the product from its main customer, which is expected for early 2008.

#### Production of fiber glass reinforced thermoplastic composites

The goal is an industrial installation for the production of fiber glass reinforced polypropylene with a fiber glass content of between 20 and 40 percent, to achieve final production of between 7,000 and 8,000 tons to be sold, mainly, to the automobile and electro-domestic industries. The product will be obtained by mixing polypropylene and additives, together with the fiber glass, in variable percentages, in function of the needs or requirements of potential customers. The research work is aimed at achieving an end product from recycled materials, of the same technical characteristics as the composites manufactured with virgin materials. Therefore, the study has focused on identifying and designing a production process suitable for mixing and treating the product to be manufactured. The process incorporates recycled materials, the competitive advantage being the lower purchase price of the materials to be utilized as against that of the virgin products currently used in the manufacturing of these composites.

#### Production of new materials and alternative fuels

With the aim of revaluating and recycling waste, Befesa continues the search for new materials for use in the construction area utilizing inorganic industrial wastes, thereby reducing the consumption of non-renewable raw materials. To this end, together with the University of Seville, the efficiency of the metal encapsulating mechanisms in crystalline networks is being evaluated. At the same time, through the use of organic industrial wastes, alternative fuels that enable the reduction of consumption of fossil fuels and minimization of CO<sub>2</sub> emissions are being pursued. In this way, industrial waste is recycled efficiently and safely, by propitiating the use of waste-derived fuels as a vehicle towards sustainability.

#### Correction of contaminated lands from harmless wastes and other sub-products

The enforcement of a new regulating framework considering the management of contaminated lands, propitiates the development of techniques that prioritize the treatment of the land in the place itself, as opposed to techniques that imply massive land movement. In this sense, it is intended to confirm correction techniques with the contamination of metals and hydrocarbons, based on fixing the

contaminants through the use of harmless industrial wastes based on plaster and other sub-products, such as modified clays or organic clays. Correct management of land and its natural resources is a priority in the development of the environmental services.

#### Use of glycerin

Glycerin is a sub-product in biodiesel manufacture that is caused in a proportion of 10 percent in relation to it. The recent rise of this biofuel in Europe in general, and in Spain in particular, is causing saturation in a market which up to now was as stable as the glycerin market. Given the volumes of glycerin expected in coming years, it is very possible that this should be managed as waste. In fact, a large part of the glycerin is currently being eliminated in cement furnaces. We are therefore developing alternatives for the correct environmental management of glycerin, by focusing our effort on material revaluation in the search for new substances and in energy revaluation.

#### High efficiency desalination pilot plant

The aim is to reduce the energy consumption of the desalination to values below 2.5 kWh/m<sup>3</sup> of water produced. The inverse osmosis membranes and the energy recovery systems have been studied for this, and also improvements in the process that allow energy consumption to be minimized. The project is subsidized by the Regional Government of Andalusia's Department of Innovation, Science and Enterprise and the Ministry of the Environment.

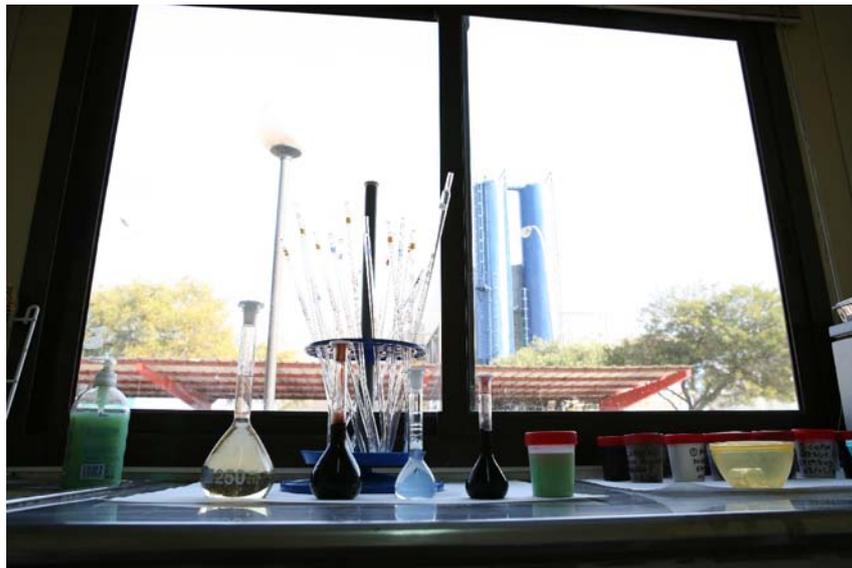
#### Study of the brine dilution phenomenon



The purpose is to develop a system for diluting the brine from the desalinating plants, to guarantee the minimization of any possible environmental impact. We are therefore developing a simulation tool confirmed with experimental data achieved from a physical scale model. The project is subsidized by the Regional Government of Andalusia's Department of Innovation, Science and Enterprise; the Andalusia Technological Corporation and the Ministry of the Environment.

#### Elimination of the EDAR (waste water treatment plant) silts by supercritical oxidation

This project is intended to demonstrate the technical and economic feasibility of the supercritical oxidation technology in eliminating the EDAR (wastewater treatment plant) silts, for which a pilot plant has been designed and is being built, and which is expected to start up in early 2008. The Regional Government of Andalusia's Department of Innovation, Science and Enterprise; the Andalusia Technological Corporation and the Ministry of the Environment are subsidizing the project.



#### Development of Renewable Energies for Desalination (DeReDes)

The object of the project is to perform a systemic study of the possible combinations of desalination technologies and the possible sources of renewable energies. The technical and economic feasibility of the different combinations is being analyzed, bearing in mind the possible scenarios for locating these kinds of plants. Finally, three concepts of desalinating plants with renewable energies will be designed. The Project is subsidized by the Ministry of Industry, Trade and Tourism; the Program for the Development of Technical Research (PROFIT) and the Ministry of the Environment.

#### Advanced treatment of wastewater for reuse (TRASOS)

The aim of this project is to develop the optimal technologies to allow the regeneration of water, in line with the type of wastewater to be treated and the quality required in line with the final expected reuse. Physical-chemical technologies, membrane technologies, biological processes and electrolytic technologies are being developed and laboratory pilot plants are used for this.

## **Innovation**

### Treatment of SPL

The project pursues an application for the carbonic part of the electrolysis cells (SPLs) used in the production of primary aluminum. It is an environmental service for plants that require recycling of this material. The work carried out this year is as follows:

- In Wales: the problem-free industrial scale crushing of a truckload of material was carried out. This demonstrates the ease of this operation, which is necessary for future applications.
- In Spain: with the sample obtained from Alcoa, thermogravimetric and chemical analysis tests to apply the thermolysis that destroys the material's most hazardous substances have been carried out. The research work will center mainly on substances with fluorine content. The project has been developed in co-operation with Alcan.

### Pre-treatment of fuels for the hazardous waste vitrification by plasma plant

The project consists of building a plant for the heat treatment of hazardous waste by means of a plasma vitrification process. Its objective is to eliminate the waste and make use of the synthesis gas generated in the process to produce electrical energy. To expand the range of treatable wastes and to optimize the operating conditions of the process, a waste pre-treatment system is being developed. These wastes constitute the input fuel of the synthesis gas production process.

### Development of advanced pre-treatment systems for desalination

The aim of this project is to develop the raw sea water treatment systems that allow us to guarantee that the quality of the water entering in the inverse osmosis membranes is optimal, depending on the type of sea water and bearing in mind its possible seasonal variation. Physical-chemical and biological process technologies and membrane technologies are being developed. The project is subsidized by the Regional Government of Andalusia's Department of Innovation, Science and Enterprise and the Ministry of the Environment.

### Development of a control system for large desalinating plants

The purpose of this is to develop a system of integrated control, that allows the optimization of the operation of the desalinating plants by maximizing their availability, and which includes tools to help in the decision-taking process. The Regional Government of Andalusia's Department of Innovation, Science and Enterprise; the Andalusia Technological Corporation; the Ministry of Industry, Trade and Tourism and the Program for the Development of Technical Research (PROFIT), are subsidizing this project.

# Information Technologies

Telvent, the information technologies company for a sustainable and secure world, specializes in high-value-added products, services and integrated solutions in the Energy, Transportation, Environmental and Public Administration segments, as well as Global Services. Its innovative technology and proven experience help ensure secure and efficient management of the operating and business processes of the world's leading companies.

Forerunners in the development of information technologies for a sustainable and secure world





With information technologies ... we manage  
business and operational processes in a secure and  
efficient way

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

### 2007 Summary

Throughout the year 2007, at Telvent we continued to face two of the main challenges of today's society: climate change and security. At Telvent, we believe that the cleanest energy is the energy we do not use; and within this context we persisted in our efforts on behalf of energy efficiency and reduction of CO<sub>2</sub> emissions in the energy, transportation and environment segments, constantly innovating, to provide high-value-added technological solutions, as well as global services. With respect to security, at Telvent we work in the field of critical infrastructures and the management of data and information for application to the energy, transportation and public administration sectors, in addition to global services.

Thus, for example, in 2007 the start-up of the Smart Grid Solution Suite initiative was especially significant in responding to the formidable challenges facing us from industry in the electric power sector. This initiative offers enhancement in the management of electrical infrastructures through quantification of energy costs and optimization of real-time operational parameters for utilities.

In the Transportation segment, our solutions for managing traffic in urban areas through constant adaptations of traffic light schemes have shown, since the 90s, the capacity to defer the point of congestion, improve travel times and reduce consumption, together with the now intensive use of low-consumption traffic signal elements. In addition, the implementation of information systems for drivers, via Internet or telephone communications, offers alternatives for choosing travel times and routes. Information on occupancy and signposting of public parking facilities also reduces recurrent city traffic flow of drivers looking for a parking space. Furthermore, the experience acquired by Telvent in public transportation solutions merits emphasis, especially fare integration, incorporating payment methods for parking facilities as well as diverse public transportation systems, thereby promoting alternative means of transportation, with a direct impact on emissions reductions.

We also offered solutions pertaining to security, in numerous facets, for the Transportation segment, in road safety through systems for detection of and



response to incidents, monitoring and control of infrastructures (tunnels, bridges, highways, etc.), dynamic signal systems and weather information, as well as for police forces, with special attention to central systems, docked or mobile, and data management of different types. Video surveillance also constitutes a key element in practically all management centers, of both traffic and transportation, with the possibility of complementing them with artificial vision equipment, depending on the specific needs of each project.

Our solutions and products in the Environment segment also have a positive impact on sustainability and security from diverse standpoints. They lead to increased security under adverse weather conditions in highway, rail and air transportation; they optimize energy consumption for water utilities, applying technology, simulation and control and reducing CO<sub>2</sub> emissions; they also provide early warning, prevention and mitigation of the effects of adverse weather conditions that cause natural disasters; they continuously monitor air quality in cities and industrial areas in order to prevent the possible negative impact on health; and, finally, our solutions and products provide infrastructures with greater security against terrorist attacks and intrusion.

Finally, through the outsourcing and management of critical technological infrastructures, in 2007 we continued to dedicate ourselves to the security of the information systems of over 400 clients, in compliance with Spanish and international legislation, and to assist clients in keeping their computer security optimized and up-to-date. Through the solutions for centralized monitorization of systems and networks carried out in our Security Operation Centers (SOC), we contribute to enhanced computer security in their clients' national and international telecommunications systems and networks. As far as sustainability is concerned, we achieved reductions of almost eleven thousand tons of CO<sub>2</sub> in 2007, thanks to the systems concentration and optimization conducted in our network of Green Data Centers in Spain and Portugal.

**Our Business**

At Telvent, we assist in efficient and secure global management of the operating and business processes of the world’s leading companies, focusing on five different areas of activity:

- **Energy.** In this area, Telvent focuses on real-time technological solutions for enhanced management of energy efficiency. We thus offer systems and services that help to manage critical infrastructures and data through highly secure and available solutions in three main areas: electricity, oil and gas.
- **Transportation.** Telvent provides solutions and services with the ultimate aim of contributing to the reduction of CO<sub>2</sub> emissions. Specifically, we offer global traffic information and control systems, applications for highway management and information, as well as solutions for automatic toll payment.
- **Environment.** In this area, Telvent offers applications for water and weather management, as well as solutions and services that span the whole cycle of water management and permit global protection of the environment.
- **Public Administration.** At Telvent, we work with the aim of optimizing governmental, regional and local management at the global level. To this end, we offer integrated technological solutions for facing the challenges of today’s society in security and sustainability, applying them to each of the specific areas of the public sector.
- **Global Services.** Telvent offers a global technological outsourcing model that spans the complete life cycle of the client’s information and communications technologies, leading to growth and evolution without the need for greater investment in resources or having to assume the significant risks related to the development and control of the company’s current and potential technologies.

**Evolution in 2007**

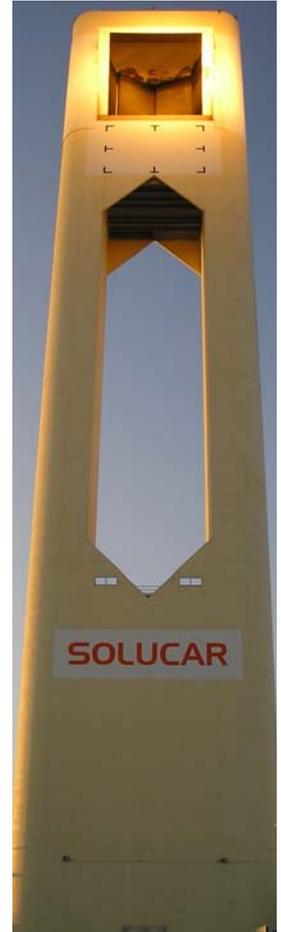
**Energy**

2007 Business Evolution

In 2007, the Energy business area developed in accordance with the strategic plan, focusing on three different approaches: constant investment in research and development (R&D), strengthening strategic agreements of collaboration, and acquisitions in order to fully cover the products and services we offer.

In the area of R&D, we focused mainly on three areas: maintaining, enhancing and developing our current products; developing new solutions and products; and, finally, conducting research on new technologies and strategies for potential products and services. Specifically, we made improvements in the subsystem of real-time data acquisition and critical infrastructures, we expanded our suite of business GIS solutions, ArcFM, and updated our Remote Terminal Unit subsystems. As far as new products and solutions are concerned, we developed the Smart Grid Solution Suite initiative, an innovative integrated solution geared toward improving efficiency in the transmission and distribution of electrical energy, as well as SimSuite Pipeline Power Optimization, a product that provides a hydraulic model for efficient energy use in the transportation of hydrocarbons. Research and planning followed the line of development of software and hardware in order to evolve in synchronization with the technological sector.

In the area of strategic collaboration agreements, five, among others, represented key relationships for the Energy business area: continuous rapport with ESRI of Redlands, strengthened in 2007; the partnership with OSIsoft of San Leandro; agreements with Echelon, based on the use of its Intelligent Metering System; the National Laboratory of Idaho; and, finally, with the National Laboratories of Sandia, through the LOGIC2 initiative (Linking the Oil and Gas Industry to Improve Cyber Security).



Most Relevant Projects in 2007

- Contract with TransCanada Pipelines, in Canada, for the TCPL Milestone Project, a large 'green field' project for transporting crude oil from Canada to the U.S. This 3,000-km. pipeline will pump 435,000 bbl/d of oil to refineries in the central U.S.
- Contract with the New York City Transit Authority, in the United States, for back-up of the electrical system that feeds the New York subway system.
- Orders for the PIA project from Red Eléctrica de España (REE) to supply equipment and integrated control systems for different substations of the electrical energy transportation network operated by REE throughout Spain.
- Contract with Petrobras Transporte – Transpetro, in Brazil. This represents one of the largest and most complex OASyS installations and upgrades.
- Contract with Electra Noroeste, in Panama, for supply, installation, operation, support and testing of a Distribution Management System comprised of SCADA/DMS/OMS modules of 100,000 household meters. This contract represents an extension of the initial contract, under the generic designation of Amrelva3.
- Contract with ADMA-OPCO, in Abu Dhabi, United Arab Emirates, to install the SCADA system in two of the world's largest petroleum complexes: Zakum and Umm Shaif.
- Contract with L&T to supply remote terminal units for the telecontrol system of the power facilities at the JERP refinery, owned by Reliance, an Indian company. The contract includes supply of electronics put together by L&T in their factories in Mumbai.
- Contract with PetroChina to supply hardware, engineering, installation and training for its main Control Center in Beijing and the Backup Center in Langfang.
- Contract with Sui Southern Gas Company Limited (SSGC) for GIS; the company already has the range of ArcFM, ArcFM Server, ArcFM View, Inspector and Designer products for managing its distribution system in a more secure and efficient way.

**Transportation**

Business Evolution in 2007

In 2007, we consolidated integration of 2006 acquisitions for the Transportation business, expanding our activities in the strategic markets of



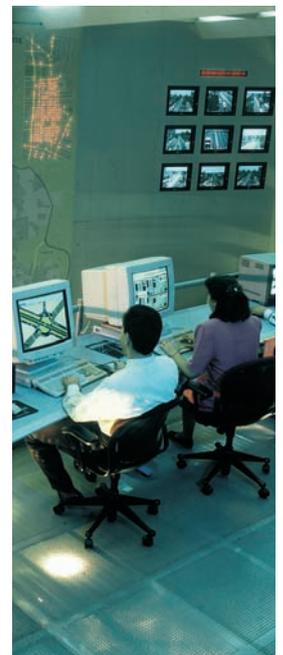
China and the United States (Telvent-BBS and Telvent Farradyne, respectively), as well as the bus segment (Maexbic, in Spain). We also finalized acquisition in the month of May of Caseta Technologies, headquartered in Austin, Texas (U.S.) and with proven experience in advanced toll systems.

In the international area, the year 2007 was characterized by contracting and execution of a large number of projects that strengthened our position in Europe and North America, along with upgrading/expansion of systems installed in previous years in Latin America, China and southeast Asia.

The Spanish market maintained its consolidation in recurring projects in operational and maintenance services and increased activity with significant projects for new road infrastructures under construction and activities involving traffic violation management.

Most Relevant Projects in 2007

- The General Traffic Department (DGT), in Spain, chose Telvent to develop a variety of projects: maintaining the Northwest Management Center (La Coruña), the Southwest Management Center (Seville) and Madrid access points, as well as the maintenance and exploitation of its cinemometer network and its expansion in 4 of the 7 designated areas, as well as the supply of diverse solutions and services for the National Traffic Violations Processing Center in Spain.



