

Ecologia to conquer contamination with Rockwell Automation-based solution

Leading environmental consultant leverages Rockwell Automation hardware, Cougar Automation knowledge and WIN-911 communication solution

Solutions

A Rockwell Automation solution was installed, which included:

- FactoryTalk View SE
- Allen-Bradley CompactLogix programmable automation controllers
- 3G/GPRS modems
- Win911 SMS software
- Software and training from Cougar Automation

Results

- Remote information delivery
- Reduced costs
- Reduced carbon footprint
- Faster decision making
- More sustainable solution



Background

In an urgent environmental project, Rockwell Automation, Cougar Automation, a Recognised System Integrator and WIN-911, an Encompass Partner, will all come together in a solution developed by a leading environmental contractor to address a historic ground water contamination.

Ground water contamination is an extremely serious issue and must be dealt with highly effectively to the satisfaction of local environmental standards. Most industrial companies prefer the obvious proactive approach of avoiding contamination in the first instance, but in some cases, accidental discharges are unavoidable and it is in these instances that the specialists have to get involved.

Ecologia, based in Sittingbourne, Kent in the UK, is an environmental contractor whose multi-disciplinary workforce provides specialist advice and undertakes environmental site investigation and remediation projects. Its in-house team of scientists, engineers, chemists and geologists has the expertise required to tackle a wide range of its client's environmental needs. It prides itself on providing the most appropriate solution rather than pursuing a more standardised, less effective approach.

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According to Tom Hayes, Director at Ecologia: "We deal with multiple projects involving contaminated land and groundwater, the majority of our work is proactive but, as in this case, sometimes reactive. To give you an idea of the type of issues we deal with, a single teaspoon (5ml) of chlorinated degreasing solvent can contaminate more than an Olympic-sized pool of ground water. The thing is, you don't hear about groundwater much, surface water is always in the news, groundwater is not because you can't see it and it is considerably more difficult to deal with."

Challenge

The primary challenge faced by Ecologia was not the complexity of the project, but instead, its geographical scale, location and timescale. It involved land remediation and subsequent treatment at a large petrochemical facility in Italy. The multi-phase system will be in operation for a period of approximately three years to remove volatile hydrocarbon contamination in shallow soils and groundwater at the site.

Hayes explains: "The actual technology and know-how behind the project is available to us through our significant in-house expertise, the primary issue we face is the upkeep and monitoring of the facility over such a long timescale. In most instances, this would require one or two full time engineers to remain on site for the entire project duration. It is for this reason that we have been investigating remote automation and telemetry solutions, which releases us from the UK meaning we can export our

capabilities and hardware and operate it remotely. In the past you would always have to set up a local office. With good telemetry you don't have to do that – we can do it all from our headquarters in Kent.

"Once we get to this level," Hayes continues, "we can put our equipment anywhere on the planet and still get regular and timely access to performance data and predictive maintenance information. We are seeing a significant uptake in the deployment of our services, as many multinational companies prefer to work with British, Dutch or US environmental contractors."

Solution

The project is based upon three identical standalone systems – at strategic locations on the site – comprising an ATEX-rated HMI running Rockwell Automation FactoryTalk® View SE HMI, Allen-Bradley® CompactLogix™ programmable automation controllers (PAC) and remote access/alarm annunciation via 3G/GPRS modems and WIN-911 SMS software.

Each unit is controlled by a sophisticated ATEX compliant telemetry system developed and tested in house that will allow the equipment to be fully monitored remotely without the need for staff to visit a hazardous part of the site.

"The units are undertaking vacuum extraction of contaminated ground water and liquid oil in a very inaccessible part of the site," Hayes explains. "The



contaminating oil is actually spread out on top of ground water to a thickness of 0.5m and will take between two and three years to successfully remove.

“With the hardware we have in place from Rockwell Automation and collaborators we can monitor and change the process remotely,” Hayes elaborates. “We can see what extraction is going on in each individual well and make decisions on the running parameters. Previously we would have to go to site, annually and monitor/change the PLCs, typically over a three-day period; we can now do this in less than an hour from Kent.”

The units themselves are 20ft shipping containers, housing high-power pumps the size of a small car. In addition to the pumps, the cabinets have over 40 other components, most of which are monitored by the CompactLogix PAC. Parameters captured include flow rate, temperature, ground water levels, pipe pressures, total fluids (liquid and gas) and the concentration of contaminant in gasses.



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“In this instance,” Hayes explains, “the PAC is being used to flag for failures or maintenance-related actions such as filter changes; it is purely a process information conduit as opposed to being a process controller. It does have some control function such as those we might see in an emergency, where it can shut down the entire system if, for example, we get contaminated gasses in the stack or if the vacuum pressure is too high.

Cougar Automation acted as a consultant with this project and as well as identifying, selecting, proposing and supplying the control system architecture for this project, apart from the ATEX-rated HMI, it also bought the Ecologia engineers up to speed on the various technologies. Simon Pape from Cougar Automation expands: “Cougar trained the Ecologia guys on the Rockwell Automation Logix5000 development software for the CompactLogix PACs and on ViewStudio for the FactoryTalk View HMI. We also trained them on WIN-911 and in setting up the remote access, VPN

tunnels and the 3G/GPRS/GSM failback on the modems.”

Once the treatment units were placed on site in Italy, WIN-911/SMS software was installed as part of the Rockwell Automation system to monitor the operations of each unit. WIN-911/SMS allows Ecologia to monitor the control units remotely and implements a smart notification system with mobile management capabilities and intelligent escalation should a situation such as a valve leak or temperature spike occur.

“The use of WIN-911 software allows the treatment equipment to be fully monitored remotely without the need for staff to visit a hazardous part of the site,” said Robert Brooker, CEO of WIN-911 Software. “Should an alert be raised, WIN-911’s built-in decision tree structure recognises the situation and escalates it until action is taken by the appropriate parties. The early notification provided by WIN-911 helps Ecologia assess and manage any concerns with the treatment units.”

Results

“Being an environmental contractor, it is vital that we get our own green credentials in order,” Hayes explains. “The ability to interrogate the units from our HQ in Kent means that not only are we reducing energy in terms of travel and subsistence, but we are also saving costs for the same reasons. Because we can read the data and make decisions in minutes we are also saving time, making the entire solution more sustainable from a business viewpoint as well.”

Additional Information www.rockwellautomation.co.uk

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



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Cougar Automation
Birch House
Parklands
Forest Road
Waterlooville
PO7 6XP
Phone: +44 (0) 23 9226 9960
Fax: +44 (0) 23 9226 9968
www.cougar-automation.com

As a Control Systems Integrator, Cougar Automation is in the business of taking away its customers automation problems and simplifying their lives so that they can concentrate on their core business of delivering the essentials of modern life.

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WIN-911 Software
4020 South Industrial Drive, Suite 120
Austin, Texas 78744 USA
Phone: +1 512 326 101
Fax: +1 512 326 1019
www.win911.com

WIN-911 is the most widely-used alarm notification software in the world protecting 10,000 facilities in 70 countries and six continents, including 170 Fortune 500 and 110 Global 500 companies.

WIN-911 delivers machine alarms and other key data via any conceivable method (e.g. smartphones, voice, SMS, web browser, announcement systems, etc.) and provides a logic engine to decide who should receive critical alarms, how, and when, and then how notifications escalate.

The company is headquartered in Austin, Texas, USA, with a network of authorized distributors and system integrators in 50 states and throughout the world.

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Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846