

Aeropila.

Control and remote monitoring of power generation based on renewable energies and fuel cells.



Organization:
Aeropila, BESEL

Location:
Valladolid, Spain

Industry segment:
Industrial

Application:
Remote monitoring and
process control

Axis partner:
Proxima Systems

Mission

The Aeropila project, developed by the engineering company BESEL, offers a clean, innovative and non-polluting power solution to ensure the future of power generation in a context in which it is essential to make changes to benefit our environment.

Aeropila is an electricity generation plant integrating renewable energies (photovoltaic and wind energy) relying on weather, for the production and storage of hydrogen, and incorporating a fuel cell. It generates electricity in a completely clean cycle. The original idea was based on closing the hydrogen cycle; in other words, a system capable of:

> Producing power by means of photovoltaic plates and a wind turbine which allows the energy needs of a particular load to be covered, including the various components for the plant, since it operates with complete autonomy. Whenever there is an excess of production, the remaining energy is stored as hydrogen by means of a process of electrolysis (dissociation

of water into hydrogen and oxygen by applying electricity) and the hydrogen is stored in pressurized cylinders.

> Whenever there is no excess of production of renewable energy, the stored hydrogen is used, transforming it again in electricity by means of a fuel cell, and it is employed to cover the energy demand of the load to which energy is being supplied by means of the generating plant.

Aeropila is thus able to obtain a system of clean and continuous power generation in which the only waste product is water.

The engineering firm that developed Aeropila, BESEL, is based in a technology park in Boecillo, Spain (Valladolid) and the prototype was built in an area of this park. For a period of one year, it was subjected to evaluation in the various possible climate scenarios, carrying out tests and correcting the possible defects.

"With regard to equipment, we have always striven to detect whether the equipment used has been particularly innovative or provided significant added value to the project, as was the case here with Axis network cameras."

Javier Mielgo Carbajo, Deputy Manager, Research and Development Division, Manager of Valladolid Facilities, Aeropila project.

The need to maintain detailed control of the processes being executed in the facility and the fact that, in real-world conditions, this type of facility is generally set up at remote locations that are difficult to access, require that a system be found that allows remote monitoring. On the other hand, the need to increase the safety of the facility, as pressurized gases are stored there, was among the determining factors that led to the selection of network cameras from Axis Communications as a key project component.

Solution

An engineering firm from Vallisoleta specializing in industrial applications, Proxima Systems, proposed the development of a remote monitoring system especially designed for Aeropila, which may be extrapolated to any type of industrial facilities. The system includes Axis network cameras as a value-added complement to carry out process control in the testing area authorized by BESEL.

The facility is monitored by two AXIS 207 Network Cameras, which are especially fast for remote indoor monitoring applications, and an AXIS 221 Day & Night Network Camera for the external surveillance of the perimeter.

The monitoring tool developed by Proxima Systems also includes a web viewing interface to make inquiries via a computer, with multi-platform support (Linux, Mac OS X and Windows) and a simplified WAP interface to make inquiries from a mobile phone or PDA.

Result

The experience gained after one year of operation shows that the facility is perfectly capable of supplying power continuously. The monitoring system, in addition to offering a greater level of security for the facility, contributes to more precise control and widens the access capabilities with the possibility of sending alerts if necessary and executing security protocols automatically.

Another outstanding feature of the system is the capability to perform tests and manage the maintenance of the area under investigation remotely, avoiding travel to areas that are difficult to access.

About BESEL

BESEL was founded in 1984 as an energy and mining business, providing consultancy services to businesses and public bodies. In 2000, as the fruition of an ambitious strategic plan, the Research and Development Department was created, which would become the basis of one of the fundamental activities of the company. Three years later, the Engineering Department was launched, geared toward the establishment of advanced solutions. In June 2006, the firm split into a parent company and several spin-offs aimed at particular business lines in different fields. BESEL SA focuses its business activities on new energies and environmental technologies and sustainable transportation and mobility.

The Aeropila project

The Aeropila project is being offered to corporate customers and public administrations. The applications range from portable devices to mobile applications such as automobiles, buses and ships, to generators of heat and energy in applications for housing units, hospitals, residential areas, and more. The negotiations are today in an advanced stage on the use of the Aeropila project in the generation of hydrogen for the future fleet of urban buses of one of the main town councils in Castilla-León, Spain, which will be fueled by hydrogen.