- Start-up and maintenance of the new SCADA system for Oresund-Konsortiet (Sweden/Denmark).
- Design, implementation, operation and maintenance of the 511 Traveler Information System in San Diego (U.S.).
- Consulting and support in the management, operation and maintenance of the ITS communications network in the state of Florida, contracted with the Florida Department of Transportation.
- Maintenance contract with the New York Department of Transportation for toll systems installed in tunnels and bridges accessing Manhattan.
- Maintenance of maritime traffic management systems (VTS) at 5 ports (Lázaro Cárdenas, Manzanillo, Mazatlán, Progreso and Tampico) in Mexico with systems previously installed by Telvent, with the Communications and Transportation Secretariat of Mexico. In addition, installation and maintenance of maritime traffic management systems (VTS) for 3 new Mexican ports, in Ensenada, Vallarta and Guaymas.
- Contact-free ticketing system for expansion of Line 2 of Metrorrey and upgrade of Lines 1 and 2 in Monterrey (Mexico) to this technology.
- Contract signing and work start-up of UTC in Mumbai (India).
- Completion and maintenance of the ITS Beijing Supercenter, in China.
- Contract signing and work start-up for the ATVM project in Saudi Arabia to install city traffic management systems and vehicle monitoring, as well as security and traffic violations detection and management systems in Jeddah, Mecca and Medina.

**Environment**

Business Evolution in 2007

In fiscal year 2007 we carried out internal restructuring of our activities, combining resources into a worldwide line that operates through five geographical locations: North America, Latin America, EMEA, Asia and Australia. By doing so, we are able to stay closer to our clients and deliver them the quality service that increases in demand and complexity each day.

For our operations in the Middle East, the year 2007 represented business consolidation in significant geographical locations such as the Asian-Pacific and the Middle East, entry into countries like the United Kingdom and Germany and the achievement of a position of leadership in the aviation meteorology segment.

Most Relevant Projects in 2007

- Contract with the National Institute of Meteorology (INM), in Spain, to supply and install aeronautical weather equipment for the airports of Seville, Melilla, Murcia, Huesca, Burgos, Valladolid and León.
- Contract with Lucebit GmbH to supply and install an AWOS weather assistance system for the Mengen-Hohentengen airport (Germany). The new system incorporates the latest technological advances and provides crucial information to pilots for ensuring safe plane takeoff and landing maneuvers.
- Contract with Meteoswiss, the Swiss Meteorological Institute, in Switzerland, to supply 25 automatic weather stations that are a part of Phase 2 of the SwissMetNet contract. This contract includes complete renovation of the Swiss weather assessment network and supply of a central data acquisition and processing center.
- Contract with Systems Interface, in the United Kingdom, to supply Revolver Transmitters for the Liverpool (John Lennon) and Doncaster (Robin Hood) airports. Strategically, this represents a very important contract for Telvent, as it is the first contract awarded in the United Kingdom.
- Contract with Eurocontrol, in Belgium, to update the VSAT satellite receiving system and SADIS software in order to comply with the new data format and protocols associated with the second generation of SADIS service with the British Meteorological Office.
- Contract with Alberta Infrastructure and Transportation (AIT), headquartered in Canada, to carry out summer maintenance of the highway weather observation systems (RWIS).
- Contract with the Australian Bureau of Meteorology (BOM), in Australia, for the “New Generation of Automatic Weather Station Networks” project. The purpose of this project is to replace the 650 automatic weather stations that make up the Australian national weather



observation network, including 50 sea level monitoring stations for the Australian Tsunami Alert System.

- Contract with Control Corporation, in Taiwan, to supply the automatic weather observation system (AWOS) for the network of the air force of the Republic of China (ROCAF).
- Contract with the Meteorological Institute of India to supply integrated aviation weather systems to eight airports in India, including the international airports of Mumbai and Delhi.
- Contract with Kahramaa, the water and electric utility of Qatar, in India, to carry out consulting service for its network of transportation and distribution of drinkable water over a period of four years.

**Public Administration**

Business Evolution in 2007

Throughout 2007, at Telvent, we consolidated our platform of electronic administration services to become a reference in the extension of the new Law of Electronic Access of Citizens to Public Services (LAECSP), as the electronic signature product developed by Telvent, @Firma, was the tool selected for certifying validity and authenticity of citizens' identities for Administration purposes.

Especially significant is the supply of personalization systems for electronic ID cards; that is to say, equipment and software for laser engraving of people's personal data on electronic national ID cards.

Our technology in the Healthcare segment evolved in production consolidation, which allowed us to offer our clients maximum functioning in both clinical as well as financial and administrative areas. Thus, we must highlight image-based diagnostic system solutions, as well as our projection as suppliers of global regional solutions of even national scope.

Most Relevant Projects in 2007

- Contract with the Ministry of the Interior – General Police Department, in Spain, to develop a system of travel and ID documentation verification at 332 border control points located throughout Spain.
- Contract with the General Department of Heritage and Red.es, in Spain, to supply electronic ID personalization systems; that is, equipment and



software for laser engraving of citizens' personal data on national ID cards.

- The "Online Urban Planning Program Initiative", in conjunction with the Ministry of Industry, Tourism and Commerce, in Spain, aims to facilitate access to different urban planning schemes for city technicians, as well as permit residents to access urban development plans in their towns and cities via Internet. Transparency in public management of the urban planning sector will be promoted through this program, helping to resolve and manage this planning.
- The Identica project, developed for the Ministry of Industry, Tourism and Commerce, in Spain, consists of advanced identify verification by means of biometrics and personal documentation in secure environments, thus facilitating the conventional identification process and incorporating all technological advances and new models for storing identification data.
- The Town of Padrón Avanza project, developed for the Ministry of Industry, Tourism and Commerce, in Spain, a part of the AVANZA Plan, aims to provide a sole integrated system that takes the whole array of management functions of a town's population into account.
- Contract with the Health Council of the Andalusian Regional Government, in Spain, to implement a Healthcare Monitoring Information System.
- Contract with Aena, in Spain, to develop the application for monitoring medical procedures in the Airport Services Division.
- Contract with the Virgen de Valme Hospital, in Seville (Spain), to renovate communications equipment and install new fiber optic trunk lines.



- Contract with SESPAS, in the Dominican Republic, to implement the digital Healthcare strategy, a unique information and affiliation system in the Healthcare segment.

### Global Services

#### Business Evolution in 2007

We experienced one of our greatest transformations in the year 2007. We went from complete reunification of all of our businesses in consulting, infrastructures, communications, systems integration and applications and outsourcing to a single new business unit called Global Services.

We also proceeded in 2007 with the acquisition of 58% of Matchmind, a technological consulting firm, in order to round out all of our capabilities in this area, beginning the processes necessary for its integration with Telvent. We also signed a gradual acquisition agreement for the remaining 42% over fiscal years 2008, 2009 and 2010. Within this strategy of growth in security services for our clients, we increased our shareholding in S21sec, a Spanish company specializing in computer security solutions.

International expansion was another of the critical points in which Global Services begin to develop its strategy in 2007. Apart from our presence historically in Portugal, where Global Services is a reference in IT infrastructure management services, we began construction in the U.S. of our sixth data center. This data center is positioned to offer IT infrastructure and security (disaster recovery) management services to Telvent's large client base in segments as consolidated as Energy and Transportation. We also took the first steps toward positioning ourselves in other geographical locations, such as Latin America, where Telvent has had a historical presence.

#### Most Relevant Projects in 2007

- Contract with the Spanish Institute of Foreign Trade (ICEX), in Spain, to manage its infrastructures.
- Contract with Jazztel, in Spain, to upgrade its technological platform, which is currently located at Telvent's Data Centers.
- Contract with the Metropolitan Telecommunications Network of Seville,



Hispalnet, in Spain, for secure access to IP services of the Metropolitan Telecommunications Network of Seville.

- Contract with the Spanish Radio and Television Corporation, in Spain, to create and manage a multimedia web portal. Contract amount: 1,500,000 Euro. Through this project, Telvent's technological capability for designing and managing one of the most innovative multimedia web portals.
- Contract with BT Spain General Systems Integration, in Spain, to expand Telvent resources.
- Contract with the Real Madrid Soccer Club, in Spain, for outsourcing the services of its web portal.
- Contract with the Regional Consortium of Transportation of the City of Madrid, in Spain, for implementation of the Backup Center of its Technological Platform.
- Contract with L'Oreal, in Spain, to house the information systems of its Spanish subsidiary.
- Contract with Telefónica, in Spain, for housing its communications nodes.
- Contract with UNED, in Spain, to outsource, manage and monitor its web portal.

## Research, Development and Innovation in 2007

At Telvent, over 350 people devote themselves to Research, Development and Innovation, distributed among the 9 Product and Competency Centers we have around the world.

The most relevant R&D&I projects in 2007 were the following:

- INL Phase 1. 2007 marked the beginning of a multi-annual research project in critical infrastructure security. The project has already begun to bear fruits with the first report from the Idaho National Laboratory (INL) on the evaluation of the security of our SCADA OASyS DNA 7.5. Given the results, at Telvent we are in a position to assure clients that our flagship is the securest in our history.
- Responder. In 2007 numerous product innovations came to light:
  - 1 The completely redesigned web interface for achieving a new, easy-to-use interface, with reinforced web security and ESRI ArcGIS Server 9.2 connection.
  - 2 The functioning associated with Responder's management by region now permits up to three levels of geographical regions as well as outage forecasts by region.
  - 3 Improved management of likely incidents, crew assignment, risks and incident confirmation, as well as interface improvement for adding trucks to the system.
  - 4 Report generation now includes the capability of generating various kinds of user-defined incident reports.
- Free Flow Toll Solution. Throughout 2007 we continued to perfect detection and classification equipment, and work was conducted on new systems by means of optical stands and piezoelectrics for detection of axles and double wheels, and on a new state-of-the-art telepay tag in conjunction with Delta and Fela. Results are due at the beginning of 2008. The solution is complemented by the development of the Back Office, divided into two projects: CSC (Customer Service Center) and VPS (Violation Processing Center) development. In 2007 the detailed analysis of different operational models of these types of systems was completed in different countries, and requisite and functional specification of the system was carried out. Advances were also made in definition and design of the architecture, and tests were conducted in order to select and validate the functioning of different tools for use in its development slated for 2008.
- SmartTouch. A consortium that aims to integrate the functions provided by contact-free intelligent card-reading, which is in wide use in ticketing systems, for cellular phones. In 2007, we focused on defining scenarios and developing the first models, including the integration of a pre-pay transportation title in the cell phone, recharging via GPRS and its validation and consumption in access equipment. In this way, a user with an adapted phone could enter the transportation system (subway, bus,...) by only having to bring his or her cell phone near the closing device.
- e-trans. The e-trans platform is the basis of our payment system solutions for tollways, ticketing and parking facility management. In 2007 we worked on its evolution, redefining the architecture, with anticipated benefits for our clients, among which the following stand out: solutions with high availability and scalability, multi-platform client support, a more flexible and enhanced user interface, and support of completely centralized systems.
- InTraSy. The aim of the project is to develop the new generation of solutions for city traffic control, both with respect to field equipment, zone regulators and exchanges, as well as the Center's system. In 2007 technical specification of the new RMZ regulator was carried out, including mechanical and electronic design. The project offers significant changes in information structure, connectivity, modularity and in the control capacity of peripherals, which allows a high degree of flexibility for adapting to our clients' present and future needs, thus reducing the necessary investment level during the useful life of the system.

- Shadow Toll. By means of this project planned over two years, 2007-2008, we are developing a Shadow Toll Smart System at Telvent. Different types of sensors for detecting and classifying vehicles were analyzed and selected in 2007, and system specification was completed. Integration of one of these sensors in the remote for data collection was conducted, and the basic software infrastructure that will complete the solution was developed as well.
- m:VIA. Development of a cellular platform permitting vehicle-infrastructure interaction and allowing drivers to receive available information during their trip. The objective of this project, which is backed by the MITandC, is research and development of basic systems for content management, both for loaded elements as well as infrastructure, for traffic and transportation sector applications. It is a research project that will bring about significant knowledge acquisition in cellular communications that may later be applied for creating added-value services in different areas of the traffic and transportation sector.
- Gas Suite. We improved the Gas Suite infrastructure in 2007 to allow better data access control of measurements having financial materiality. GMAS, in particular, is used as an auditing tool to ensure compliance of norms regarding corporate governance, such as the Sarbanes-Oxley Act. We added other innovations to the product, such as enhancement of data treatment so that information arrives first to those involved in decision-making, or the restructuring of the product that lowers cost since it allows for modular installations and facilitates version upgrades.
- SimSuite Integration. SimSuite Pipeline is a key component of the LMS (Liquids Solutions Suite). The SimSuite development program focused on the integration of certain parts in the OASyS DNA 7.5 infrastructure, such as the man-machine interface (ezXOS) or the data access layer (DAL). The objective of this project is to offer our clients an integrated solution which at the same time lowers costs in the long run. Configuration tools and common interfaces assure that the end user need not have to change contexts in moving from one application to another.



- Next Generation Liquids Suite (NGLS). Continuation of the project launched in 2006 with the aim of creating a superproduct based on the solid nature of current products. Throughout 2007, we continued to work on the integration of applications in the OASyS DNA infrastructure: elimination of function duplication, reduction to a minimum of migration effort over the previous one and the division of the applications' components. This effort in technological enhancement of our Liquids Suite applications lets us offer our clients systems for operating and monitoring their pipelines, with the confidence of being based on our solutions that are highly proven by the industry and on which we continue to work in order to improve functioning and flexibility and therefore stay in line with the rapid changes in the oil industry.
- Pipeline Power Optimization. This application is based on the Liquids Suite SimSuite module and determines energy consumption and operating cost of a pipeline at a given moment. This information is used to determine optimal pump configuration in order to minimize costs. The Pipeline Power Optimization solution offers those in charge of the operation and energy management of the line a tool for knowing energy consumption, to improve operation and aid in decision-making, which lead to savings in the energy cost.

- Smart Grid Solutions Suite. In 2007 we started up a strategic initiative called the Smart Grid Solutions Suite (SGS) in response to the new challenges facing the industry in terms of efficient and secure network management. Within this range of solutions, our SCADA OASyS, ArcFM Enterprise GIS, Responder Outage Management, DMS Distribution Management, and Titanium Smart Metering Solution are included, as well as new products for automating substations. SGS concentrates its efforts on innovation of both technology and processes that give value to our clients, based on the cohesive integration of our advanced applications and on our base products, thereby creating a highly secure structure that is especially suitable for managing critical infrastructures. SGS will provide, among other advantages, network energy efficiency, improvements in customer service, reduction in the frequency and duration of service interruptions and possibilities for intelligent management of demand which were unheard-of until now.
- Denise. This represents a 4-year (2007-2011) research project, which obtained public financing from the Cenit program of the 2010 Ingenuity Plan. Telvent is part of a consortium comprised of representative companies from the electricity sector and Spanish research centers. The aim is to apply the latest generation of technologies to create a new generation of networks for electric distribution with the capacity to improve the quality of the energy supply, optimize supply and demand management, increase energy efficiency and supply security and support a new generation of energy services. This project fits perfectly within the objectives of our Smart Grid.
- Cirrus 100 Ceilometer. Cirrus 100 is Telvent's cloud height sensor (ceilometer) that includes mechanics based on a double lens system in its development. With this system, the focal distance will be reduced while improving thermal stability, data acquisition with a resolution of 9.8 meters and Ethernet connectivity. This product of high added value will form part of the Telvent product catalogue for aviation meteorology, a key component in airport security, increasing confidence in security during takeoff and landing maneuvers.



- Beftel (optimized control system for desalination plants). The aim of the project is to design and develop an advanced control system that will permit optimization in the operation of a desalination plant. The system integrates the most advanced control and simulation technologies while combining new pre-treatments and energy recovery systems for application in desalination plants, providing the necessary efficiency by means of supplying technology geared towards lowering energy consumption and therefore reducing GHG emissions. This project began in 2006 and is being developed in conjunction with Befesa CTA. It is subsidized by the Andalusian Technological Corporation, the MITandC and the Andalusian Regional Government.
- THMDT (Telvent Hydrometeorology Decision Tool). The project aims to design and develop a monitoring and control platform for watersheds, permitting integration of new field technologies for measuring precipitation and hydrological modeling. With this objective, real-time information from hydrological sensors and precipitation data are integrated, for use in a distributed hydrological model, in order to obtain short-term forecasts on river and dams. THMDT therefore represents the development of new technologies linked to sustainable management of water resources. In the development of the project, we are backed by the Hydrometeorological Research Group at the University of Catalonia and aided by the MITandC and the CICE of the Andalusian Regional Government.

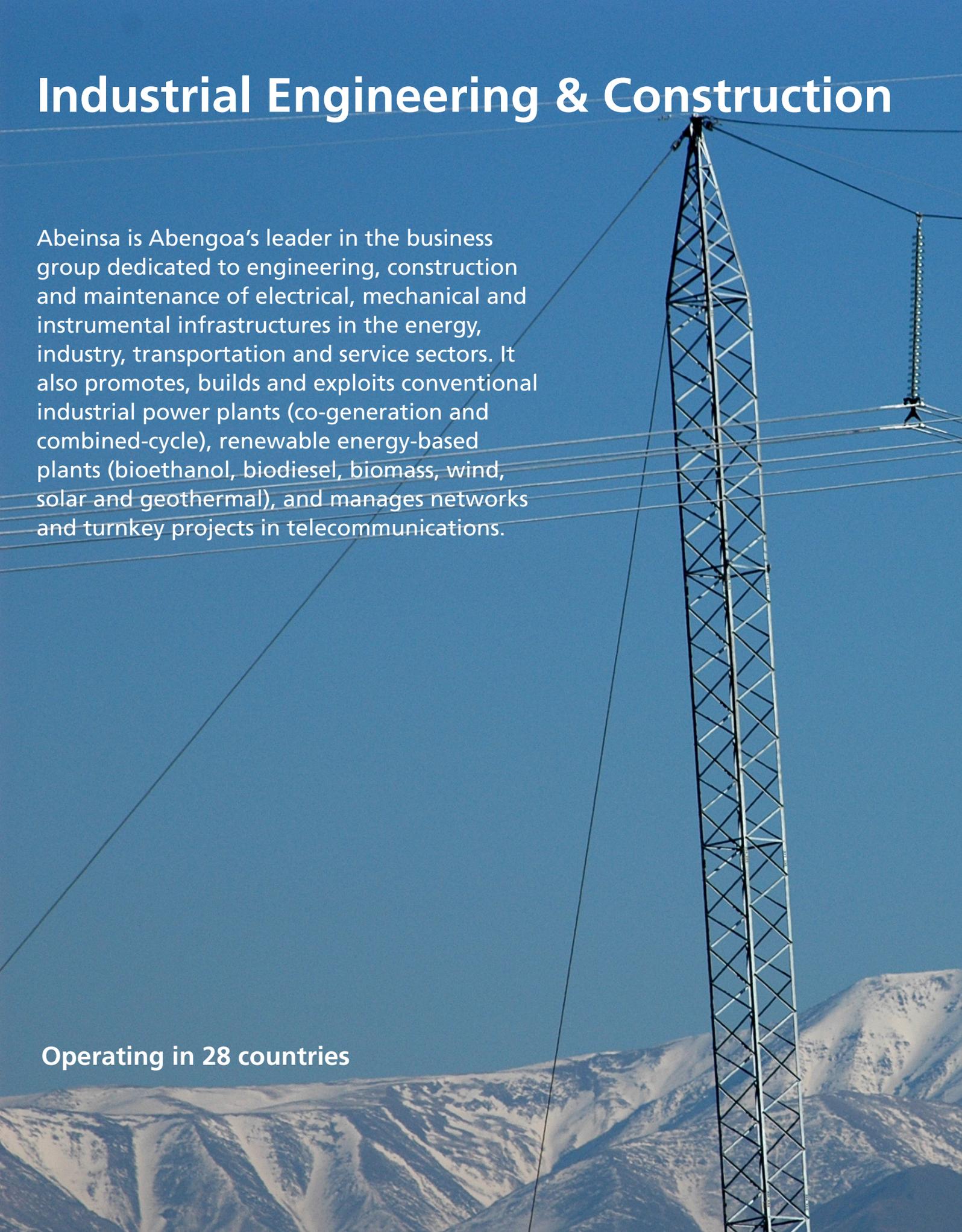
- **Tesemat.** This project puts forth the design and development of a Solar Energy Management Tool for optimizing solar energy generation by means of exploiting an accurate weather forecast adapted to the needs of the operator. With this forecast, solar plants will have a tool for maximizing power level and energy production quality, and improve management of operations and maintenance. Tesemat will allow efficient and sustainable handling of solar plants. The project is developed in conjunction with Solúcar R&D. Subsidies were granted for 2007 and 2008 from MITandC.
- **PMAI (Image-Assisted Medical Processes).** The PMAI project, which began in 2006, lies within the strategy of developing solutions in the Healthcare sector and, more specifically, in Medical Imaging. In 2007, we succeeded in developing the Medical Image integrated Visualizer in 2-D and 3-D for its flexible application within the TiCares suite for planning and carrying out medical intervention processes (radiation, surgery, ...). Through this project, we seek to increase efficiency of current surgical procedures to achieve more precise and minimally invasive surgery at a lower price. It enjoys a subsidy from the Andalusian Technological Corporation (CTA).
- **Amlvital.** Project within the Cenit program, with a subsidy granted by the CDTI. Its objective is developing a new generation of TIC technologies and tools for modeling, designing, implementing and operating Environmental Intelligence (Aml) Amlvital systems, the aim of which is to provide personal services and support for independent living, health and well-being.
- **Identica.** The Identica project arose in 2007 with the objective of constructing an advanced identity verification system through biometrics and personal documentation in secure environments to respond to the current need for unequivocal evidence of a person's identify, while verifying physical presence at the same time. With this project, at Telvent we will develop a simple, light and flexible platform which can, in real environments, respond to the different possibilities for identification and authentication: verification of document authenticity and collection of biometric features and their validation comparing data stored in the bearer's



document or at a remote database. Identica was granted a subsidy from the Ministry of Education and Science (MEC).

