CASE STUDY: ACCIONA AGUA, SPAIN

FACTS AT A GLANCE

Company: ACCIONA Agua

Website: www.acciona-agua.com

Description: ACCIONA Agua is a leader in the water treatment sector with the ability to design, construct and operate drinking water treatment plants, residual purification plants, tertiary treatment plants for re-use and reverse-osmosis desalination plants. ACCIONA Agua is committed to innovation and the application of the latest technologies. ACCIONA Agua aims to contribute to sustainable development in the water sector through innovations in the design, execution and operation of plants for the treatment, purification and desalination of water. In addition to having a significant presence in Spain, Italy and Portugal, the company is expanding in the United States, the Middle East, Australia, Algeria, Mexico, Brazil and Colombia.

Employees: 700

Industry: Energy

Country: Spain

PRODUCTS USED

- PDS®

KEY BENEFITS

- Improvement in the overall quality a
- Optimal design in challenging geographical conditions
- Fast generation of accurate data for immediate project applicability
- One source of information ensures consistent change and facilitates decision making
- Increased efficiency and reduced project schedules

PROVIDING DRINKING WATER IN THE MOST CHALLENGING ENGINEERING CONDITIONS

Intergraph PDS® design tool shapes the plant producing Adelaide's half-year water needs

IDENTIFYING GOALS

ACCIONA Agua is one of the divisions of the Spanish engineering, construction and infrastructure company Acciona. ACCIONA Agua is a leader in the water treatment sector with the ability to design, construct and operate drinking water treatment plants, residual purification plants, tertiary treatment plants for re-use and reverse-osmosis desalination plants. ACCIONA Agua was the preferred provider to build, operate and maintain a reverse-osmosis desalination plant in Adelaide, Australia, thanks to a consistent plan and an intelligent and automated technology providing higher security and quality control. The plant was to have a capacity to treat 300,000 cubic meters (1,0594,399 cubic feet) per day and was to provide water to the city of Adelaide and surroundings.

The geographic area –on a 52-meter above sea level cliff– where the plant was to be located, along with the environmental protection measures enforced in the zone necessitated a unique design and construction. In addition, the plant in Adelaide is pioneering an advanced membrane ultrafiltration pre-treatment and a double membrane design system, which enables higher energy efficiency and faster purification. All these circumstances demanded a high-quality design and high quality engineering data that enabled the plant to live up to the lofty performance expectations placed on it by the city and its residents.

OVERCOMING CHALLENGES

ACCIONA had used Intergraph's PDS design tool in Sea Water Desalination Plants projects such as Isola di Salina (Italy), Jorf Lasfar (Morocco), CRP Cardón (Venezuela), etc. beginning about four years ago. The tool had proved to provide effective and accurate engineering data and ultimately save project time and the company was convinced that the technology provided the perfect qualities to design such an advanced plant.

The initial challenge in Australia was to introduce the tool to construction teams that were used to working with 2D paper drawings and its duplicates. The challenge was to change the team mindset and to get used to working on 3D and with a single platform. Working with other partners and contractors was easier once

everybody worked the one truth. The tool enables teams to create a single drawing, allowing everyone to work with the same information. The objectives were to:

- Meet high-quality design requirements in challenging geographical conditions
- Generate accurate data for immediate project applicability
- Ensure good coordination of contractors through a single source of information

REALIZING RESULTS

The feed flow of sea water is captured through a 1.5 km subterranean tunnel, which needed to be designed under special conditions in order to ensure the tunnel performance parameters and facilitate maintenance. The pressure needed for the water to climb the 52m cliff from sea level is provided by 12 pumpers, reaching a stream flow of 28,400 cubic meters per hour.

“Importing and exporting GIS models was smooth and the integration of the virtual model was consistent. This provided higher usability and competence. PDS allowed engineers optimize isometrics generation. It saves 30 to 40 percent project time for isometrics generation,” explained Jon de la Iglesia, head of the Technical Bureau department at Acciona Agua.

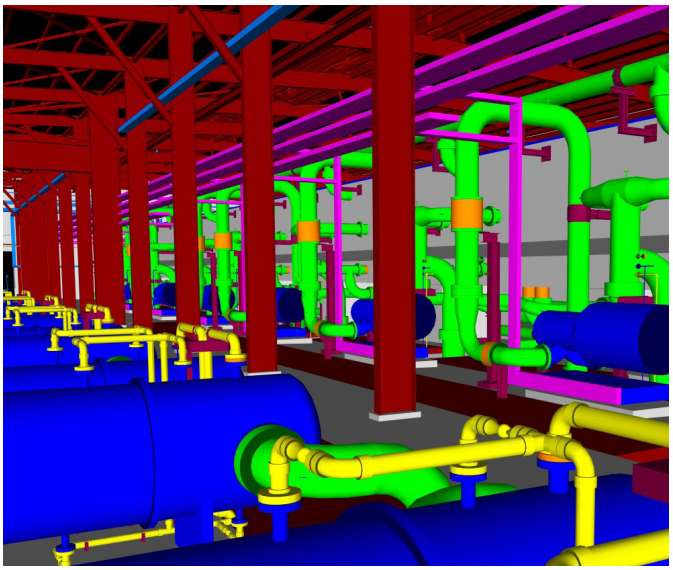
Engineering data could be used directly for project applicability, including detailing, associations, electrical systems, wiring and looping. It also enabled faster detection of errors and consistent change, as the project progressed. Changes are faster, more consistent and human error is reduced by 50 percent. You are ready for production earlier, as the tool integration and flexibility reduces construction schedules.

MOVING FORWARD

ACCIONA has invested time in building its libraries in order to optimize the use of the tool and automate as much information as possible. Customizing the engineering data and material handling data generated in the construction of water treatment plants has demanded attention. However, the final product is very satisfactory and the results in terms of shortening building schedules, plant operation and maintenance are manifest.

The Adelaide Desalination Plant has now produced its first desalinated drinking water. The €1.4 billion project at Port Stanvac is on track to be completed by the end of 2012, delivering 100GL of drinking water per year –up to half of Adelaide’s annual water needs. ACCIONA Agua is part of Adelaide Aqua, the consortium designing, building and operating for 20 years the renewable energy-powered sea water reverse-osmosis desalination plant, one of the largest plants of its kind anywhere in the world.

In addition, Adelaide’s desalination plant performance has boosted ACCIONA’s opportunities in their bidding plans to provide water services and design-build-operate contracts in Western Australia, South Australia, Victoria, and Queensland.



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