ACCIONA AGUA

ACCIONA Agua is a specialist in the design, construction and management of drinking water and sewage treatment plants, plants providing tertiary treatment for reuse and reverse osmosis desalination plants. It currently has an order book worth 3.6 billion euros.

ACCIONA Agua's infrastructure and services deliver drinking water to more than 50 million people in 20 countries

The Company has **400 drinking water and sewage treatment plants and 70 desalination plants**; and processes, purifies, reuses, desalinates and manages water for over 50 million people.

In 2008, ACCIONA Agua operated from **offices in Portugal, Italy, the USA, Dubai, Australia, the UK, Algeria, Venezuela and Chile**, creating jobs in those countries, improving the water management industry by providing technology, and setting an example of international development for the entire Spanish market.

The division's research and development and innovation efforts led to over 14 patents

ACCIONA Agua consolidated its position as world leader in its industry, broadly as a result of its strategic focus on R&D and innovation. It is the world benchmark for seawater desalination using reverse osmosis (RO). Over **20 projects and pilot plants** are running in an effort to make **desalination more energy-efficient, and over 14 patents** (relating to desalination technologies, membrane bioreactors and water reuse) are evidence of the success of the Company's applied research.

Key business figures (Dec. 2008)

ORDER BOOK
3.6
BILLION EUROS

REVENUES
370
MILLION EUROS

2,000
WORKFORCE

70

DESALINATION PLANTS FROM THE US TO AUSTRALIA

BUSINESS LINES

1. Desalination (Construction and Operation)

ACCIONA Agua is the company that has developed the largest number of RO desalination plants in the world: no less than 70 in such countries as the **US, Cape Verde, Peru, the UK, Italy, Algeria and Australia**. Total output is over 1.7 million cubic metres per day, supplying over 6 million people. The company also manages the bulk of that infrastructure.

This division's most outstanding projects in 2008:

SALIENT PROJECTS IN 2008

• **Venezuela.** Petróleos de Venezuela S.A. (PDVSA), the country's largest oil company, chose ACCIONA Agua to design and build **Venezuela's first RO desalination plant.** It will be one of the largest desalination plants in Latin America, with a production capacity of 75,000m³/day.

• **Florida (USA).** **The Tampa desalination plant was inaugurated in 2008; ACCIONA Agua will operate it for 18 years.** It was named "Plant of the Year" by Global Water Intelligence, one of the most prestigious journals in the water industry.

• **Algeria.** Construction of the Fouka desalination plant, which will produce 120,000m³/day, began in 2008.

• **Other notable inaugurations** in the last twelve months include **sewage treatment plants in Aniñón (Zaragoza) and Bergara (Guipúzcoa)**, and the extension of the drinking water treatment plant in Tudela (Navarre). And outside Spain, the Pazardjik sewage treatment plant in Bulgaria.

• **ACCIONA** Agua was also **selected as Preferred Bidder for the Port Stanvac desalination plant in Adelaide, Australia,** with a capacity of 150,000m³/day.

1.7 million m³/day of desalinated water supplies more than six million people

ACCIONA has built over 300 sewage treatment plants, serving 31.4 million people

2. Drinking water treatment, waste water treatment and reuse (plant construction and operation)

ACCIONA Agua has built over **110 drinking water treatment plants with a total capacity of over 67.03m³/second,** supplying over 15.9 million people. It has also built over 300 sewage treatment plants with a total capacity of 6.6 million cubic metres of water per day, serving a total of 31.4 million people, notably in Spain, Portugal, Italy, China and Puerto Rico.

3. End-to-end water management

ACCIONA Agua provides end-to-end water management (construction, operation and services) in over 60 cities in Spain, serving water directly to over 1.7 million users.

AWARDS AND CONTRACTS

Awards in 2008

Design and construction of water treatment plants (drinking water, sewage, desalination and tertiary treatment for reuse):

- **Italy:** ACCIONA Agua will build and operate the extension to the **Reggio Calabria desalination plant.** It will be Italy's first RO plant.
- **Gerona:** ACCIONA Agua is to expand the capacity of the Tordera (Gerona) desalination plant to 20 cubic hectometres per year. This project will provide drinking water to 500,000 people.
- **Biscay:** Construction of a tertiary treatment plant and ancillary work at the Galindo sewage plant (Biscay).

Most important contracts in 2008

Plant maintenance and end-to-end water management:

- ACCIONA Agua will take charge of the installation and management of the **sewage treatment plants and tertiary services in Guía-Gáldar, Agaete,** Sardina Casa Aguilar and Risco on the island of Gran Canaria, which together represent 3,910m³/day, serving a population of 38,000 people as well as 13 water pumping stations. It will also serve another 23,500 people and four pumping stations from the sewage plants at Teror, Valsequillo, San Mateo, Tejada and Artena, representing a total water volume of 2,975m³/day.
- Upkeep, maintenance and repair of **the network of public sewers in Getafe (Madrid)** for two years, with the possibility of an extension of up to a maximum of four years.
- Extension of the municipal water concession in Dolores (Alicante) until 2035.
- Expansion of the contract to operate the **Is Arenas sewage plant in Cagliari, Sardinia.**

Reverse Osmosis

Reverse Osmosis (RO) is a physical-chemical process for separating salt from seawater. In the mid-1950s, researchers at the University of Florida and the University of California, Los Angeles, began to study osmosis as a means of separating salt from water. Led by Charles Reid, they were the first to use the term "reverse osmosis". That was in 1956.

RO essentially turns a basic chemical principle on its head: osmosis, which is when two liquids of differing saline concentrations move until their concentrations are equal. If the liquids are separated by a semi-permeable membrane - through which a solvent may pass but not the solutes -, the liquid from the less concentrated solution moves to the more concentrated one.

RO aims at precisely the opposite: to reverse the natural process, driving the solvent from the more concentrated to the less concentrated solution. This is achieved by applying external pressure to the saltwater.

The success of the process hinges on the quality of the permeable membrane: the finer the membrane, the greater the purity of the water. Ever since Reid designed the process, both he and other scientists in this field have worked to perfect membrane technology. Desalination plants currently use a combination of different membranes to achieve optimal water quality.