- **Globe.** The Globe (European GLObal Border Environment) project is categorized under the strategic thematic line of e-immigration established by the European Commission, defining a series of Institutional objectives, thus obtaining a global control panel for making strategic (policies and procedures) and operative (tactics) decisions, Information Systems, Normalization and Integration (Identification of users, Identification and analysis of information sources and systems, Identification of needs and Design of the integrated solution) and Technological, with the development of innovative, scalable and reliable solutions.

# Industrial Engineering & Construction

A tall, lattice-structured tower under construction against a clear blue sky. The tower is the central focus, extending from the bottom right towards the top center. Several power lines are visible, some crossing the tower. In the background, there are snow-capped mountains under a clear blue sky. The overall scene is industrial and construction-related.

Abeinsa is Abengoa's leader in the business group dedicated to engineering, construction and maintenance of electrical, mechanical and instrumental infrastructures in the energy, industry, transportation and service sectors. It also promotes, builds and exploits conventional industrial power plants (co-generation and combined-cycle), renewable energy-based plants (bioethanol, biodiesel, biomass, wind, solar and geothermal), and manages networks and turnkey projects in telecommunications.

**Operating in 28 countries**



With engineering ... we build and operate  
conventional and renewable energy power  
plants, power transmission systems and  
industrial infrastructures

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

## Summary 2007

Abeinsa bases its growth on correct development of the integrated energy product and construction of bioenergy and solar thermal power plants, strong sustained growth in infrastructure activities with higher added value, and a high degree of internationalization. The company offers its customers integrated solutions in the Energy, Transportation, Telecommunications, Industry, Services and Environment sectors.

The company's success in recent years, accompanied by consolidation of growth, is due to higher customer satisfaction levels, advances in internationalization by means of innovative measures that improve profitability, and to the development of company human resources and social involvement.

In 2007, advances were made in environmental commitment through a considerable increase in R&D&I investments in fuel cell, hydrogen, CO<sub>2</sub>-capture, and energy efficiency activities through the subsidiary company Hynergreen Technologies. The aim is to assure a future in which energy supply will be secure and sustainable for everyone.

Through the company ZeroEmissions Technologies, Abeinsa grouped all the carbon trading and CDM project activities related to the Kyoto Protocol and provides global solutions to climate change through the promotion, development and trading of carbon credits, voluntary compensation of companies and innovation in greenhouse gas reduction technologies.

Furthermore, the company participates in Carbon Funds through a 23 M€ investment. This amount is scheduled for increase from 2008 to 2012. These funds are utilized to finance the acquisition of emission projects that contribute to reducing greenhouse gases in developing countries and in transition economies through clean development mechanisms and joint implementation projects in accordance with the Kyoto Protocol.

This growth in activity and international development has resulted in the company's position as a world leader in the fields in which it operates. In this sense, according to the data published in the Engineering New Record magazine, Abeinsa is ranked as No. 1 in



the world for international contracts related to the construction of electricity transmission and distribution infrastructures, and No. 2 in the construction of electric infrastructures.

This has been achieved thanks to the efforts of the company's entire professional team that in 2007 executed our construction and engineering projects, noteworthy among which are:

- Construction of a 245 million-liter bioethanol production facility in Lacq (France).

- Construction of a 200,000 ton biodiesel production plant in Algeciras (Spain).

- Construction of the 37 km, 525 kV Bateias-Curitiba transmission line; Bateias 525/230 kV transformation substation; and Curitiba 525/230 kV transformation substation.

- Execution of Package 2 of the SIEPAC project (Electric Interconnection System for Central American Countries) consisting of a 230-kV s/c transmission line.

Construction and operation of a 150 MW hybrid solar combined-cycle power plant in Hassi R'Mel (Algeria), where one of the world's largest natural gas reserves is located.

Construction, in Argentina, of the 181 km, 500 kV Mendoza-San Juan HV transmission line.

Construction of a second solar thermal tower technology power plant, with a nominal rating of 20 MW, at the Solar Platform in Sanlucar la Mayor (Seville).

The company's fulfillment of these, and many other, commitments has resulted in customers' complete trust in project execution and integrated solutions, which are adapted to their needs at all times.

Consequently, business operations have increased through the awarding of new contracts, noteworthy among which are the following:

Construction of a 470 MW hybrid solar combined-cycle power plant in Ani Beni Mathar (Morocco), 20 MW of which will come from the solar field system. The power plant will generate more than 3,800 GW of electricity per year.

Construction of three bioethanol plants in Europe (Holland, England and Germany). Each plant will have the capacity to produce up to 480,000 m<sup>3</sup> of bioethanol from corn or wheat per year.

Construction of two corn-to-bioethanol plants in the United States, with a production capacity of 88 million gallons. There is no other plant with a larger capacity anywhere in the world to date.

The concession contract for the new hospital and outpatient care facility, underground parking areas and complementary infrastructures for the Hospital Costa del Sol, in Marbella (Spain).

Construction of the conduction and distribution mains and complementary facilities to improve and assure the supply of drinkable water to the city of Montevideo (Uruguay) system until the year 2035. The project is known as the Sixth Pumping Line.



Construction of the expansion and upgrade of the drinkable water and sewage systems of Manchay-Lima (Peru).

Construction of fire-fighting water systems at two of Pemex's refineries in Mexico.

Construction of three photovoltaic, 10 MW global rating power plants in Spain.

The main highlights for the year in the company's different fields of activity are described in more detail below.



**Energy**

Activity in the energy sector focuses on providing integrated solutions through the promotion, pursuit of financing for, and engineering, construction and operation of new power plants and industrial facilities, with special emphasis on the solar and biofuel sectors, as well as on upgrading existing facilities.

Within this field of activity, focus is centered on the following products:

Promotion, design, engineering, construction, operation and maintenance of energy generation plants:

Bioethanol and Biodiesel Plants

Biomass Plants (forestry, agriculture)

Solar Thermal Power Plants (tower and parabolic trough)

Conventional Power Plants

Combined-Cycle Plants

Cogeneration Plants

Research and development activities aimed at obtaining new methods of electricity production:

Design, development and construction of fuel cell and hydrogen-based electricity production systems.

Production, processing and storage of hydrogen as an energy vector.

Solutions in the fight against climate change.

Greenhouse gas emissions reduction and elimination.

Management of carbon credits, and investment in carbon funds.

**Abener Energía**

Abener Energía, S.A. is the parent company in this sector. It consolidated its three business areas – Solar, Biofuels and Generation – in 2007, with the completion of emblematic projects, making it a reference worldwide in solar thermal power plant and biofuel facility construction.

If the PS10 plant was the company's first incursion into the solar thermal power plant construction market and key to its positioning as a reference company, in 2007 this line continued with the construction of the PS20 plant. Work continues on this 20 MW plant to schedule. The 161-meter tower was completed in the last quarter of the year. Completion of the entire plant is scheduled for June of 2008.

Another of the innovative technologies the company's activity currently focuses on is PTCs (Parabolic Trough Collectors). This technology is being utilized at the Solnova 1 and Solnova 3 power plants, on which construction commenced in mid-2007. Each is a 50 MW plant with 350 collectors that track the sun automatically.

The PS10, PS20, Solnova 1 and Solnova 3 plants will prevent the emission of 238,000 tons of CO<sub>2</sub> into the atmosphere. They are located at the Solar Platform in Sanlúcar la Mayor, Seville (Spain).

ISCC (Integrated Solar Combined Cycle) technology is a perfect combination of innovation and development and is being utilized on projects currently in progress in Algeria and Morocco. The projects in question consist of the construction of two power plants, of 150 MW and 470 MW, respectively that integrate a PTC solar field and a combined cycle. This initiative is the first of its kind in the world.

With respect to biofuels, our role as Europe's leader in construction of bioethanol facilities stands out. Following a solid trajectory in Spain, Abener is now consolidating its positioning in the European bioethanol marketplace through construction of the three largest facilities to date – each with a capacity of 480,000 m<sup>3</sup> – in Holland, England and Germany. To



this, the advances on the bioethanol project in Lacq (France), currently at the final stage of construction, must be added.

Simultaneous with the company's entry into Europe, it has set out to conquer the world's largest bioethanol marketplace: the United States. In this respect, it has already signed contracts for two 88 million-gallon (333,000 m<sup>3</sup>) projects.

The 200,000 ton annual production capacity biodiesel plant under construction in San Roque, Cadiz (Spain) is 60% completed and scheduled to be brought into operation in 2008.

In view of the above, 2007 represented an important turning point in Abener's expansion and growth. The company doubled its project portfolio and established itself very successfully in new markets such as central Europe, Africa and North America.

The most significant projects developed by Abener throughout 2007 are listed as follows:

A 20 MW Solar Thermal Power Plant (tower technology) in Seville (Spain)

Work was completed on construction of the tower, an extraordinary piece of engineering work, for the PS20 plant. It is 161 meters high and its spectacular design allows perfect integration into the natural surroundings of the area the plant is located in. The tower houses a solar receiver, 120 meters above ground level, designed to produce steam to drive a turbine for electricity generation purposes.

The 20 MW plant's more than 80 hectare solar field consists of over 1,250 heliostats that capture the sun's rays and project their reflection onto the receiver, thus enabling the production of 50.6 GWh of electricity per year for commercial use. Work on the PS20 plant is progressing according to schedule, with completion programmed for mid-2008.



50 MW PTC technology Solar Thermal Power Plants in Seville (Spain)

Construction began on the Solnova 1 and Solnova 3 PTC (Parabolic Trough Collector) technology solar thermal power plants, each with 50 MW.

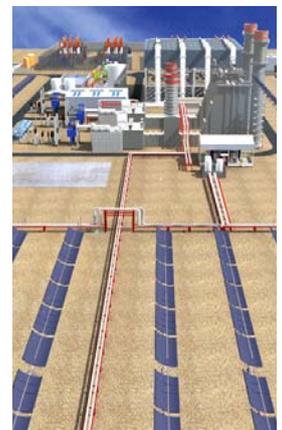
Both plants have 360 collectors, each with a useful reflective surface area of more than 800 m<sup>2</sup>. The collectors are parabolic-shaped mirror structures that track the sun azimuthally and concentrate its radiations onto a pipe with a heat-carrying fluid which circulates inside.

Solnova 1 and 3 will each produce an estimated 114 GWh per year of electricity, equivalent to the consumption needs of almost 30,000 homes. Moreover, thanks to PTC technology, they will prevent annual emissions of almost 90,000 tons of CO<sub>2</sub>.

ISCC technology Solar Thermal Power Plant at Ain Beni Mathar (Morocco)

The company was awarded the contract for the world's first project to integrate a PTC solar field and a combined cycle.

Ain Beni Mathar is a 470 MW hybrid power plant, of which 20 MW are generated by a solar field with 183,000 m<sup>2</sup> in useful reflective surface area. The installation also includes a combined cycle. The plant's annual electricity production will exceed 3,800 GW.



ISCC technology Solar Thermal Power Plant at Hassi R' Mel (Algeria)

This is the second ISCC technology power plant project to be undertaken by Abener. The groundbreaking ceremony was held in the last quarter of 2007.

The 150 MW plant consists of a 183,000 m<sup>2</sup> useful reflective surface area PTC solar field that achieves an output of 20 MW, thereby contributing approximately 5% of the total electric energy produced.

There is also a combined cycle consisting of one steam and two gas turbines, and heat recovery, post-combustion boilers.

Bioethanol Plant in Lacq (France)

The 200,000 m<sup>3</sup> bioethanol-from-grain production plant is in the final stage of construction. In addition to bioethanol, DGS is obtained via a fermentation, distillation and dehydration process. DGS is a product utilized as animal feed and production is around 150,000 tons per year.

This was the company's first incursion into continental Europe following a consolidated trajectory as the leading builder of bioethanol plants in Spain.

Bioethanol Plants in Europe (Holland, England and Germany)

Abener continues its expansion in Europe with the construction of three major bioethanol production plants.

Construction has begun on three bioethanol plants with an overall production capacity of up to 480,000 m<sup>3</sup>, from corn or wheat, in Holland, England and Germany. DGS (370,000 tons/year) is also obtained as a by-product.

With these projects, the company has strengthened its position as Europe's leading builder of bioethanol plants.



Bioethanol Production Plants in the USA

During the course of the year Abener entered the world's largest bioethanol market through contracts to construct two of the largest capacity plants in the United States, in Indiana and Illinois. Each will produce 88 million gallons (333,000 m<sup>3</sup>) per year of bioethanol from corn.

Biodiesel Production Plant in San Roque, Cadiz (Spain)

Work was completed, in the last quarter of 2007, on the storage yard, the most relevant area of the entire plant, not only because of its function, but also because it takes up more than half the terrain.

Plant start-up is scheduled for April, 2008.

Using crude vegetable oils, the plant will produce 200,000 tons of biodiesel per year, and some 21,000 tons of pharmaceutical glycerin as a by-product.



### Cogeneration in Brazil

Abener's activity was completed with its entry into the Brazilian market through the execution of two 70 MW cogeneration projects, integrated into two plants for ethanol and sugar production. The electric energy generated will be utilized by the main plant, and surplus energy will be exported and sold to the grid.

Both plants are scheduled for completion in mid-2009.

### Operation and Maintenance

The Operation and Maintenance (O&M) line of business for generation plants includes preventive, programmed and corrective maintenance of equipment and systems, as well as operation of the same to achieve facility reliability and ensure compliance with design specifications in terms of power, availability and load factor.

These services are being provided at nine different plants, and technical support for O&M operations is also being provided at another cogeneration plant.

These plants are located in six provinces of three different Autonomous Regions. Their total installed output is 177 MW.

It is worth highlighting that two of these plants sell their surplus energy in the electric energy production market (the so-called "electric pool"). Management of the sale of this energy to maximize earnings in accordance with market regulations, and of other new products such as the quarterly auction of distributors for supply at a fee, were incorporated as additional tasks to those executed by the O&M Division. This Division also provides energy management services for three of the Bioenergy Business Unit's plants, as well as another external facility. The global managed energy figure for these facilities is 1,444 GWh per year.

In 2007, the PS10 Solar Thermal Tower Technology Power Plant was commissioned. Furthermore, the Division has been successfully carrying out O&M at the Seville PV plant. Both plants are located on land



at the Solar Platform in Sanlúcar la Mayor (Seville, Spain).

The O&M operations carried out at the PS10 plant were a challenge for the Division. The Division demonstrated its capacity by integrating its experience in operation and maintenance of conventional cogeneration plants into this new electric energy generation technology, the commercial operation of which is unique worldwide.

The experience gained at PS10 has resulted in a team of specialists from Abener participating, in 2007, in the start-up works for the PS10 Repowering Project and providing assistance for the construction of the PS20 Solar Thermal Tower Technology Power Plant, both of which are also located at the Solar Platform in Sanlúcar la Mayor, Seville (Spain).

### **Hynergreen**

Hynergreen Technologies, S.A. (Hynergreen) is the Abengoa-owned company dedicated to hydrogen as an energy vector, and fuel cells as electric energy production systems. Committed to the environment and sustainability, the company offers solutions, based on the aforementioned technologies, for different sectors, thanks to its constant R&D&I activities.

Throughout 2007, Hynergreen increased its investments in R&D&I considerably in order to allow it to continue to hold a leading position, both nationally and internationally, in the fields in which it operates. A large part of this research effort was channeled through the company's Fuel Cell Testing and Characterization and Advanced Hydrogen Technologies Laboratory in Seville.

Some examples of projects undertaken, in full or in part, during the year are listed below:

#### Aquila project:

The objective of the 24-month Aquila project is to analyze different options for distributed and environmentally sustainable electric energy generation aboard aircraft utilizing different technology fuel cells, and to also study both the possibility of carrying stored hydrogen and that of producing it on board while the aircraft consumes it, utilizing different alternatives for the purpose. Through the project, the company has also studied the performance of different devices when subjected to typical aircraft conditions. This project receives funding from the Agency for Innovation and Development of Andalusia (IDEA) and the Technology Corporation of Andalusia (CTA).

#### EPiCo project:

The main objective of the 42-month EPiCo project is to coordinate the efforts of researchers from the main Spanish companies involved in developing different types of polymer membrane (PEM) fuel cells, each of which is then proven in different applications developed for the purpose. A total of 5 partners are participating in EPiCo: Ajusa, Cegasa, Cidetec, INTA and Hynergreen. The project is being funded by the Ministry of Education and Science, which considers it a scientific-technological Project of Singular and Strategic Nature (PSSN).



