Get a Charge Out of Waste

Discover how a waste management company gained flexible plant control and reduced landfill and other waste by migrating to the Logix Control Platform.

>> Waste disposal is a highly-regulated activity no matter where in the world it's performed. Pyros Environmental, a major waste management disposal company in the U.K., addresses these challenges head-on. The company needed flexible control of different plant systems to help it cost-effectively process waste while maintaining regulatory compliance. It also needed the ability to generate real-time information for regulatory and business demands. Upgrading its legacy distributed control system (DCS) to the Allen-Bradley® Logix Control Platform provided comprehensive, flexible control that delivers real-time information while helping to make it easier for the maintenance team to make changes or repairs.

At its 11-acre Fawley, Hampshire site, Pyros Environmental incinerates up to 105,000 tons of pharmaceutical, chemical, agricultural and industrial waste every year. This reduces its volume by up to 85% with a resulting reduction in landfill requirements.

Pyros' high-temperature incinerator processes waste in excess of 1,100°C. The company returns 34,000 megawatt hours of electricity to the national grid annually from its separate waste-to-energy plant — enough to supply 7,250 U.K. households. It runs a high-temperature incineration plant and a waste-to-energy plant.

In line with U.K. government and regulatory policies, the company is investing in this national asset to help relieve some of the challenge of wastes, both hazardous and nonhazardous, that are no longer suitable for landfill.

Replacing An Aging System

With increasingly stringent directives for the management and disposal of industrial waste, Pyros continuously aims to upgrade its services to help customers to meet waste management goals. Its aging DCS was holding back the plant's development and flexibility.

"We had one distributed control system running the entire plant, and it was becoming obsolete," says Ed Hutton, project engineer for Control and Instrumentation. "Using the old system, we were facing a number of issues. Because the control system ran the whole site, whenever we wanted to carry out any major maintenance or improvements, it was necessary to shut down the entire site. This was clearly not an economical way to run the business."

In addition, it was very time consuming to find and extract the plant information management needed. In a highly regulated industry, access to accurate, timely plant information is critical.

"We required real-time data for the management team for regulatory and economic reasons. Under the old system, the information was there, but it was incredibly difficult to get at," Hutton explains.

Reestablishing Control

Pyros first prioritized efforts in establishing a new control system for its high-temperature incineration plant. The company chose Rockwell Automation because of Hutton's

>> OEMs Turning to Sun, Wind and Waves

By Lou Mello, Global Segment Business Manager, Alternative Energy for the Global OEM Team and Dave Schaetz, Global Industry Technical Consultant, Rockwell Automation

While Pyros Environmental has focused on waste, many companies are turning to alternative energy sources to help improve the environment. As demand grows for renewable energy, many OEMs are shifting their efforts to build equipment for producing sun, wind and wave-powered systems.

For example, traditional assembly OEMs making custom machinery for the automotive, appliance and consumer-facing industries are expanding their offerings to serve the emerging alternative energy market. Solar power is of particular interest to assembly machine builders because best practices from traditional industries can be leveraged.

Significant money is being invested to research various technologies and to develop new manufacturing processes. For example, solar panels using emerging thin film technology are manufactured with equipment that didn't exist five to 10 years ago. Custom machine builders can capitalize on this market opportunity by building equipment to run these new processes.

The European Photovoltaic Industry Association ("Global Market Outlook for Photovoltaics until 2013," March 2009) projects an average annual growth rate of 20% to 30% for the global PV industry through 2013. Yole Développement, ("Photovoltaic Technology, Equipment and Materials Report," July 2008) forecasted a $6.4 billion PV equipment market in 2009, growing to $8 billion in 2012. Much of the equipment produced by major assembly companies is now being applied in solar manufacturing.

The solar industry is also taking advantage of the technology developed and experience of suppliers from the semiconductor industry. With a few modifications, equipment developed for manufacturing flat panel displays can be used in thin-film solar panel manufacturing. As a result, OEMs have seen an increase in requests for their equipment to serve the solar market.

Many end users are looking to other industries for best practices as they integrate and start their solar panel production line. Machine builders and system integrators from the automotive industry often are consulted to help tie together the various pieces of OEM equipment to form a fully functional assembly line.

The scenarios are the same for wind technology. Some OEMs are leveraging the skills acquired from producing heavy industrial equipment as a catalyst in making parts for wind turbines. Minster Machine, a manufacturer of press feeders and other metal forming equipment, recently established the Minster Wind Division.

Time-to-market is critical in the solar and wind energy marketplace, and implementing new designs quickly is paramount. Rockwell Automation has a team of Global OEM Technical Consultants to help equipment builders accelerate development efforts; adopt technology; and lower the total cost to design, develop and deliver a machine.

The study of ocean-renewable technologies also is increasing. Ocean tides and wave-powered technology to produce electricity are gaining ground in the U.K., Europe and Australia, and is expected to significantly increase within the next five years.

The demand for machine builders in alternative energy won't decline for at least the next decade — it will simply shift to new renewable energy technology areas.

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positive previous experiences with the company and the flexibility of the Rockwell Automation solution.

The new control system was based on the Rockwell Automation Integrated Architecture,™ using the Allen-Bradley® Logix Control Platform and FactoryTalk Production and Performance Suite (www.rockwellautomation.com/go/tj10ft). It included Rockwell Software® FactoryTalk® Linx Enterprise from Rockwell Automation, a FactoryTalk Live Data server and device-based alarm and event server.

This solution allows Pyros system administrators to monitor sensor readings and other controller data from its plant-floor devices using a desktop computer or dedicated Allen-Bradley PanelView™ Plus terminal.

Pyros also wanted more than one entry point to its data to help make faster and more accurate decisions. Using FactoryTalk Historian and FactoryTalk Transaction Manager as the Windows NT-based transaction processing system, plant supervisors can view the process in real time while managers can look at key performance indicators (KPI) and compare production activity.

Pyros also deployed Rockwell Software FactoryTalk View, a line of human-machine interface (HMI) software products designed with a common look, feel and navigation to help speed HMI application development and training. FactoryTalk View is part of the scalable and unified suite of monitoring and control solutions that spans machine-level to supervisory-level applications.

It also works across multiple platforms anywhere in the manufacturing enterprise, allowing Pyros to view the right information, at the right place, and at the right time.

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Pyros runs a high-temperature incineration plant and a waste-to-energy plant.

Gaining Flexibility

The project has so far achieved Pyros' goals. "We now have a control system that is much more flexible and user-friendly," explains Hutton. "Before, we would have been very wary about making any proactive changes because of the time and uncertainty of operating with the old system. Today, the diagnostics and information provided is much more comprehensive. We are able to make changes online and because we are familiar with the standard control language, any of the maintenance team can get involved in repairs or modifications.

"Also access to real-time data is now becoming fully automated with our plant system integrated to the management information systems," Hutton adds. "We can now make decisions in seconds rather than days."

The company is planning to build on its success with the high-temperature incinerator by rolling out Rockwell Automation control systems to its waste-to-energy and effluent treatment plants.

"By the end of the year, we will have the whole system changed over," says Hutton. "This project has been very important for us as we continue to expand and develop the plant. Without this automation technology, it would be very difficult for us to have achieved our expansion plans moving forward." □

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