Deployment of a state-of-the-art monitoring and control solution from Rockwell Automation

Logix Programmable Automation Controllers (PAC) and FactoryTalk software suite offer improvements across the board.

Background

SIAAP Seine Centre in Colombes based in Paris, France is fully integrated into the urban environment. It is an “all-in-one” plant: not only does it treat the town’s waste water; it also incinerates the sludge recovered after treatment at the same site. It processes 240,000 m³ of waste water per day, and up to three times more during storms, as well as the 200 tonnes of sludge recovered daily. The four-hectare site houses 10,000 devices of various kinds (pumps, sensors, motors, analysers, etc.).

Challenge

Controlling this kind of plant requires a particularly powerful system able to process tens of thousands of items of information, control the 10,000 devices (25,000 I/O) across the site remotely based on 650 mimic diagrams and archive even larger quantities of information, and all this both responsively and flexibly.

The SIAAP Seine Centre de Colombes was built in the early 1990s. Originally, controllers from another supplier and a custom supervision system were used at the site. But in 2006, faced with the announcement that the controllers used would no longer be supported, the SIAAP decided to overhaul its supervision strategy from top to bottom. It drafted specifications for a fully revised system and issued a call for bids.

Solutions

A Rockwell Automation solution was installed, which included:

- 70 Allen-Bradley ControlLogix and CompactLogix PACs monitoring and controlling some 10,000 devices via remote I/O
- ControlNet and EtherNet/IP fibre-optic networks
- FactoryTalk View SE supervisory package
- FactoryTalk Historian SE
- FactoryTalk AssetCentre

Results

- The solution provides complete automation that is virtually transparent for the operators, who control the plant from a single central supervision station.
- Teams of five SIAAP operators, assigned in rotation, are enough to control all the processes.
The requirement was for a system that was easy to maintain, that could evolve and accept modifications while on-line without the need to interrupt its operation and, above all, that was totally integrated and standardised, requiring no specific development or “gateway” to control all the devices at the site and make them communicate with each other.

Solution

SIAAP chose the solution proposed by Rockwell Automation: a redundant, fully automated solution incorporating some 70 controllers from the Allen-Bradley Logix family (ControlLogix and CompactLogix), ControlNet and EtherNet/IP fibre-optic networks and almost the full range of software from the FactoryTalk suite: FactoryTalk View SE supervisory package, FactoryTalk Historian SE logging software and FactoryTalk AssetCentre asset management system.

The 70 Logix controllers monitor and control the 10,000 devices at the plant via remote input/output blocks linked using ControlNet. Some of the more critical controllers are redundant (including the controllers managing the incineration process). The information from the controllers and the devices they control is transmitted to five redundant servers, each responsible for a zone at the plant (sludge treatment, pre-treatment/decanting, biology, incineration and utilities), themselves linked by the FactoryTalk system to form a single global (multi-server) application in a single control room. Here, six dual-screen control stations enable the operators to monitor the whole facility using 640 mimic diagrams. The devices communicate across dual fibre-optic ring networks.

The twelve screens are themselves linked to the five redundant servers that supervise the whole plant and archive the 6,000 items of information collected per second at all levels of the site which are required to prepare operational reports. The data is sent to a centralised system for archiving process data (for reporting) and a computerised maintenance management system (CMMS). Data required for regulatory purposes, such as incineration waste quality, is also sent regularly to Government agencies.

The Rockwell Automation Global Solutions teams provided an “engaging” technical support throughout the project. This means the Global Solutions project team made a commitment as to the system’s level of performance; that they worked to prepare programming standards and implementation rules; and that they had to supply a list of recommendations and support during the development phases so that the required performance level could be reached.

Results

After six months of tests by the integrator responsible for the project, the new system was installed at Colombes and has been in operation since the end of 2009.

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Additional Information

www.rockwellautomation.com

The results mentioned above are specific to SIAAP’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.