#### PlasmaGen project:

The PlasmaGen project, completed in 2007 following two years of work, aimed at the roll-out of a reforming process based on plasma technologies as a means of producing hydrogen in a cleaner and more efficient way. During the project, the company proved different technologies that have led to attainment of a more efficient and larger-scale process. The project received funding from the Agency for Innovation and Development of Andalusia (IDEA).

#### Hercules project:

The objective is to establish a renewable hydrogen service station in Sanlúcar la Mayor (Seville), where the hydrogen is to be produced with solar energy; in addition, a fuel cell-powered electric vehicle is under development. This vehicle uses the hydrogen supplied at the service station. The project's global budget exceeds 9 M€ and is backed by the Agency for Innovation and Development of Andalusia (IDEA) and the Ministry of Education and Science, catalogued as a scientific-technological project of Singular and Strategic Nature. The Hercules project is an Andalusian initiative globally coordinated by Hynergreen and promoted by a total of 8 partners. Five companies, a public agency and two research centers are collaborating: Hynergreen, Solucar R&D, Santana Motor, Carburros Metálicos, GreenPower, the Energy Agency of Andalusia, Inta and Aicia. The

project commenced in January, 2006 and is scheduled to last 42 months. Throughout 2007 the consortium has been working on developing a test bench where the technologies developed for the vehicle will be assessed and work began on design of both the renewable hydrogen production plant and the service station.

This year, Hynergreen invested almost € 2 M in Research and Development, double the previous year's figure. This allowed the company to undertake different types of projects, at both national and international level.

Among the most significant lines of R&D&I are the renewable hydrogen production technologies (mainly from biofuels and solar energy, both photovoltaic and thermal), storage and processing of the same (with developments in carbon and metal hydride structure storage systems), and ancillary systems for fuel cells with power conditioners, controllers, and cooling circuits, among others.

The company received collaboration from different Spanish, European and American research centers, Public Research Bodies (PRBs) and universities in these activities. Collaboration from these institutions has, on many occasions, resulted in long-term agreements that have led to a large number of publications, participations in conferences and, in some cases, patents.

Hynergreen participates in associations and platforms to collaborate in the timely development of the technologies its work focuses on. It does so with the aim of promoting standardization, diffusion and implementation of fuel cells and hydrogen as an energy vector. Some noteworthy examples in 2007 are as follows:

The company participates actively on the Technical Subcommittee for Fuel Cell Standardization under the auspices of Aenor's Technical Committee for Standardization of Electric Energy Production (AEN/CTN206/SC105), where it coordinates several work groups.



It participates in the Spanish Hydrogen Association (AeH2), where it is the Board's Speaker on Engineering.

It holds vice-chairmanship of the Spanish Fuel Cell Association (Appice).

The company chairs the Spanish Hydrogen and Fuel Cell Technology Platform backed by the Ministry of Education and Science. The objective of this platform is to facilitate and accelerate the development and use, in Spain, of different technology fuel cell and hydrogen-based systems for application in transportation, and the stationary and portable sector, while taking the entire chain of R&D&I into consideration.

It participates on the Advisory Council of the European Hydrogen and Fuel Cell Technology Platform promoted by the European Commission.

It is a founding member of Industry Grouping which, together with the European Commission, will launch the Fuel Cells and Hydrogen Joint Technology Initiative (JTI) in 2008.

Finally, Hynergreen is proving its worth as a Technological Knowledge Agent of the Network of Technological Spaces of Andalusia (Reta).



## ZeroEmissions Technologies

2007 saw the definitive constitution and launching of the company ZeroEmissions as Abengoa's Carbon Business Unit. The company is now responsible for the carbon trading and CDM project activities associated with the Kyoto Protocol that Abengoa has been carrying out since 2005.

ZeroEmissions contributes global solutions to Climate Change through the promotion, development and commercialization of carbon credits, voluntary compensation of GHG emissions and innovation in greenhouse gas reduction technologies. The company is present in Spain, Brazil and China.

The Kyoto Protocol represents the global commitment undertaken to reduce emissions of gases that contribute to the greenhouse effect, which is one of the main causes of the Climate Change our planet is experiencing. ZeroEmissions develops its activity through the utilization of different tools and actions aimed at attaining reduction of the emissions of industrialized countries.

Significant among the main activities carried out this year was the signing of a contract to provide consultancy services for a Clean Development Mechanism (CDM) project for a chemical sector company in China. ZeroEmissions will execute the entire process to register one of this company's projects as a CDM and obtain the emission reduction certificates: from the project feasibility study, preparation of documentation and registration at the United Nations, to commercialization of the Certified Emission Reductions (CERs). This contract includes the signing of an ERPA (Emissions Reduction Purchase Agreement) under which the Chinese company is committed to achieving a reduction of greenhouse gas emissions and to selling the company the certification for these emission reductions in the form of CERs. This represents a further step in the development of ZeroEmissions, as China is a strategic enclave in this sector.

Furthermore, ZeroEmissions is to undertake an energy efficiency CDM project at the Chennai desalination plant (India), currently under construction by Befesa CTA. The installation of frequency converters to



reduce electricity consumption will result in an estimated savings of 120,000 tons of CO<sub>2</sub> emissions over ten years.

The company's voluntary compensation of emissions activity commenced this year with neutralization of the emissions from: the World Solar energy Conference, held in Seville, in October, the Expoenergético energy trade fair, held in Valencia, in November, and Abengoa's Investors' Forum, held in Madrid in November. In these cases an inventory of the emissions associated with the events was made and compensation was obtained through carbon credits from the Spanish Carbon Fund, a World Bank initiative ZeroEmissions is participating in.

Finally, and in relation to ZeroEmissions' participation in the international carbon market, the company's presence in some carbon funds is of note. These funds are utilized to finance the purchase of emissions from projects that contribute to reducing greenhouse gas emissions in developing countries and transition economies through Clean Development Mechanism and Joint Implementation (CDM JI) projects, in accordance with the Kyoto Protocol.

The funds in which the company is currently participating are the Spanish Corporate Carbon Fund, the first mixed capital (public and private) fund managed in Spain; the Spanish Carbon Fund, created by the Spanish Government and the World Bank, in which the company is ranked fifth from the private sector, preceded only by the four large Spanish electricity companies; the Multilateral Carbon Credit Fund, promoted by the European Investment Bank and European Bank for Reconstruction and Development; and the Biocarbon Fund, promoted by the World Bank, where it is Europe's sole participating industrial and technology company.

## Installations

Activity in the installations area is focused on engineering, construction and maintenance of electrical and mechanical infrastructures and instrumentation for the energy, industry, transportation and service sectors; installation of refractory insulation and passive fire protection.

This line of activity is led by the Inabensa Installations Company and encompasses the core activities involved in electrical and mechanical installations, instrumentation, high voltage lines, railways, maintenance, communications, and manufacturing of control cabinets and boards. Abengoa has been a pioneer in this area since 1941, as well as in insulation and refractory assembly and passive fire production.

The main products we develop are the following:

**Electric Installations:** Hydroelectric, thermal and combined-cycle plants, substations, airport and industrial infrastructures, singular buildings, maritime and railway transportation, residential areas and industrial parks.

**Mechanical Installations:** Systems associated with power and gas plants and the chemical and petrochemical industry.

**Insulation, Refractory Lining and Passive Fire Protection.**

**Instrumentation and Maintenance:** Chemical and gas production plants, nuclear and thermal power plants, state bodies and singular buildings.

**High Voltage Lines:** Construction and maintenance of power transmission lines, underground circuit-laying, live line works and stringing of fiber optic cable.

**Railway Installations:** Catenary installation.

**Singular Building Construction:** State-of-the-art hospital facilities and teaching centers.

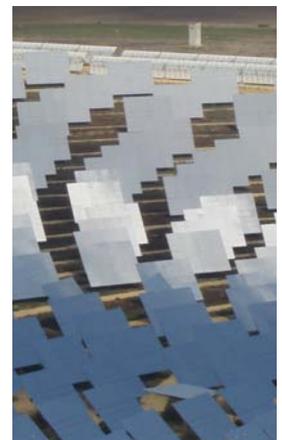
Significant in 2007 were activities in service concessions, with special emphasis on the award, under a concession agreement, of the new hospital building, outpatient care facility, underground parking and complementary infrastructure of the



Hospital Costa del Sol, in Marbella. Work was also completed on the Hospital del Tajo in Aranjuez for the Community of Madrid, where we began providing services last September.

In the development of new products in the solar sector, we were awarded a contract for the photovoltaic plant located atop the main Expo Zaragoza building and for the plants at the San Juan de Dios Hospitals, in Malaga, and in Las Palmas on the Great Canary Island. We also began the construction of three photovoltaic plants, with a total output capacity of 8 MW, developed by Inabensa; completion is scheduled for mid-2008.

In the international area, we continued with our consolidation in markets we consider strategic. In terms of most prominent activities, we must point out the award of the construction of Batch II of the Electrical Interconnection System for countries in Central America (Siepac), a project involving the execution of 950 km of 230 kV transmission line throughout Nicaragua, Costa Rica and Panama. In Batch I of this project, Inabensa is in charge of executing 278 km of 230 kV transmission line in Guatemala.



Our subsidiaries abroad, Inabensa Bharat (India), Inabensa France, Inabensa Maroc and Inabensa Abu Dhabi all significantly met their objectives, based both on customer satisfaction and the work conducted.

Along the same lines, within our strategy of internal expansion, the Manufacturing Division, put into production, through our Inabensa Tianjin subsidiary, a new workshop for manufacturing electronics and electrical panels.

**Communications**

Our business in telecommunications is focused mainly on the integration of networks and turnkey projects.

In 2007, through our **Abentel** subsidiary, we conducted our traditional activities and external plant maintenance, as well as supply and maintenance of customer loops and equipment. In the latter area of operations, there was a significant increase in supply and maintenance of wideband ADSL and the entire range of associated products.

During the year, we renewed our contract with Telefónica de España, S.A.U. for a five-year period, thus maintaining the leading position in contract volume and presence in nine provinces.

Our commitment to improvement group consolidation merits special mention, as an efficient way of increasing productivity, quality and customer service.

Through Inabensa's Telecommunications Division we also deliver engineering services and telecommunications network integration (stationary and cellular phone lines, CATV, radio, via satellite, etc.) and products and services for the deployment, installation and exploitation of telecommunications networks (design and engineering, infrastructure construction and testing, operation and maintenance).



**Marketing and auxiliary manufacturing**

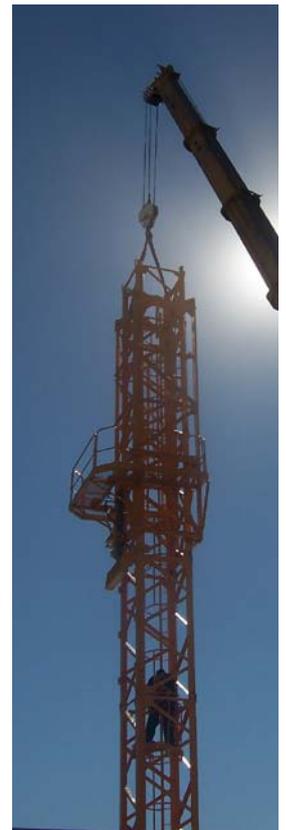
In this area, we market products related to the activities described above, and we manufacture auxiliary elements for the energy and telecommunications sectors.

It is worthwhile to mention our outsourcing services in storage facilities and purchasing logistics, which, together with the execution of new turnkey projects, allows us to ensure future growth.

We manufacture reticulated steel structures (pylons for power lines, telecommunications towers and substations) and thin plate-derived products (panels, signals and telephone booths), structures for parabolic trough collector system thermosolar plants, as well as photovoltaic plants.

In 2007, at **Nicsa** we maintained our position in Spain and we reinforced our international presence as a supplier of electrical, instrumentation and communications material for the chemical and petrochemical industry, combined-cycle and nuclear power plants, and mining and heavy industry in general.

Over the course of the year, the following business areas were created: Environment, Renewables and Strategic Development.



At **Abencor**, we maintained positive growth in the markets in which we operate, in both the energy and transportation sectors, and in alternative energy sources and the industrial segments, which has helped us to surpass the previous year's performance, both in terms of contracting and in profits, thanks to our customer-focused structure and the increase in the number of suppliers who entrust us with the distribution of their products.

At **Eucomsa** we experienced an increase in activity in 2007 with respect to previous fiscal years, which is reflected in our strategic plan for the coming years, taking very positive perspectives into account for our operations in the solar energy sector.

In other more traditional sectors we must highlight the supply of cellular telephone towers, as well as the testing conducted on metal towers.

Through **Comemsa**, the business activities underway for private industry in the Mexican market allowed us to continue our activity levels in 2007, having supplied structures for diverse national projects, and increasing projected exportation in the United States, Guatemala and Nicaragua.

**Latin America**

In Latin America – a strategic market in which we have had a stable presence for over 40 years through companies located in Argentina, Brazil, Chile, Mexico, Peru and Uruguay - we conduct business activities in the construction market, mainly in the energy and infrastructure segments.

An important part of the business is focused on activities involving high-voltage line concessions, where Abeinsa is dedicated to construction and operation.

With respect to our subsidiary in Argentina, **Teyma Abengoa**, we must highlight the completion of construction on the 181 km of 500 kV interconnection between Mendoza and San Juan, which allowed us to establish ourselves as a reference for this product in Argentina.

Country	Project	Localization	Lenght (Kms)	Investment (M USD)	Stake	Situation	Project Financing	Client
Brazil	Expansión	Minas Gerais	575	170	25%	Operation (Dec-02)	BOOT	Transener Chesf & NTE
Brazil	NTE	Noreste	386	179	50%	Operation (Jan-04)	BOOT	Transener
Brazil	ETIM	Minas Gerais	212	89	25%	Operation (Jul-04)	BOOT	Transener
Brazil	STE	Rio Grande Do Sul	389	102	50%	Operation (Jul-04)	BOOT	Transener
Brazil	ATE I	Sao Paulo & Paraná	370	260	100%	Operation (Oct-05)	BOOT	Transener
Brazil	ATE II	Colinas Sobradinho	937	508	100%	Operation (Dec-07)	BOOT	Transener
Brazil	ATEIII	Itacaunas, Colinas Carajas	459	292	100%	Construction (Mar-08)	BOOT	-
Brazil	ATE IV, V, VI y VII	Sao Mateus, Londrina, Campos Novos & Foz do Iguaçu	463	280	100%	Construction (Jul-08)	BOOT	-
<b>Total</b>			<b>3,791</b>	<b>1,880</b>				
Chile	Araucana (Aelsa)	Sic 8ª Región	54	8	20%	Operation (Nov-96)	BOOT	Endesa
Chile	Abenor	Sing 2ª Región	100	9	20%	Operation (Jan-96)	BOOT	Codeko
Chile	Huepil	Sic 8ª Región	141	38	20%	Operation (Jun-03)	BOOT	Endesa
Chile	Palmucho	Sic 8ª Región	11	10	100%	Operation (Nov-07)	BOOT	Endesa
<b>Total</b>			<b>306</b>	<b>65</b>				
Peru	Redesur	South of Peru	431	80	20%	Operation (Mar-01)	BOOT	Público
<b>Total</b>			<b>431</b>	<b>80</b>				
<b>Total</b>			<b>4,528</b>	<b>2,025</b>				

At **Abengoa Chile**, we continued to grow in our market, working for companies in the mining (Codeclco, Compañía Minera Inés de Collahuasi, Atacama Minerals), electric (Transeclec, Endesa Chile, Chilectra, Colbún), water (Esval, Empresa de Obras Sanitarias del Bío-Bío, Aguas Araucaria), and the industrial segments.

In 2007, at **Teyma Uruguay**, we began the process of structuring activities toward a holding type of organization, in which the parent company delivers four lines of business: Uruguay Construction, International Construction, Forestry Services and Environmental Services.

Thanks to this new structure, we maintained growth in our activities with traditional clients in Uruguay and began our involvement in commitment to international clients, through the development of projects in Europe, northern Africa and Brazil.

**Abengoa Mexico** continued in 2007 to be one of the main integrating companies for the Federal Energy Commission, Mexican Petroleum, the National Water Commission (through its operating bodies) and Private Initiative. Throughout the year we consolidated our level of competence and quality, as well as the degree of compliance of our clients.



At **Abengoa Peru** we significantly increased our level of activity with respect to previous years, achieving our consolidation among the main actors in the country's infrastructure development.

Significant in 2007 was the contract with Sedapal to expand and improve the potable water and sewage systems of Manchay-Lima. This project will provide potable water and sewer systems to a population of almost 50,000 inhabitants with limited resources, with its subsequent positive impact on health and quality of life for these people.

At **Bargoa** we manufacture auxiliary telecommunications products, thanks to an engineering department that allows us to develop products to meet the technical requirements of our customers.

We carry out projects involved in the manufacturing of molds, including manufacture of materials and testing as well.

Throughout the year we continued with our investment plan for developing products, increasing our productivity with respect to the previous year at the same time.

At **Abengoa Brazil** we own the concession of 2,869 km of high voltage lines in use and 922 additional km which are under construction, which represents an investment of \$1,880 M.

Commercial start-up of ATE II took place this past year, allowing us to strengthen our presence in the northern and northeast regions of the country, developing infrastructures in an area of scarce investment.

In addition, four new concession contracts were signed in 2007 for a total of 463 km in transmission lines.

In this line of activity, we build turnkey plants for transmission lines and transformer stations of up to 500 kV. Since 2001 we have built 1,800 km of 500 kV transmission line and 200 km of 230 kV line and their associated stations.



We also started up the implementation of the centralized operation center of our network in Rio de Janeiro. This system will improve the quality of operational services and will reduce costs and risks associated with local operation of the installations.



### Research, development and innovation

The chief characteristic of sustainability is that it must be sustainable for all, for every inhabitant of our planet. And to assure that this is so, at Abengoa we are convinced that the right path to follow is that of Research, Development and Technological Innovation, in order to improve the use of natural resources, helping them to reach all places and ensuring respect for the Environment.

Therefore, through our different subsidiaries, we are currently developing strategic lines in areas such as energy efficiency, CO<sub>2</sub> capture and storage, development of communications infrastructures, and establishing new energy vectors, such as hydrogen and its use in fuel cells. The synergy among these lines, and their application to our daily activities, help us to obtain better service for our clients and increasingly more technologically advanced and innovative products. In this way we contribute to building a better society and a secure future for everyone.

Over the course of the year 2007, some examples of the projects and initiatives described above are the following:

- In the area of Energy Efficiency, we developed converters and other systems associated with electric power for transportation and, specifically, for aviation, with the aim of introducing new, more efficient technologies to this sector.
- With respect to technology for capturing and storing CO<sub>2</sub>, we must point out our participation, through Inabensa, in the Cenit CO<sub>2</sub> (National Strategic Consortium for Technical Research in CO<sub>2</sub>) project, which aims to establish the technological, scientific and knowledge bases for the transportation, storage, valorization and use of CO<sub>2</sub>. Other projects are under development at the same time as well, both in Spain and internationally, that complement our work in this area, examples of which are the PSECO<sub>2</sub>, NanoGLOWA and DeCO<sub>2</sub> projects. We are confident that in the near future we will be able to offer much more efficient electrical energy plants with a significantly lower level of contamination.

