

EMAE - Metropolitan Company of Water and Energy

System of Supervision and Control of Production

Context

EMAE is an utility power generation operating a hydraulic system and providing electricity located in the Greater São Paulo, in the Médio Tietê, in the Baixada Santista and Paraíba Valley. The company also operates in the control of river floods in Pinheiros, in addition to storing water for public supply in the Guarapiranga and Billings reservoirs, which provide 30% of the water consumed in the metropolis.

EMAE has an installed capacity of 937.94 MW and controls the hydroelectric plants of Henry Borden, Rasgão and Porto Góes, the dam of Retiro and the lifting units of Traição and Pedreira.

Spin began working with EMAE in 2004 with its participation in automating the Henry Borden Plant, in the scope of the SINOCON project of ONS. From this agreement, EMAE came to know and rely more on Spin. The result was two new contracts, one to automate all of its plants and reservoirs and another to implement an Operation Center to monitor all of their sites.

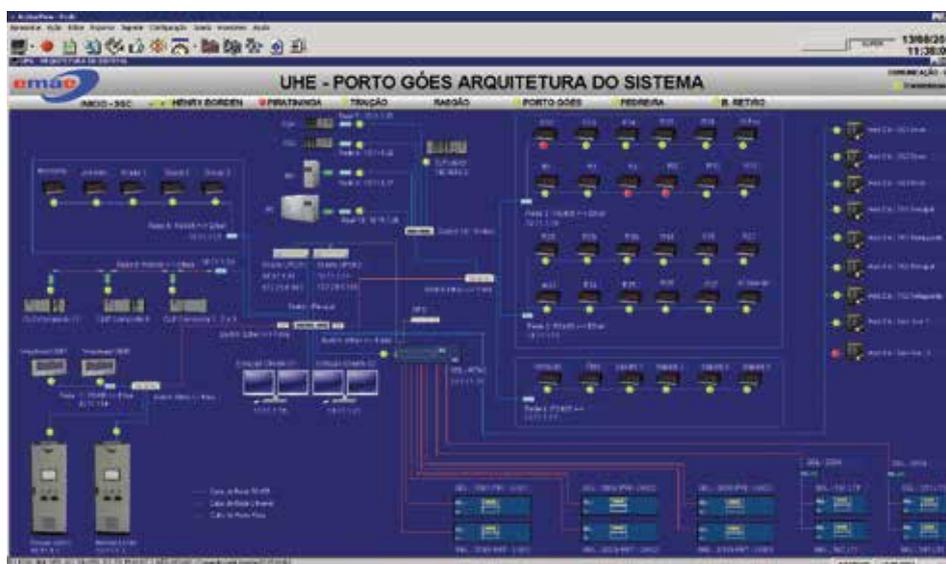
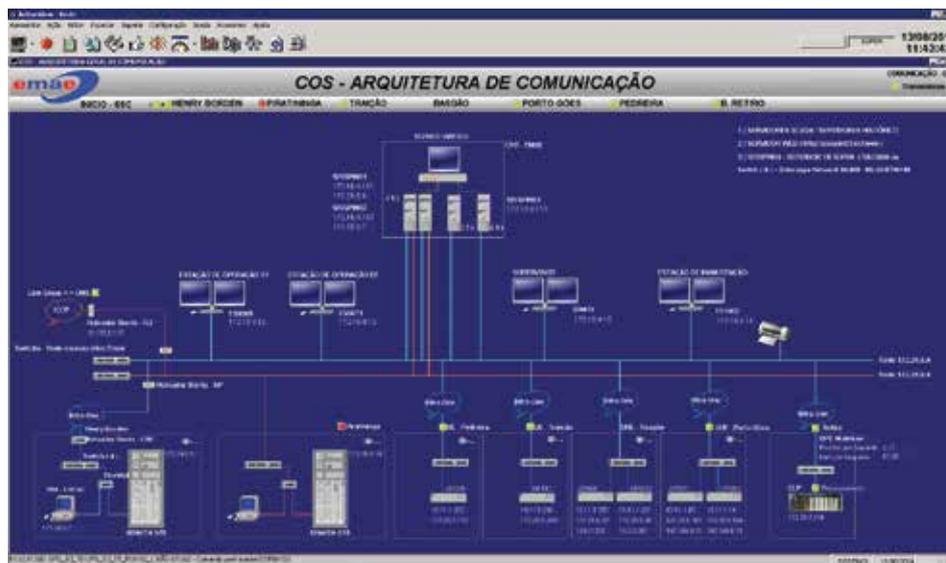
Challenges

EMAE asked Spin to complete a study detailing each site, assessing what was already in place in terms of automation, what was salvageable and what should be done to automate all sites and make the information available on its new control center.

During the study, it became apparent the need to add sensors, multimeters and telecommunication infrastructure as well as replacing dead SCADA systems and reprogram PLCs. Spin as the single contractor, had to subcontract partner companies for field work, expansion of remotes and programming of relays.

Implanted Solution

The following figures show the architecture of the COS and Porto Goes plant.



The new contracts started in 2010 and were completed in 2014. Today the SCADA Spin is standard within the company. The plants have software SCADA with dual hot-standby architecture, while the reservoirs and pumping stations work with the simple SCADA software.

In all sites is possible to locally control via SCADA software and these serve, through the DNP3.0, the data of the sites to COS which implements the supervisory control of all sites.

Results

All EMAE plants have been automated and the company now has an Operation Centre that implements the supervisory control of power plants, reservoirs and pumping stations.

In this project, Spin once again showed its knowledge as a company that integrates electrical systems of hydroelectric generation. In the figure of the Porto Góes system, presented earlier, the SCADA integrates with voltage regulators and speed of Reivax (two different models), Schweitzer relays, temperature gauges of two different manufacturers, Elo multimeters and various PLC models of GE, including some (the gates) were also programmed by Spin.