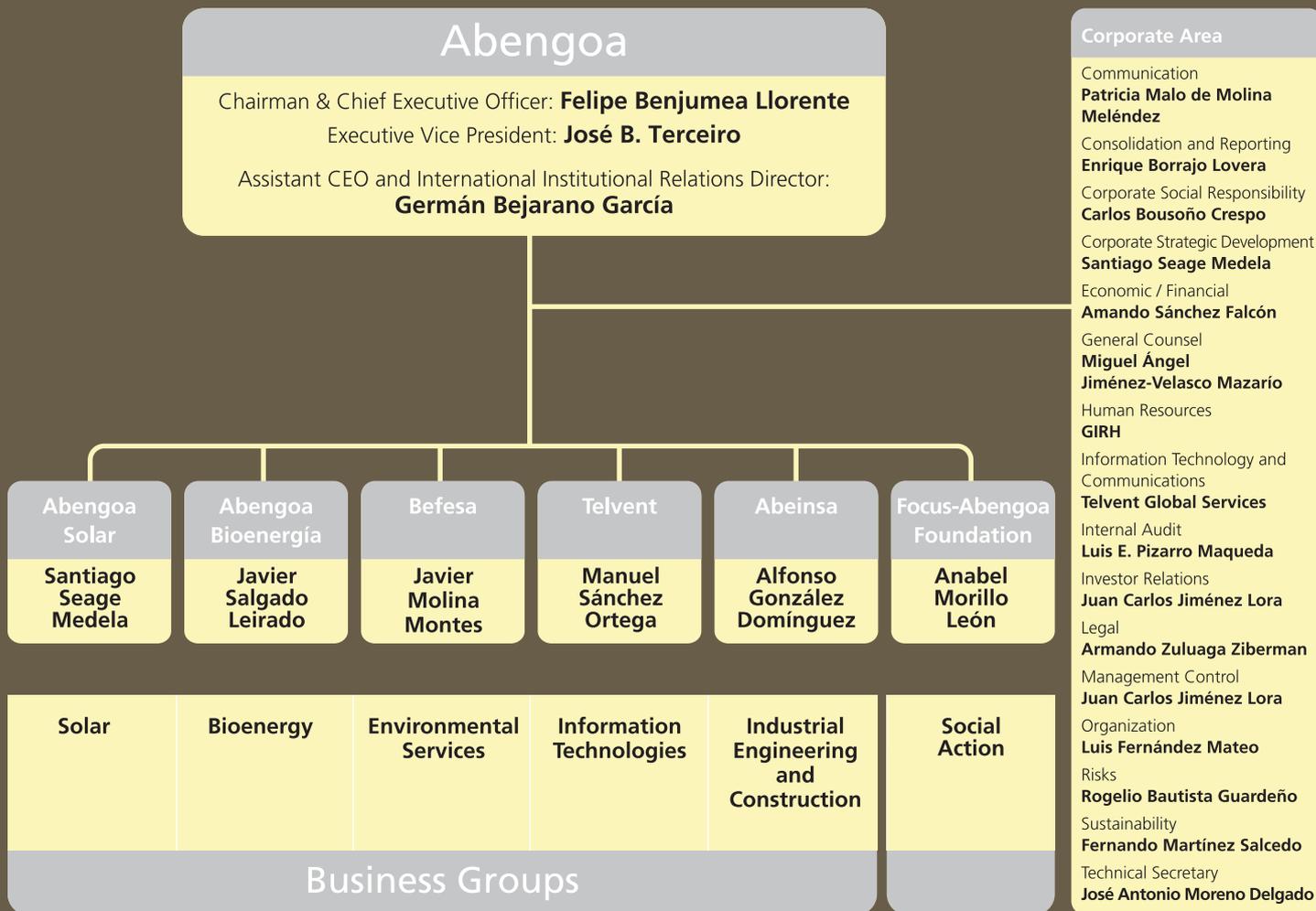
- Worthy of mention in the communications segment is the work being conducted by Inabensa in the development of new products and services: in the interest of the integration of patients with Alzheimer's disease; in the search for more advanced home care assistance methods and enhancing quality of life for people with disabilities. Thus, the Wi-Pac, Ada or Inredis projects, funded by different public institutions and carried out in collaboration with healthcare institutions contribute towards making day-to-day life of those affected easier, through the use of wireless localizers, personal assistance systems, interfaces for relating to the surroundings and custom-made communications networks. Inabensa has also developed projects involving sensor network applications for the fishing sector, or to facilitate remote access to digital information.



- Through ZeroEmissions, we have conducted activities in identifying and evaluating technologies to allow us to reduce greenhouse gas emissions: through technological monitoring tasks, project proposals for reducing emissions, preliminary studies on technical and economic viability, and follow-up on the implementation of identified measures. In this context, we must point out the project for reducing emissions carried out in Sanlucar la Mayor, which will later be extended to other municipalities.
- Finally, in the area of hydrogen and fuel cells, our Hynergreen Technologies subsidiary has been working on the development of new systems for producing clean hydrogen, with special emphasis on hydrogen from solar energy, biofuels or biomass, and on new applications for fuel cells in the transportation sector. Furthermore, deeper research has been conducted on new systems for secure hydrogen storage. An example of an application for all of this is found in the Hercules project, which aims to develop a fuel-cell-powered vehicle and implement, in the province of Seville, a solar energy-based renewable hydrogen service station.

In the development of all of our R&D&I projects, at Abeinsa we rely on strategic agreements and alliances with major universities and research centers, both Spanish and international. In many cases this has led to exchanges of research personnel, the development of new inventions, patent applications, and participation in numerous conferences and specialized publications. This continuous effort to explore scientific and technological knowledge has made Abeinsa a symbol of innovation, here in our own country and around the world, in the sectors in which we conduct our activities.

# Abengoa Management Structure

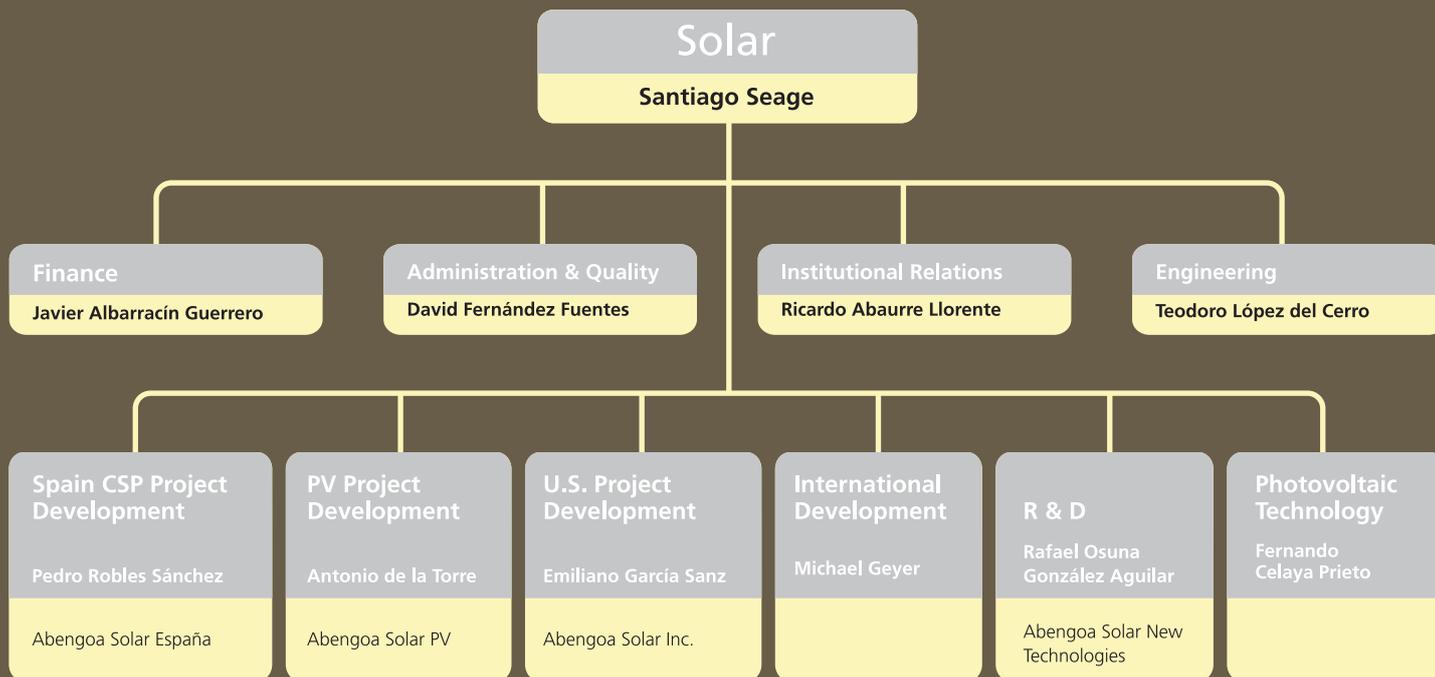


# Abengoa Management Structure

## Management Structure

Chairman & Chief Executive Officer	<b>Felipe Benjumea Llorente</b>	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 002
Executive Vice Chairman	<b>José B. Terceiro</b>	41018 Seville (Spain)		abengoa@abengoa.com
Assistant CEO and International Institutional Relations Director	<b>Germán Bejarano García</b>			
<b>Corporate Services:</b>				
Financial Director	<b>Amando Sánchez Falcón</b>	Gral. Martínez Campos, 15-5º	T +34 954 937 000	F +34 914 487 820
Estructured Financing	<b>Vicente Jorro de Inza</b>	28010 Madrid (Spain)		
Corporate Financing	<b>Jesús Ángel García-Quílez Gómez</b>	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 015
		41018 Seville (Spain)		
Appointments and Remunerations Director	<b>José Marcos Romero</b>			
Investor Relations Director	<b>Juan Carlos Jiménez Lora</b>			
Consolidation & Reporting Director	<b>Enrique Borrajo Lovera</b>			
Internal Audit Director	<b>Luis E. Pizarro Maqueda</b>			
General Secretary	<b>Miguel Ángel Jiménez-Velasco Mazarío</b>			F +34 954 937 019
Legal Department	<b>Armando Zuluaga Zilberman</b>			
Risk Management	<b>Rogelio Bautista Guardenio</b>			
Communication Department	<b>Patricia Malo de Molina Meléndez</b>	Pº de la Castellana, 31	T +34 954 937 000	F +34 913 105 039
		28046 Madrid (Spain)		
Corporate Social Responsibility	<b>Carlos Bousoño Crespo</b>	Valgrande, 6	T +34 954 937 000	F +34 917 147 003
		28108 Alcobendas, Madrid (Spain)		
Organisation, Quality and Budgeting Director	<b>Luis Fernández Mateo</b>	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 015
		41018 Seville (Spain)		F +34 954 937 019
Sustainability Management Director	<b>Fernando Martínez Salcedo</b>			
Technical Secretary Director	<b>José Antonio Moreno Delgado</b>			
Corporate Strategy and Development Director	<b>Santiago Seage Medela</b>	Gral. Martínez Campos, 53	T +34 954 937 000	F +34 913 197 307
		28010 Madrid (Spain)		
Human Resources Director	<b>Gestión Integral de Recursos Humanos, S.A.</b>	Tamarguillo, 29	T +34 954 937 000	F +34 954 935 859
		41006 Seville (Spain)	T +34 902 335 599	F +34 954 660 852
Computer Systems Director	<b>Telvent Outsourcing, S.A.</b>			

# Solar Management Structure



## Solar Business Unit

Chairman and CEO	Santiago Seage	Pº de la Castellana, 31- 5ª Planta 28046 Madrid (Spain)	T +34 954 937 000	F +34 917 907 006 abengoasolar@abengoa.com
Finance Director	Javier Albarracín Guerrero	República Argentina, 24 - entreplanta 41011 Seville (Spain)	T +34 954 937 000	F +34 954 452 659 abengoasolar@abengoa.com
Director of Administration and Quality	David Fernández Fuentes			
Director of Institutional Relations	Ricardo Abaurre Llorente			
Director of International Development	Michael Geyer	Plaza Marqués de Heredia, 6 - 9º izq 04001 Almeria (Spain)	T +34 954 937 000	abengoasolar@abengoa.com
Photovoltaic Unit Director	Fernando Celaya Prieto	Pº de la Castellana, 31- 5ª Planta 28046 Madrid (Spain)	T +34 954 937 000	F +34 917 907 006 abengoasolar@abengoa.com

## Abengoa Solar España

Managing Director	Pedro Robles Sánchez	República Argentina, 24 - entreplanta 41011 Seville (Spain)	T +34 954 937 000	F +34 954 452 659 abengoasolar@abengoa.com
Director of Operations	Valerio Fernández Quero			
Director of Project Development	Antonio Esteban Garmendia			
Director of New Project Development	Antonio Cañas Rojano			
Director of Engineering	Teodoro López del Cerro			

## Abengoa Solar New Technologies

General Manager	Rafael Osuna González-Aguilar	República Argentina, 24 - entreplanta 41011 Seville (Spain)	T +34 954 937 000	F +34 954 452 659 abengoasolar@abengoa.com
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## Abengoa Solar PV

General Manager	Antonio de la Torre Iglesias	Pº de la Castellana, 31- 5ª Planta 28046 Madrid (Spain)	T +34 954 937 000	F +34 917 907 006 abengoasolar@abengoa.com
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# Solar Management Structure

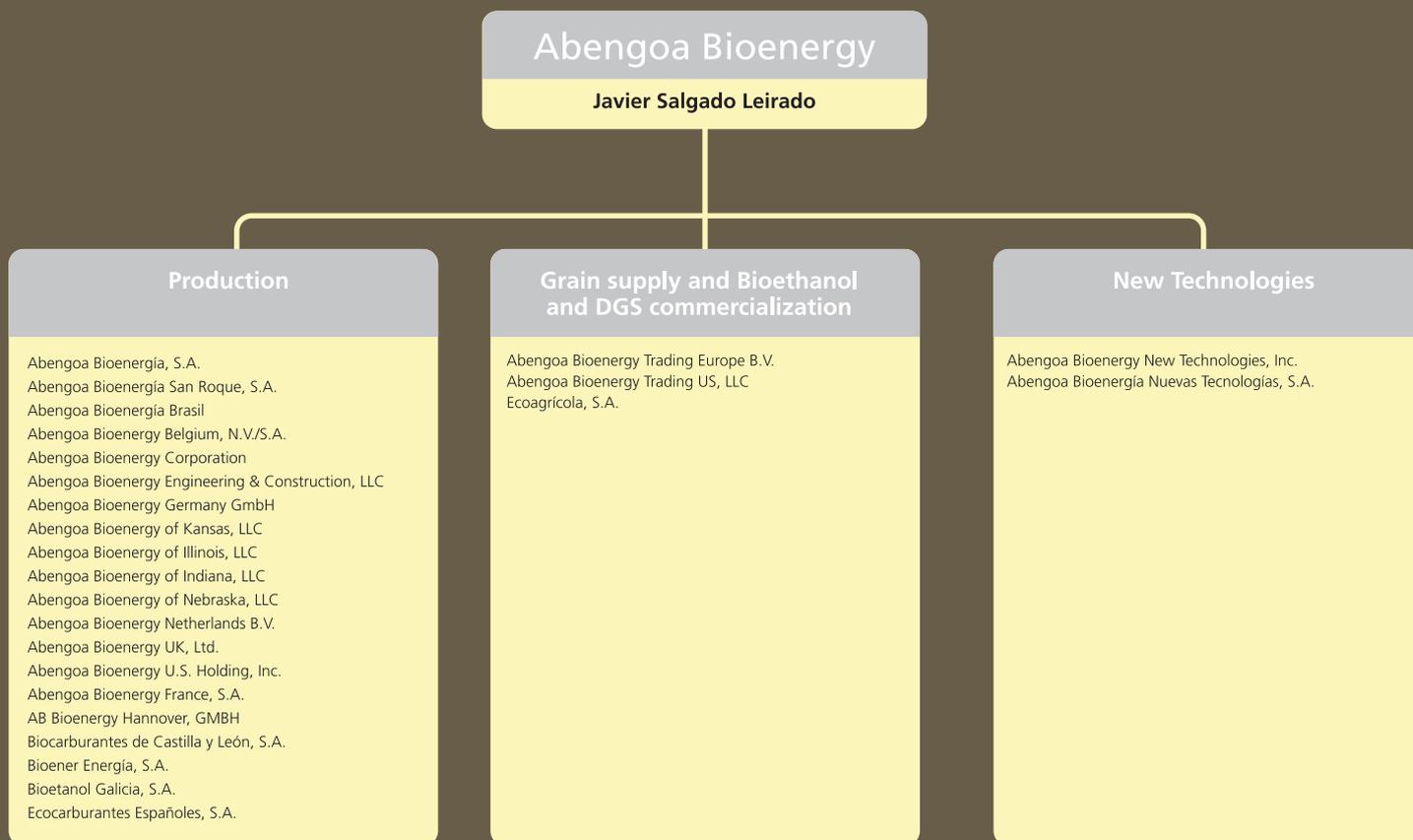
## Abengoa Solar Inc.

General Manager	Emiliano García Sanz	11500 West 13th Avenue	T +34 954 937 000	abengoasolar@abengoa.com
Director of Industrial Systems Division	Ken May	Lakewood, 80215 CO (USA)		

## Partner Companies

<b>Helioenergy</b> <b>Aznalcóllar TH</b> <b>Sanlúcar Solar</b> <b>Solar Processes</b> <b>Aznalcóllar Solar</b> <b>Solnova Electricidad</b> <b>Solaben</b> <b>Fotovoltaica Solar Sevilla</b> <b>Copero Solar</b>	Pedro Robles Sánchez	República Argentina 24, entreplanta 41011 Seville (Spain)	T +34 954 937 000	F +34 954 445 265 abengoasolar@abengoa.com
<b>Almadén Solar</b> <b>Hyperion</b> <b>Solarcor</b> <b>Solargate</b>	Antonio Cañas Rojano	República Argentina 24, entreplanta 41011 Seville (Spain)	T +34 954 937 000	F +34 954 445 265 abengoasolar@abengoa.com
<b>Egeria Densam</b> <b>Stella World</b> <b>Orinella</b>	Antonio de la Torre Iglesias	Pº de la Castellana, 31- 5º Planta 28046 Madrid (Spain)	T +34 954 937 000	F +34 917 906 869 abengoasolar@abengoa.com

# Bioenergy Management Structure



## Abengoa Bioenergy

### Abengoa Bioenergía, S.A.

#### Corporate

President and Chief Executive Officer Chief Financial Officer	Javier Salgado Leirado Ignacio García Alvear	1400 Elbridge Payne Road, Suite 212 Chesterfield, St. Louis MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
Chief Technical Officer IT Corporate Director	Francisco Antonio Morillo León Juan José Lallave García	Pº Castellana, 31 - 3º P. 28046 Madrid (Spain)	T +34 913 197 070	F +34 913 085 242 abengoabioenergy@abengoa.com

### Ecocarburantes Españoles, S.A.

President Chief Executive Officer Executive Vice President Plant Manager	Eduardo Sánchez-Almohalla Serrano Javier Salgado Leirado Antonio Vallespir de Gregorio David Galindo Cascales	Carretera Nacional 343, km 7,5 Valle de Escombreras 30350 Cartagena, Murcia (Spain)	T +34 968 167 708	F +34 968 167 070 / 87 abengoabioenergy@abengoa.com
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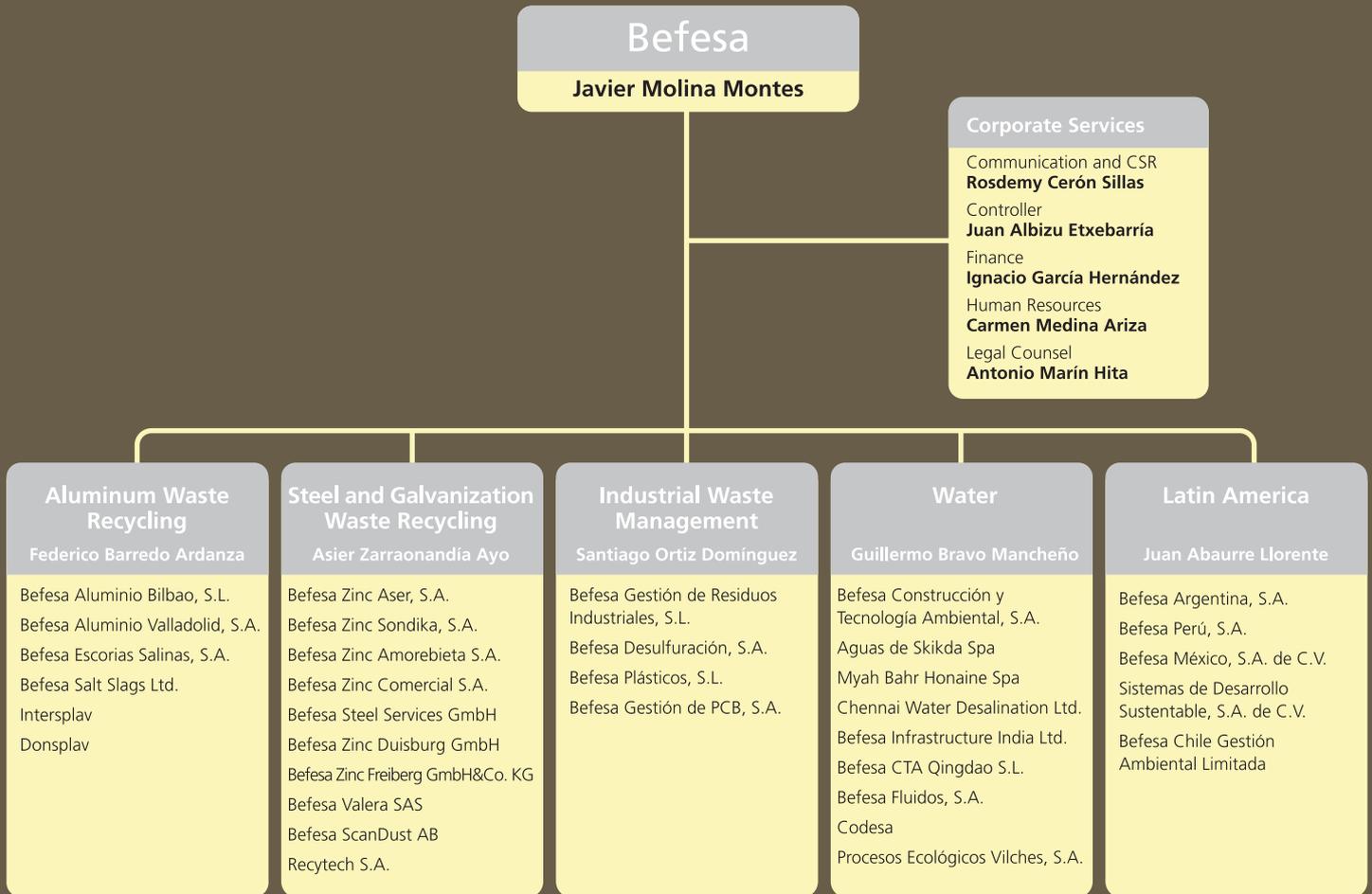
# Bioenergy Management Structure

<b>Bioetanol Galicia, S.A.</b> President Chief Executive Officer Executive Vice President Plant Manager	José B. Terceiro Javier Salgado Leirado Antonio Vallespir de Gregorio Tomás Blanco Parra	Ctra. Nacional 634, km 664,3 Polígono Industrial Teixeira 15310 Teixeira-Curtis La Coruña (Spain)	T +34 981 777 570	F +34 981 785 131 abengoabioenergy@abengoa.com
<b>Biocarburantes Castilla y León, S.A.</b> President Plant Manager	Ginés de Mula González de Riancho Gonzalo Curiel Fernández	Avda. de la Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 937 012 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergía San Roque, S.A.</b> President & Chief Executive Officer Biodiesel Program Director Plant Manager	Javier Salgado Leirado Gerardo Novales Montaner Juan Carlos Muñoz	Pº Castellana, 31 - 3 P 28046 Madrid (Spain)	T +34 913 197 070	F +34 913 085 242 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy France, S.A.</b> President & Chief Executive Officer Executive Vice President Chief Operations Officer	Javier Salgado Leirado Antonio Vallespir de Gregorio Vincent Bovis	Plateforme Industiacq Rocade Sud d'Arance 64300 Arance, Porte d'Abidos (France)	T +33 559 14 0990	F +33 559 14 0991 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Netherlands B.V.</b> President & Chief Executive Officer Chief Operations Officers	Javier Salgado Leirado Rob Groeliker	Pº de la Castellana, 31 - 3 P. 28046 Madrid (Spain)	T +34 913 197 070	F +34 913 085 242 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy UK</b> President & Chief Executive Officer Chief Operations Officer	Javier Salgado Leirado Darrel Hampshire	Pº de la Castellana, 31 - 3 P. 28046 Madrid (Spain)	T +34 913 197 070	F +34 913 085 242 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Trading B.V.</b> President & Chief Executive Officer Chief Operations Officer	Javier Salgado Leirado Pedro Carrillo Donaire	Weena, 294 3012 NJ Rotterdam (The Netherlands)	T +31 10 271 0111	F +31 10 271 0119 abengoabioenergy@abengoa.com
<b>Ecoagrícola, S.A.</b> President Chief Executive Officer Executive Vice President	Antonio Navarro Velasco Javier Salgado Leirado Ginés de Mula González de Riancho	Avda. de la Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 937 012 ecoagricola@abengoa.com
<b>Abengoa Bioenergy Corporation</b> President & Chief Executive Officer Executive Vice President & General Chief Operations Officer  Colwich Plant Manager  Portales Plant Manager  York Plant Manager	Javier Salgado Leirado Christopher Standlee Danny Allison  Darrell Sanford  Wes Ronbinson  Mitch Stuhr	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis MO 63017 (USA)  523 East Union Ave. Counsel, KS 67030 (USA)  1827 Industrial Dr. Portales, NM 88130 (USA)  1414 Road 0 York, NE 68467 (USA)	T 1 636 728 0508  T 1 316 796 1234  T 1 505 356 3555  T 1 402 362 2285	F 1 636 728 1148 abengoabioenergy@abengoa.com  F 1 316 796 1523  F 1 505 539 1060  F 1 402 362 7041

# Bioenergy Management Structure

<b>Abengoa Bioenergy Nebraska</b> President & Chief Executive Officer Executive Vice President Chief Operations Officer Plant Manager	Javier Salgado Leirado Christopher Standlee Danny Allison Timothy Wilson	35955 Navaho Rd. Ravenna, NE 68869 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Indiana</b> President & Chief Executive Officer Executive Vice President Chief Operations Officer	Javier Salgado Leirado Salvador Martos Barrionuevo Craig Kramer	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis, MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Illinois</b> President & Chief Executive Officer Executive Vice President Chief Operations Officer	Javier Salgado Leirado Salvador Martos Barrionuevo Craig Kramer	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis, MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Engineering &amp; Construction</b> President & Chief Executive Officer Executive Vice President	Javier Salgado Leirado Salvador Martos Barrionuevo	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis, MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy Trading US</b> President & Chief Executive Officer Executive Vice President	Javier Salgado Leirado Ron Finck	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis, MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergy New Technologies</b> President & Chief Executive Officer Executive Vice President	Javier Salgado Leirado Gerson Santos-León	1400 Elbridge Payne Road, suite 212 Chesterfield, St. Louis, MO 63017 (USA)	T 1 636 728 0508	F 1 636 728 1148 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergía Nuevas Tecnologías</b> President & Chief Executive Officer Executive Vice President Program Director	Javier Salgado Leirado Gerson Santos-León Ricardo Arjona Antolin	Avda. de la Buhaira nº 2 41018 Seville (Spain)	T +34 954 937 000	F 954 937 012 abengoabioenergy@abengoa.com
<b>Abengoa Bioenergía Brasil</b> President & Chief Executive Officer Executive Vice President	Javier Salgado Leirado Joaquín Alarcón de la Lastra Romero	Fazenda São Luiz 13630-970 Pirassununga (Brazil)	T +55 19 3565 5555	F +55 19 3565 5502 abengoabioenergy@abengoa.com

# Environmental Services Management Structure



## Befesa Medio Ambiente, S.A.

President	Javier Molina Montes	Buen Pastor s/n 48903 Luchana-Baracaldo Biscay (Spain)	T +34 944 970 533	F +34 944 970 240 befesa@befesa.abengoa.com
<b>Corporate Services</b>				
Legal Counsel	Antonio Marín Hita	Pº de la Castellana, 31-3º 28046 Madrid (Spain)	T +34 913 084 044	F +34 913 105 039 befesa@befesa.abengoa.com
Controller	Juan Albizu Etxebarria			
Finance	Ignacio García Hernández			
Human Resources	Carmen Medina Ariza			
Communication and CSR	Rosdemy Cerón Sillas			

# Environmental Services Management Structure

## Aluminum Waste Recycling

<b>Aluminum Waste Recycling</b>	Federico Barredo Ardanza	Ctra. Luchana-Asúa, 13 48950 Erandio, Biscay (Spain)	T +34 944 530 200	F +34 944 530 097 aluminio.bilbao@befesa.abengoa.com
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## Aluminum Waste Recycling

Aluminum	Manuel Barrenechea del Arenal	Ctra. Luchana-Asúa, 13	T +34 944 530 200	F +34 944 530 097
Salt Slags	Carlos Ruiz de Veye	48950 Erandio, Biscay (Spain)		aluminio.bilbao@befesa.abengoa.com
Commercial Production	Fernando Zufia Sustacha			
Sale of Machinery and Technology	José Á. Corral Ruiz			
Economic and Finance	Francisco Sáenz de Tejada Picornell			
Quality, Safety and Environment	Juan C. Torres Romero			
	Oskar de Diego Rodríguez			

## Befesa Aluminio Bilbao, S.L.

Federico Barredo Ardanza	Ctra. Luchana-Asúa, 13 48950 Erandio, Biscay (Spain)	T +34 944 530 200	F +34 944 530 097 aluminio.bilbao@befesa.abengoa.com
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## Befesa Aluminio Valladolid, S.A.

Pablo Núñez Ortega	Ctra. de Cabezón, s/n 47011 Valladolid (Spain)	T +34 983 250 600	F +34 983 256 499 aluminio.valladolid@befesa.abengoa.com
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## Intersplav

Victor Ivanovich Boldenkov	Luganskaya Oblast 94800 Sverdlovsk (Ukraine)	T +380 643 47 53 55	F +380 642 50 13 40 is@intersplav.vom.ua
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## Donsplav

Alexander Shevelev	Yugoslavlakaya Str.№ 28 83008 Donetsk (Ukraine)	T +380 622 53 47 69	F +380 622 53 37 42 donsplav@donsplav.dn.ua
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## Befesa Escorias Salinas, S.A.

Carlos Ruiz de Veye	Ctra. de Cabezón, s/n 47011 Valladolid (Spain)	T +34 983 264 008	F +34 983 264 077 escorias.salinas@befesa.abengoa.com
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## Befesa Salt Slags, Ltd.

Adrian Platt	Fenns Bank Whitcurch Shopshire S y 13 3PA (United Kingdom)	T +44 1948 78 04 41	F +44 1948 78 05 09 enquiries@remetaltrp.com
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## Steel and Galvanization Waste Recycling

### Steel and Galvanization Waste Recycling

Asier Zarraonandia Ayo	Ctra. Bilbao-Plencia, 21 48950 Asúa-Erandio, Biscay (Spain)	T +34 944 535 030	F +34 944 533 380 zinc.aser@befesa.abengoa.com
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### Controller Legal

Marta Deprist García	Albert-Hahn-Strasse, 9 47269 Duisburg (Germany)	T +49 203 80 93-0	F +49 203 80 93-219 befesa.steel.services@befesa.abengoa.com
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### Commercial & Logistic (Spain & Portugal)

Ana Martínez de Urbina Abrisqueta			
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### Commercial (Europe)

Uwe Lüke			
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### Logistic (Europe)

Dirk Witte			
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# Environmental Services Management Structure

<b>Befesa Zinc Aser, S.A.</b> Provision & Facility Administration Economic-Finance Producción Maintenance R&D&I, Quality & the Environment Technological Development	Asier Zarranonandia Ayo  Íñigo Urcelay González. Isabel Herrero Sangrador Jesús Prado Gazpio Alfredo Ruiz Azcue Iker Dañobeitia Sierra Iñaki Aurrekoetxea Agirre	Ctra. Bilbao-Plencia, 21 48950 Asúa-Erandio, Biscay (Spain)	T +34 944 535 030	F +34 944 533 380 zinc.aser@befesa.abengoa.com
<b>Befesa Zinc Duisburg GmbH</b> Administration & Financial Plant Manager	Eckhard von Billerbeck Irina Gosmann Thomas Flath	Richard-Seiffert-Strasse, 1 47249 Duisburg (Germany)	T +49 203 75 816-0	F +49 203 75 816-15 befesa.zinc.duisburg@befesa.abengoa.com
<b>Befesa Zinc Freiberg GmbH &amp; Co. KG</b> Administration & Financial Plant Manager	Uwe Hasche Edda Ritcher Steffen Rabe	Alfred-Lange-Strasse, 10 09599 Freiberg (Germany)	T +49 3731 38 99 10	F +49 3731 38 99 12 befesa.zinc.freiberg@befesa.abengoa.com
<b>Recytech S.A.</b> Administration Production Logistic & Environment	Charles van Cutsem Thierry Waquier Christian Drelon Frédéric Heymas	43, Route de Noyelles 62740 Fouquierès-lez-Lens (France)	T +33 3 21 79 13-0	F +33 3 21 79 13 59
<b>Befesa Valera SAS</b> Commercial & Financial Technical, Development & Maintenance Production	Marc Wauters Noël Decreton Michel Liere Fabrice Chies	Route Duvigneau Z.I.P. des Huttes 59820 Gravelines (France)	T +33 3 28 51 91 91	F +33 3 28 51 91 95 befesa.valera@befesa.abengoa.com
<b>Befesa Scandust AB</b> Administration Production Technical	Ulf Helgesson Rolf Engqvist Ulf Löfgren Tom Petersen	P.O. Box 204 26123 Landskrona (Sweden)	T +46 418 43 78 01	F +46 418 43 78 12 befesa.scandust@befesa.abengoa.com
<b>Befesa Zinc Sondika, S.A.</b>	Joseba Arrospe Ercoreca	Sangroniz Bidea, 24 48150 Sondika, Biscay (Spain)	T +34 944 711 445	F +34 944 532 853 zinc.sondika@befesa.abengoa.com
<b>Befesa Zinc Amorebieta, S.A.</b> Financial Commercial Technical Quality & Human Recourses	Joseba Arrospe Ercoreca Josu Goitia Villela José A. Hernández Cofreces Ivan Eguiluz Nuin Itziar Alcerreca Unzurrunzaga	Barrio Euba, s/n 48340 Amorebieta, Biscay (Spain)	T +34 956 730 930	F +34 946 730 800 zinc.sondika@befesa.abengoa.com
<b>Befesa Zinc Comercial, S.A.</b>	Ana Martínez de Urbina Abrisqueta	Ctra. Bilbao-Plencia, 21 48950 Asúa-Erandio, Biscay (Spain)	T +34 944 535 030	F +34 944 533 380 zinc.aser@befesa.abengoa.com
<b>Befesa Steel Services GmbH</b>	Uwe Lüke Dirk Witte	Albert-Hahn-Strasse 9 47269 Duisburg (Germany)	T +49 203 80 93-0	F +49 203 80 93-219 befesa.steel.services@befesa.abengoa.com

# Environmental Services Management Structure

## Industrial Waste Management

<b>Business General Manager</b>	Santiago Ortiz Domínguez	Benito Mas y Prat, 5	T +34 954 937 000	F +34 954 937 024
Hazardous Waste Commercial	Antonio Rodríguez Mendiola	41005 Seville (Spain)		bgri@befesa.abengoa.com
Hazardous Waste Industrial	Juan Contreras Casas			
Non-Hazardous Waste	Álvaro de Rojas Marín	Pº de la Castellana, 31 - 3º Pl	T +34 913 084 044	F +34 913 105 039
Industrial Cleaning	Sergio Nusimovich Kolodny	28046 Madrid (Spain)		bgri@befesa.abengoa.com
Assist. to Industrial Cleaning	Apolinar Abascal Montes			
Quality and Environment	María del Mar Vales Pérez			
Economic - Finance	Íñigo Molina Montes			

## General Manager, Corporate Planning and Development

	Alfredo Velasco Erquicia	Avda de La Buhaira, 2	T +34 954 937 000	F +34 954 937 018
		41018 Sevilla (Spain)		bgri@befesa.abengoa.com
New Projects	Daniel González Martín	Pº de la Castellana, 31 - 3º Pl	T +34 913 084 044	F +34 913 105 039
Technical Office / New Technologies	Javier González del Valle	28046 Madrid (Spain)		bgri@befesa.abengoa.com
Land Management	Miguel Maiz Ramírez	Benito Mas y Prat, 5	T +34 954 937 000	F +34 954 937 024
R&D&I	José Manuel Benitez Fernández	41005 Seville (Spain)		bgri@befesa.abengoa.com
Finance Management	José María Ponce de León Álvarez			

## Befesa Desulfuración, S.A.

Production	Asier Zarraonandia Ayo	Buen Pastor s/n	T +34 944 970 066	F +34 944 970 240
Economic - Finance	Antonio Pérez Buenaga	48903 Luchana-Baracaldo		desulfuracion@befesa.abengoa.com
Technical	José Pérez Trigo	Biscay (Spain)		
	Karmele Calvo Díaz			

## Befesa Plásticos, S.L.

Manuel Roca Blanco	Las Salinas, s/n. Parque Ind. Las Salinas	T +34 968 320 621	F +34 968 632 233
	30840 Alhama de Murcia		befesaplasticos@befesa.abengoa.com
	Murcia (Spain)		

## Befesa Gestión PCB, S.A.

Manuel Roca Blanco	Pol. Ind. Cabezo Beaza	T +34 968 320 621	F +34 968 122 161
	Avda de Bruselas, 148-149		befesa.pcb@befesa.abengoa.com
	30395 Cartagena, Murcia (Spain)		

## Water

<b>Water</b>	Guillermo Bravo Mancheño	Avda. de La Buhaira, 2	T +34 954 937 000	F +34 954 937 018
		41018 Seville (Spain)		befesa.cta@befesa.abengoa.com

## Befesa Construcción y Tecnología Ambiental, S.A.

Chief Executive	Guillermo Bravo Mancheño	Avda. de La Buhaira, 2	T +34 954 937 000	F +34 954 937 018
Corporate Division	Salvador Soler Salcedo	41018 Seville (Spain)		befesa.cta@befesa.abengoa.com
Controller	Manuel Sánchez Navarro			
I+D+I	Arturo Buenaventura Pouyfaucion			

## National

Contracting	Valentín Estefanéll Jara	Avda. de La Buhaira, 2	T +34 954 937 000	F +34 954 937 018
Bids	Miguel Ángel Moñino García	41018 Seville (Spain)		befesa.cta@befesa.abengoa.com
Technical Office	Ramón Rubio Vicente			
Management	Jesús Vega Escudero			
Production	Ángel Laffón Benjumea			
	Federico Barceló Pinzón			

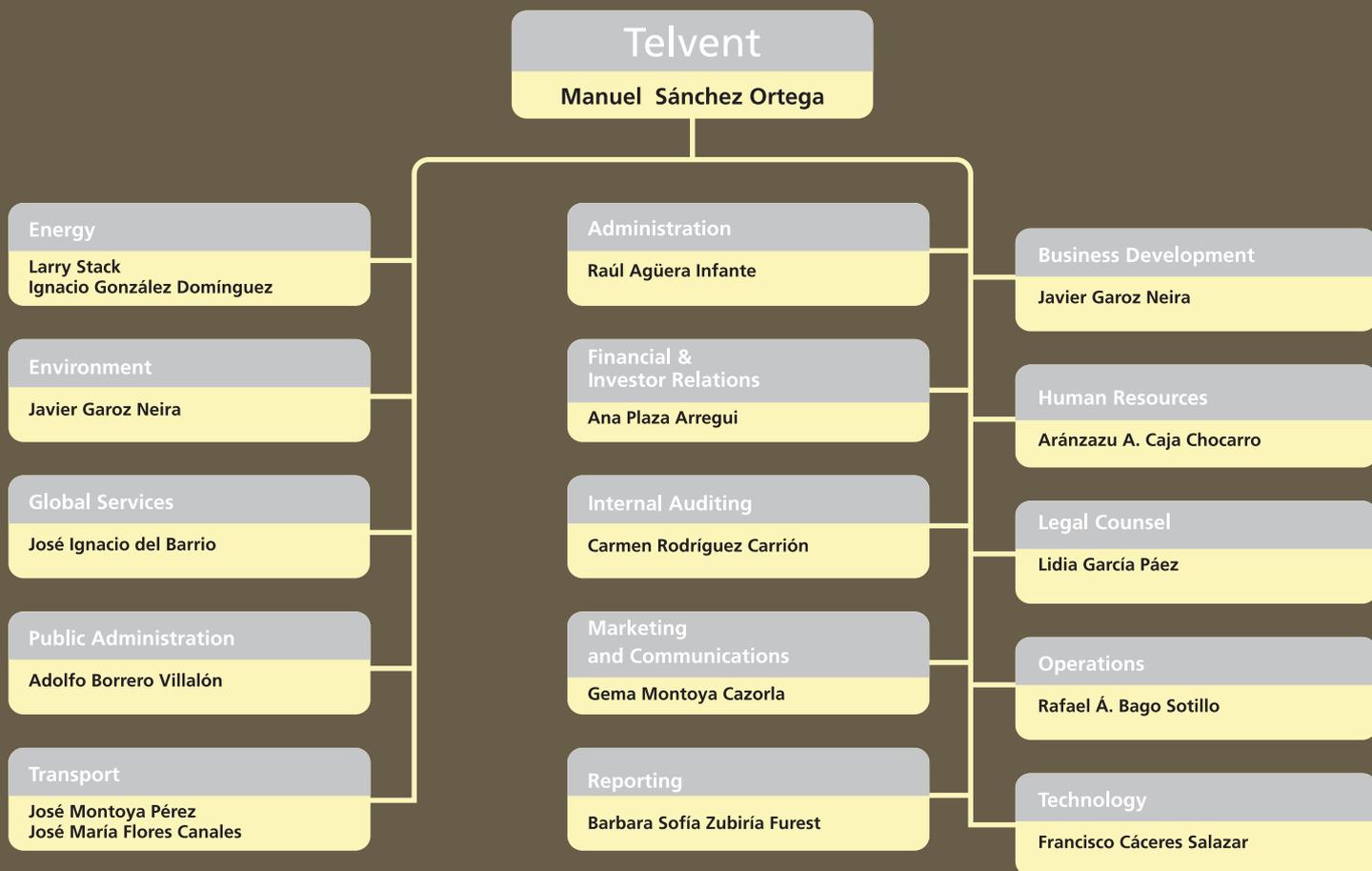
# Environmental Services Management Structure

Regional Office Center	Juan Ignacio García de Miguel	Quintana, 29 - 6ª derecha 28008 Madrid (Spain)	T +34 917 581 710	F +34 915 425 503
Regional Office North	Rafael González García	Ctra. Villaviciosa, 40 32204 Gijón (Spain)	T +34 985 131 718	F +34 985 131 987
Regional Office Catalonia-Aragon	Víctor Martín Font	Entenza, 95 - 6ª planta 08015 Barcelona (Spain)	T +34 932 890 715	F +34 934 232 365
Regional Office Valencia	Pedro Rodríguez Hernández	Játiva, 15, Pta. 20 46002 Valencia (Spain)	T +34 963 526 145	F +34 963 526 145
Regional Office Murcia	Pedro Rodríguez Hernández	Molina del Segura, 5 bloq.3-1ºC 30007 Murcia (Spain)	T +34 968 248 694	F +34 968 271 169
Regional Office South-East	Federico Barceló Pinzón	Puerto, 14 – 5º 29016 Málaga (Spain)	T +34 952 606 100	F +34 952 607 936
Regional Office South-West	Juan Peña López-Pazo	Bda Fuente del Rey Prolongación C/D Remondo, s/n 41700 Dos Hermanas, Seville (Spain)	T +34 944 692 654	F +34 954 690 941
<b>International</b> Production Commercial y Business Development Management Technical Office	Carlos Cosin Fernández Rodrigo Segovia Yuste Joaquín Fernández de Piérola José R. Alcántara Fernández Francisco Bernaola Echevarría	Fernando el Santo, 27 28010 Madrid (Spain)	T +34 917 021 737	F +34 913 196 576 befesacta.exterior@befesa.abengoa.com
<b>Aguas de Skikda Spa</b>	Mario Pulido Egea	52, Lot Bois des Cars II Dely Ibrahim - Alger (Algeria)	T +213 21 363 892	F +213 21 363 892
<b>Myah Bahr Honaine Spa</b>	Mario Pulido Egea	52, Lot Bois des Cars II Dely Ibrahim - Alger (Algeria)	T +213 21 363 892	F +213 21 363 892
<b>Chennai Water Desalination Ltd.</b>	Carlos Cosin Fernández	30 A, South Phase, 6th Cross Rd, Thiru Vi. Ka. Industrial Estate, Guindy Chennai 600 032, Tamil Nadu (India)	T +91 44 22 32 66 12	F +91 44 22 32 66 12
<b>Befesa Infrastructure India Ltd.</b>	Joaquín Fernández de Piérola	No. 56,Thirumalai Pillai Road C Block, 3rd Floor, T. Nagar Chennai 600 017, Tamil Nadu (India)	T +91 44 421 242 20	F +91 44 421 242 20 befesa.india@befesa.abengoa.com
<b>Befesa CTA Qingdao S.L.</b>	Pedro Almagro Gavilán	A2, 10th floor, China Ren building, No. 2 Shangdong Road 266071, Qingdao (China)	T +86 532 83095808	F +86 532 83095808 befesacta.china@befesa.abengoa.com
<b>Rep. Off. China (Beijing)</b>	Pedro Almagro Gavilán	CITIC Building, Office 18-A, No.19 Jianguomenwai Dajie 100004 Beijing (China)	T +86 10 650 012 10	F +86 10 650 011 90 befesacta.china@befesa.abengoa.com
<b>Rep. Off. Morocco</b>	Fernando Fernández Iglesias	Zénith Millenium Immeuble I, Bureaux 312 Résidence Attaoufik, Sidi Maarouf 20190 Casablanca (Morocco)	T +212 2 287 94 00	F +212 2 287 94 14 befesacta.marruecos@befesa.abengoa.com

## Environmental Services Management Structure

<b>Rep. Off. Nicaragua</b>	Hernán P. Castro Bravo	Plaza España, Edificio Málaga, Mod. A-3 Managua (Nicaragua)	T +505 266 8219	F +505 266 8220 befesacta.nicaragua@befesa.abengoa.com
<b>Befesa Fluidos, S.A.</b>	Santiago Martínez Mansilla	Conde de Aranda, 5 - 3º Izq. 28001 Madrid (Spain)	T +34 914 323 381	F +34 914 323 381 befesa.fluidos@befesa.abengoa.com
<b>Codesa, S.A.</b>	Juan Peña López-Pazo	Bda. Fuente del Rey, Prolongación C/ D. Remondo, s/n 41700 Dos Hermanas, Seville (Spain)	T +34 954 692 654	F +34 954 690 941 codesa@codesa.com
<b>Procesos Ecológicos Vilches, S.A.</b>	Manuel Neila Matas	Ctra. La Carolina-Úbeda km 12 23220 Vilches, Jaén (Spain)	T +34 953 631 185	F +34 953 631 188
<b>Latin America</b>				
<b>Latin America</b>	Juan Abaurre Llorente	Avda. de La Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 93 70 18
<b>Befesa Argentina, S.A.</b>	José Giménez Burló	Paseo de Colón, 728- piso 10 C1063ACU Ciudad Autónoma de Buenos Aires (Argentina)	T +5411 40 00 79 00	F +5411 40 00 79 99 info@befesa.com.ar
<b>Befesa Perú, S.A.</b>	Jorge C. León León	Canaval y Moreyra 654, piso 7 San Isidro- Lima (Perú)	T +511 224 54 89	F +511 224 54 89 befesa@abengoaperu.com.pe
<b>Befesa México, S.A. de C.V.</b>	Norberto del Barrio Brun	Bahía de Santa Bárbara, 174 Col. Verónica Anzures 11300 Mexico D.F. (Mexico)	T +52 55 52 62 71 11	F +52 55 52 62 71 50 abengoa@abengoamexico.com.mx
<b>Sistemas de Desarrollo Sustentable, S.A. de C.V.</b>	Juan Ramón Barcala	Bahía de Santa Bárbara, 174 Col. Verónica Anzures 11300 Mexico D.F. (Mexico)	T +52 55 52 62 71 11	F +52 55 52 62 71 50 abengoa@abengoamexico.com.mx
<b>Befesa Chile Gestión Ambiental Limitada</b>	Alejandro Conget Inchausti Miguel Murúa Saavedra	Las Araucarias, 9130 Santiago (Chile)	T +56 2 461 49 00	F +56 2 461 49 90 befesa@abengoa-chile.cl

# Information Technologies Management Structure



## Telvent

Chairman and Chief Executive Officer	Manuel Sánchez Ortega	Valgrande, 6	T +34 902 335 599	F +34 917 147 001
Chief Financial Officer & Investor Relations	Ana Plaza Arregui	28108 Alcobendas, Madrid (Spain)		
Chief Accounting Officer	Raúl Agüera Infante			
Chief Reporting Officer	Bárbara S. Zubiría Furest			
Legal Counsel	Lidia García Páez			
Marketing and Communication	Gema Montoya Cazorla			
Human Resources	Aránzazu A. Caja Chocarro			
Chief Operating Officer	Rafael Á. Bago Sotillo			
Chief Technology Officer	Francisco Cáceres Salazar			
Business Development	Javier Garoz Neira			
Internal Auditing	Carmen Rodríguez Carrión			

# Information Technologies Management Structure

## Telvent Energy

President Larry Snack 10333 Southport Road SW Calgary, T +1 403 253-8848 F +1 403 259-2926  
 Executive Vice President Ignacio González-Domínguez Alberta, T2W 3X6 (Canada)

## Telvent Environment

Executive Vice President Javier Garoz Neira Valgrande, 6 T +34 902 335 599 F +34 917 147 001  
 28108 Alcobendas, Madrid (Spain)

## Telvent Transport

President José Montoya Pérez Valgrande, 6 T +34 902 335 599 F +34 917 147 001  
 Executive Vice President José M<sup>o</sup> Flores Canales 28108 Alcobendas, Madrid (Spain)

## Telvent Public Administrations

Executive Vice President Adolfo Borrero Villalón Tamarguillo, 29 T +34 902 335 599 F +34 954 926 424  
 41006 Seville (Spain)

## Telvent Global Services

Executive Vice President José I. del Barrio Gómez Valgrande, 6 T +34 902 335 599 F +34 917 147 001  
 28108 Alcobendas, Madrid (Spain)

## Telvent North America

Chairman Dave Jardine 10333 Southport Road SW Calgary T +1 403 253 8848 F +1 403 259 2926  
 Alberta, T2W 3X6 (Canada)

## Telvent Mexico

Chairman Luis Rancé Gómez Bahía de Santa Bárbara, 174 Col. Verónica T +52 55 30 67 29 00 F +52 55 52 60 70 37  
 Managing Director José R. Salgado Rodríguez Anzures 11300- México D.F. (Mexico)

## Telvent Venezuela

Managing Director George Galaz Avda. Fco. de Miranda, Ed. Parque Cristal T +58 212 284 2343  
 Torre Oeste, P 3, Ofic. 3-2 Caracas (Venezuela)

## Telvent Brazil

Chairman Marcio Leonardo Estrada do Camorim, 633 Jacarepaguá CEP T +55 21 21 79 35 00 F +55 21 24 41 30 15  
 22780-070 Rio de Janeiro (RJ Brazil)

## Telvent Argentina

Managing Director Ignacio Llorente Av. Paseo Colón, 728, piso 10 T + 54 11 4000 7900 F + 54 11 4000 7977  
 1063 Buenos Aires (Argentina)

## Telvent Holland

Landzichtweg 70 T +31.345.544.080 F +31.345.544.099  
 4105 DP, Culemborg (Holland)

## Telvent Scandinavia

Prästgatan, 38 SE831 31 T +46 631 31 000 F +46 631 05 116  
 Östertund (Sweden)

## Telvent China

Chairman Dai Yue No 18-2 BDA International Enterprise Avenue, T +86 10 678 562 9677/8/9 F +86 10 678 851 12  
 Managing Director Gustavo Costa Rey N°. 2 JingYuanBeiJie BDA, Beijing 100176 (China)

## Telvent Tailandia

1725 Soi Lardprao 94, Lardprao Rd. T +66 2 934 4852-3 F +66 2 539 2947  
 Wangtonglang, Bangkok 10310 (Thailand)

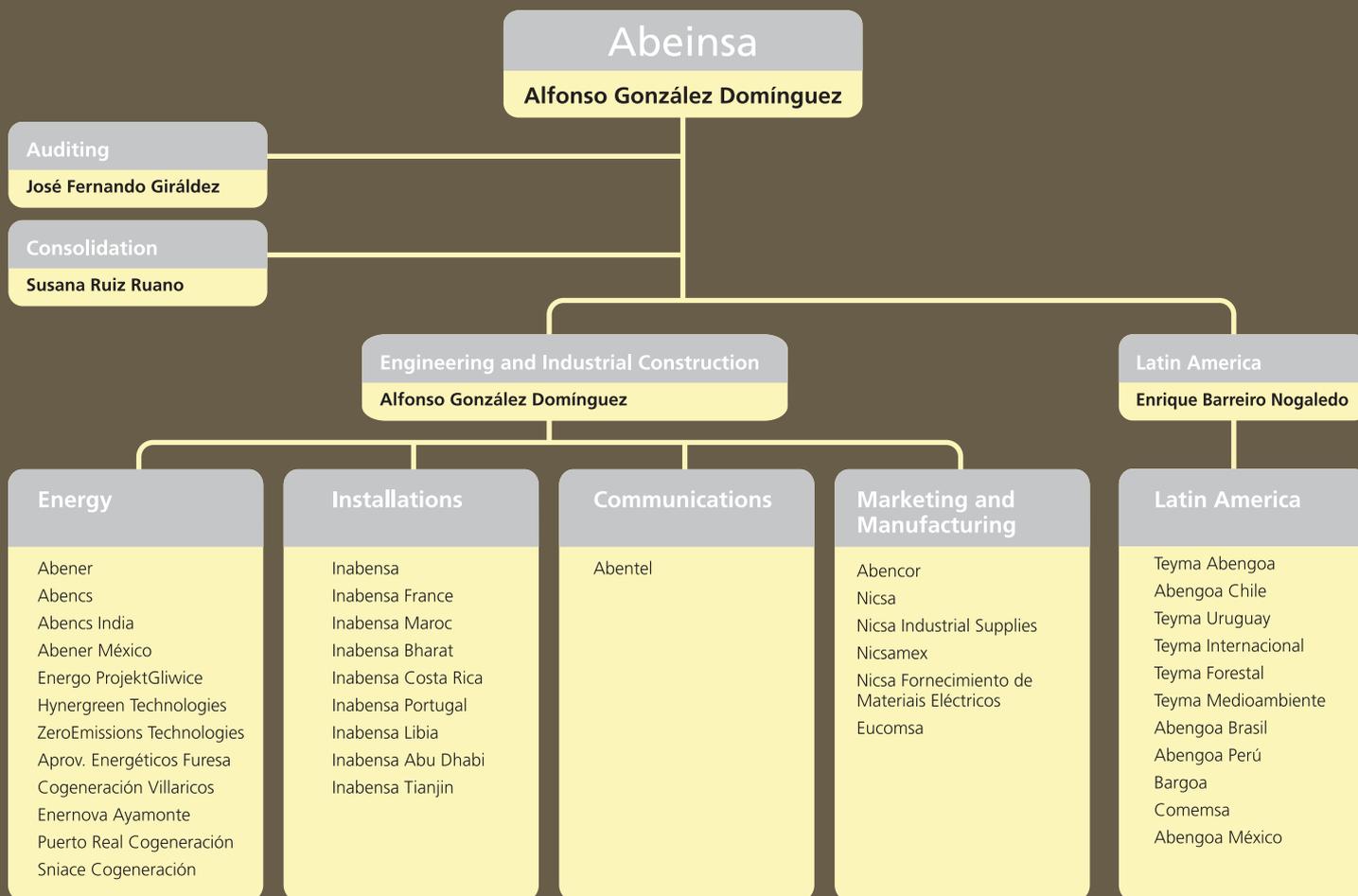
## Telvent Australia

Managing Director José A. Álvarez Dodero 4/41 King Edward Rd Osborne Park T +618 92 44 2346 F +618 92 44 2379  
 6916 Perth, Western Australia (Australia)  
 Level 9 / 440 Collins Street T +61 3 9607 1331 F +61 3 9607 1332  
 Melbourne Victoria 3000 (Australia) T +61 3 9670 4668

## Telvent Turkey

Koza Sokak 74/10 Gaziosmantasa T +90 312 405 60 10 F +90 312 405 69 12  
 06700 Ankara (Turkey)

# Industrial and Engineering Construction Management Structure



## Abeinsa

Chairman	Alfonso González Domínguez	Avda. de la Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 937 005 abeinsa@abengoa.com
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## Business Group Managers

Director of Engineering and Industrial Construction	Alfonso González Domínguez	Avda. de la Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 937 005 abeinsa@abengoa.com
Director of Latin America	Enrique Barreiro Nogueledo			
Auditing Director	José Fernando Giráldez Ortiz			
Consolidation Director	Susana Ruiz Ruano			

# Industrial and Engineering Construction Management Structure

## Engineering and Industrial Construction

### Energy

#### Abener

General Director	Manuel J. Valverde Delgado	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 009
Energy Division 1	José Luis Burgos de la Maza	41018 Seville (Spain)		abener@abengoa.com
Energy Division 2	Pedro Rodríguez Ramos			
Industrial Division 1	José Luis Gómez Expósito			
Industrial Division 2	Pedro Rodríguez Ramos			
Industrial Division 3	Manuel J. Valverde Delgado			
Poland Division (Abener EPG)	Francisco Pérez Olmo			
USA Division (Abencs)	Emilio Martín Rodríguez			
Mexican Division	José de Jesús Barragán Hernández			
Project Control Dep. Director	Antonio González Casas			
Financial Department Director	Natalia Cebolla Zarzuela			
Legal Department Director	Jorge Clúa Gomis			
Operations Dep. Director	Javier Pariente López			
Strategic Development Manager	Ignacio J. Escudero Ortiz de la Tabla			
Press Relations Officer	M <sup>a</sup> José Mosquera Garrido			
Project Design and Tenders Dep. Director	Ana Cristina González de Uña			
Quality, Environment and OPR Dep. Director	Maribel Torres Castro			

#### Partner Companies

Director	Juan A. Gutiérrez del Pozo	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 367
		41018 Seville (Spain)		abener@abengoa.com

#### Aprovechamientos Energéticos Furesa

#### Cogeneración Villaricos

#### Enernova Ayamonte

#### Puerto Real Cogeneración

#### Sniace Cogeneración

## Abroad

#### Abener México

Chairman	Jaime I. García Muñoz	Bahía de Santa Barbara, 174	T (52) 52 5 530 67 39 00	F (52) 525 552 62 71 60
General Director	José de Jesús Barragán Hernández	Col. Verónica Anzures		abener@abengoa.com
		11300 México D.F. (Mexico)		

#### Abener Energo ProjektGliwice

Chairman	Artur Mermon	Ul. Zygmunta Starego, 11	T 48 032 7902 600	F 48 032 7902 601
CEO	Francisco J. Pérez Olmo	44-100, Gliwice (Poland)		epg@epg.abengoa.com

#### Abencs

President & CEO	PJ Desai	14522 South Outer Forty Rd. Chesterfield	T 314 275 5800	F 314 275 5801
Executive Vicepresident	Emilio Martín Rodríguez	63017 St. Louis, MO (USA)		
		110, L.B.S. Marg Vikhroli (West)	T 91 22 5556 9600	F 91 22 5556 9655
		400 083 Mumbai, Maharashtra (India)		

#### Hynergreen Technologies

Director	José J. Brey Sánchez	Avda. de la Buhaira, 2	T +34 954 937 000	F +34 954 937 008
		41018 Seville (Spain)		hynergreen@hynergreen.abengoa.com

#### ZeroEmissions Technologies

Director	Emilio Rodríguez-Izquierdo	José de la Cámara, 3-4C	T +34 955 112 360	F +34 647 812 610
		41018 Seville (Spain)		zeroemissions@zeroemissions.com

# Industrial and Engineering Construction Management Structure

## Installations

### Inabensa

General Director	Eduardo Duque García	Manuel Velasco Pando, 7	T +34 954 936 111	F +34 954 936 006
Assistant General Manager	Jorge Santamaría Mifsut	41007 Seville (Spain)		F +34 954 936 006
Commercial/Tender Manager	Ignacio Ríos Villegas			F +34 954 936 016
Exports Manager	José Antonio Amigueti Tosso			F +34 954 936 016
Operations and Logistics Manager	M <sup>a</sup> José Esteruelas Aguirre			F +34 954 936 007
Strategic Development Manager	Isidro Montoro Mantilla			F +34 954 936 010
Economic-Financial Manager	Juan Carlos Deán García Adámez			F +34 954 936 009
Studies and Development Manager	Javier Valerio Palacio			F +34 954 936 016
				inabensa@abengoa.com

### Installations 1

Director	Francisco Galván Gómez	Manuel Velasco Pando, 7	T +34 954 936 111	F +34 954 936 012
Maintenance, Electricity and Instrumentation Manager	Juan Carlos Torres Torres	41007 Seville (Spain)		
Southern Regional Manager	Antonio Núñez García			F +34 954 936 014
Mechanical Assembles Manager	Francisco Martínez Gómez			
Manager Protisa	Francisco Galván Gómez	Gral. Martínez Campos, 15. 6º y 7º	T +34 914 483 150	F +34 915 932 720
		28010 Madrid (Spain)		protisa@abengoa.com
Central Regional Manager	Luis del Castillo Esteban	Marqués de Encinares, 5	T +34 913 150 143	F +34 913 158 718
		28029 Madrid (Spain)	T +34 913 150 145	
Galicia Regional Manager	José Macías Camacho	Bajada a la Gándara, Nave 8	T +34 986 299 451	F +34 986 298 014
		36330 Corujo, Vigo (Spain)	T +34 986 299 453	
Canary Islands Regional Manager	Fernando Celis Bautista	Castillo, 7	T +34 928 323 115	F +34 928 316 606
		35001 Las Palmas (Spain)	T +34 928 323 116	
Railways Manager	Fco. Javier Sánchez Laguna	Marqués de Encinares, 5	T +34 913 150 143	F +34 913 153 289
		28029 Madrid (Spain)		

### Installations 2

Director	Rafael González Reiné	Manuel Velasco Pando, 7	T +34 954 936 111	F +34 954 936 013
Grid Manager	Alberto Pizá Granados	41007 Seville (Spain)		
Levante Regional Manager	José I. Muñoz Donat	Poeta Altet, 18, bajo	T +34 963 602 800	F +34 963 618 608
		46020 Valencia (Spain)		
Catalonia, Aragon and Balearic Islands Regional Manager	Pedro Clares del Moral	Perú, 214-226	T +34 933 034 540	F +34 933 070 094
		08020 Barcelona (Spain)		
Northern Regional Manager	Íñigo Astigarraga Aguirre	Santa Ana, 26. Políg. Barrondo	T +34 944 400 500	F 944 400 252
		48450 Etxebarri, Biscay (Spain)		

### Workshop

Director	Gonzalo Gómez García	Manuel Velasco Pando, 7	T +34 954 936 111	F +34 954 936 015
		41007 Seville (Spain)		
Seville Workshop Manager	Antonio Jiménez Rodríguez	Ctra. de La Esclusa, s/n. Políg. Torrecuellar	T +34 954 936 111	F +34 954 936 015
Torrecuellar Industrial and Logistic Center		41011 Seville (Spain)		F +34 954 936 115
Alcalá de Henares Workshop Manager	Felipe Collado Yoldi	Ctra. M-300, km 28,6	T +34 918 880 736	F +34 918 827 341
		28802 Alcalá de Henares, Madrid (Spain)		

### Communications

Director	José Luis Montells García	Valgrande, 6	T +34 917 147 000	F +34 917 147 004
		28108 Alcobendas, Madrid (Spain)		

### Concessions

Director	M <sup>a</sup> José Esteruelas Aguirre	Manuel Velasco Pando, 7	T +34 954 936 111	F +34 954 936 010
		41007 Seville (Spain)		inabensa@abengoa.com

# Industrial and Engineering Construction Management Structure

## Abroad

### Inabensa France

Director Milagros Ramón Jerónimo GVio Parc de la Bastide Blanche T (33) 442 46 99 50 F (33) 442 89 01 35  
Batiment D2, 13127 Vitrolles (France) inabensafrance@ inabensa.com

### Inabensa Maroc

Director Hamza Chebaa 179, Av. Moulay Hassan I. 1° étage, Esc. A T (212-22) 27 43 46 F (212-22) 22 97 36  
20000 Casablanca (Morocco) T (212-22) 27 50 66 abengoa@casanet.net.ma

### Inabensa Bharat

Director G.C. Tather Eros Corporate Tower, Flat 902, 9th Floor T (91-11) 264 140 93 F (91-11) 262 135 47  
Nehru Place, 110019 New Delhi (India) inabensa@de13.vsnl.net.in

### Inabensa Costa Rica

Director José Marset Rams 100m Sur del Automercado de los Yoses T (506) 234 86 14 F (506) 225 08 93  
Casa esquinera gris inabensa@abengoa.com  
1508-1000 San José de Costa Rica  
(Costa Rica)

### Inabensa Portugal

Director Crispim M. Gouveia dos Santos Ramos Rua Profesor Henrique de Barros, 4 T (351) 21 941 11 82 F (351) 21 941 11 69  
Edificio Sagres, 6° C inabensa@abengoa.com  
2685/338 Prior Velho-Lisboa (Portugal)

### Inabensa Libia

Director Ignacio Ranero Herrero Gurji road nearby Hai Al-Andalus souk, T (218) 214 77 92 83 F (218) 214 77 45 55  
above Al-Gumhuria Bank, 1st floor, flat 3  
Tripoli (Libya)

### Inabensa Abu-Dhabi

Director Manuel Rodríguez Lavado Al Falah street (passport road) Saeed Hilal T (971) 263 51 010 F (971) 263 51 015  
Al Dhahiri the Building, 160 mezzanine.  
Floor flat 2 Abu Dhabi (United Arab Emirates)

### Inabensa Tianjin

Director Jiang Jiannong Workshop B2, HongTai T (862) 22 529 00 22 F (862) 22 529 00 22  
Industry Garden, 87 TaiFeng Road inabensa@abengoa.com  
Teda Tianjin (PR China)

### Inabensa Saudi Arabia, Ltd.

Director Javier Valerio Palacio King fahed airport road. T +34 954 936 111 F +34 954 936 016  
Al faysalia area-street 71. P.O.Box 1083 inabensa@abengoa.com  
Dammam 31431 (Saudi Arabia)

## Communications

### Abentel Telecomunicaciones, S.A.

General Director Vicente Chiralt Siles Valgrande, 6 T +34 902 33 55 99 F +34 917 147 004  
28108 Alcobendas, Madrid (Spain) abentel@abengoa.com

Deputy General Director Alfonso Benjumea Alarcón Avda. del Reino Unido,1 - 2ª Pta. C T +34 902 33 55 99 F +34 954 298 919  
Economic-Financial Manager Martín Muñoz Fernández 41012 Seville (Spain)

Catalonia and Levante Regional Manuel Torres Moral

Southern and Canary Islands Regional Manager Eduardo González Pinelo

Quality and Environment Manager Luis Giráldez González T +34 954 625 200

Madrid and Extremadura Regional Manager Francisco J. Bolaños Mora T +34 916 779 132

Sierra de Guadarrama, 4  
Pol. San Fernando II, 28830 San Fernando  
de Henares, Madrid (Spain)

Information Systems Manager

Daniel Vidal López

Ctra. de La Esclusa, s/n. Polig. Torrecuéllar T +34 954 983 513  
41011 Seville (Spain)

F +34 954 983 491

# Industrial and Engineering Construction Management Structure

## Marketing and Manufacturing

### Abencor Suministros, S.A.

Director	Rafael Gómez Amores	Tamarguillo, 29. 1ª Planta 41006 Seville (Spain)	T +34 954 933 030	F +34 954 653 282 abencor@abencor.com
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### Nicsa

Director	José Carlos Gómez García	Gral. Martínez Campos, 15 28010 Madrid (Spain)	T +34 914 464 050	F +34 914 483 768 nicsa@nicsa.abengoa.com
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## Abroad

<b>Nicsa Industrial Supplies</b>	José Carlos Gómez García	1786 North Commerce Parkway Weston Florida 33326 (USA)	T (1-954) 389 34 34	F (1-954) 389 34 35 nicsa@nicsa.abengoa.com
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<b>Nicsamex</b>	David Baldomero Gómez García	Bahía de Santa Barbara, 174 Col. Verónica Anzures 11300 México D.F. (Mexico)	T (52) 55 52 62 71 11	F (52) 55 52 62 71 62 nicsa@nicsa.abengoa.com
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<b>Nicsa Fornecimiento de Materiais Eléctricos Ltda.</b>	José Carlos Gómez García	Avda. Marechal Câmara, 160 18º Andar Salas 1833-1834 CEP 20020-080 Rio de Janeiro (Brazil)	T (55-21) 2217 33 00	F (55-21) 2217 33 37 nicsa@nicsa.abengoa.com
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### Eucomsa

Director	Luis Garrido Delgado	Ctra. A-376, km 22 Apartado 39 41710 Utrera, Seville (Spain)	T +34 955 867 900	F +34 954 860 653 eucomsa@abengoa.com
Economic-Financial Manager	Rafael Lecaroz Muñoz			
Structures Division Manager	Sergio Tarazona Rodríguez			
Technical Department				
Structures Division Manager	José Pérez Jara			
Sheet Metal Division Manager	José Esteban del Corral Sánchez			
Station Tests Manager	Alfonso Barrera Cabañas			
Quality and Environment Manager	Edgar Redondo Aguilar			
Human Resources	Egberto Pacho Martín			

## Latin America

Latin America Director	Enrique Barreiro Nogaledo	Avda. de la Buhaira, 2 41018 Seville (Spain)	T +34 954 937 000	F +34 954 937 005 abeinsa@abengoa.com
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<b>Teyma Abengoa (Argentina)</b>				
Director	Alejandro Conget Inchausti	Paseo de Colón, 728, piso 10	T (5411) 4000 79 00	F (54-11) 4000 79 77
Commercial Manager	Emilio Manuel Dopacio	C1063ACU-Buenos Aires (Argentina)		info@teyma.abengoa.com.ar
Operations Director	José Carlos Vassallo			
Economic-Financial Manager	Pablo Maximiliano Verdile			

### Abengoa Chile

General Director	Alejandro Conget Inchausti	Las Araucarias, 9130. Quilicura	T (56-2) 461 49 00	F (56-2) 461 49 90
Operations Director	Miguel Ángel Murúa Saavedra	Santiago (Chile)		abengoa@abengoa-chile.cl
Administration and Financial Director	Miguel Ángel Fdez. Moreno			
Commercial Manager	Daniel E. Peyrot			

### Teyma (Uruguay Holding)

Director	Brandon Kaufman	Avenida Uruguay, 1283	T (598-2) 902 21 20	F (598-2) 902 09 19
General Subdirector	Alejandro Fynn	11100 Montevideo (Uruguay)		teyma@teyma.com.uy

### Teyma Uruguay

Director	Brandon Kaufman			
General Subdirector	Alejandro Fynn			
Manager	Daniel Gutiérrez García			

# Industrial and Engineering Construction Management Structure

## Teyma Internacional

Director: Brandon Kaufman  
 General Subdirector: Alejandro Fynn

## Teyma Forestal

Forestal Services Manager: Guillermo Rucks Lombardi  
 Biomass Manager: Santiago Severi Cortabarría pandelco@pandelco.com.uy

## Teyma Medioambiente

Manager: Diego Portos Minetti  
 Veracierto, 3180. Local 2 T 509 48 92 F 509 48 92  
 11100 Montevideo (Uruguay)

## Abengoa Brazil

Director: Antonio Merino Ciudad Avenida Marechal Cámara, 160 T (55-21) 2217 33 00 F (55-21) 2217 33 37  
 Concessions and Bussines Development Director: Ricardo Sánchez Guerrieri Salas 1833-1834 CEP 20020-080 Río de Janeiro (Brazil)  
 Concessions Subdirector: Luciano Paulino Junqueira  
 Construction Director: Ernesto H. Saralegui  
 Administration and Financial Director: Julio Artillo Grau  
 General Services Director: Fernando Hector Russo

## Abengoa Perú

General Director: Ignacio Baena Blázquez Avda. Canaval y Moreyra, 654. Piso 7° T (51-1) 224 54 89 F (51-1) 224 76 09  
 Operations Manager: Agustín Nerguizán de Freitas San Isidro. Lima 27 (Perú) abengoaperu@abengoaperu.com.pe  
 Administration and Financial Director: Martín Paco Solimano  
 Commercial Manager: Bernardo Wagner Grau

## Bargoa (Brazil)

Director: José Calvo Sebastián Estrada do Camorin, 633. Jacarepaguá T (55-21) 3416 51 50 F (55-21) 2441 20 37  
 Administration and Financial Director: Rogério Diniz de Oliveira CEP 22780-070 Rio de Janeiro (Brazil) bargoa@bargoa.com.br

## Comemsa

Chairman: Norberto del Barrio Brun Autopista Querétaro-Celaya, km 16 T (52-442) 294 20 00 F (52-442) 294 20 08  
 Director: Antonio Manzano Parras Calera de Obrajuelos comemsa@comemsa.com.mx  
 Commercial Manager: Dhiman Roy Municipio de Apaseo El Grande  
 Administration and Financial Director: Julio Hernández Tavera 38180-Guanajuato (Mexico)

## Abengoa México

Chairman: Norberto del Barrio Brun Bahía de Santa Bárbara, 174 T (52-55) 5262 71 11 F (52-55) 5262 71 50  
 Director: Javier Muro de Nadal Col. Verónica Anzures abengoa@abengoamexico.com.mx  
 Operations Director: Alejandro Weiss 11300 México, D.F. (Mexico)  
 Administration and Financial Director: José I. Santiago Jover  
 Legal Department Director: Manuel Granados Morales  
 Critical Projects Manager: Rolando Vázquez Ancona  
 Electric Sector Division: Ernesto Alfonso Tacchi  
 Waters Division: Manuel Salas Flores  
 Oil and Gas Division: Fernando López de Carrizosa  
 Abengoa Servicios Manager: Julián Márquez Juárez  
 Industrial Plants, Concessions and Delegations Division: Jorge Lobatón de la Guardia