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Wireless connectivity solutions for water treatment plants

To optimise and automate sludge dewatering, Alfa Laval has designed Octopus, an intelligent 'autopilot' which, thanks to the Digi Connect WAN 3G wireless WAN router, is also able to remotely manage this process

Alfa Laval is a world leader in the provision of solutions for heat transfer and treatment, centrifugal separation and fluid handling. With offices in nearly 100 countries all over the world and a strong presence in the UK, Alfa Laval's technologies are used extensively in environmental stewardship.

Decanter centrifuges for waste cleansing, which separate liquid from dry matters, form the backbone of many municipal and industrial waste water treatment facilities. To optimise and automate sludge dewatering, Alfa Laval has designed Octopus, an intelligent 'autopilot' which, thanks to the Digi Connect WAN 3G wireless WAN router, is also able to remotely manage this process.

Previously, operators handled sludge separation based on manual analysis of the end result. This procedure was time consuming and required 24-hour manning, as continuous adjustments were necessary to cope with variations in waste water contents. Alfa Laval wanted to offer its customers a fully automated, unmanned solution, which was able to remotely detect and adjust for all variations in the dewatering process, thereby keeping it running at peak performance all the time. After developing the web service and the auto-pilot system, what Alfa Laval needed to complete its new decanter facility was a web-based M2M data communication solution, capable of enabling remote control.

To get started, Alfa Laval decided to test Octopus in 15 customer premises in Europe, China, and the USA deploying analogue modems. However, this was not a viable solution. The modems were awkward to connect and had poor data transfer rates. Implementation costs were also too high because Alfa Laval would need to buy fixed line subscriptions from operators in each country where it delivers decanters and modify Octopus protocols to support each operator's modem standards.

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It was, therefore, a considerable challenge to find a supplier who, besides fulfilling the demand for reliability, performance and security, was able to guarantee global compatibility and accessibility even in the most remote corners of the planet - all at an affordable price.

Having tried several GSM cellular products that did not fulfil the company's requirements, Alfa Laval's IT supplier recommended the Digi Connect WAN 3G.

Joe Heilmeyer, process engineer for Alfa Laval in Søborg, Denmark, comments: "We have installed the Digi router on decanters in China, Denmark and the USA, in order to remotely control and monitor processes from the development department in Søborg. The Digi Connect WAN 3G is the quickest and most user-friendly product among those we tested. The 3G data rates are very high, and the always-on operations and global compatibility allows us to monitor systems, adjust parameters and upload software updates without connection hassles anywhere in the world."

The Digi Connect WAN 3G is an upgradeable third generation (3G) wireless WAN router for primary and back-up connectivity to remote sites and devices. It is a targeted function Ethernet-to-cellular router that supports both HSDPA and EVDO 3G standards. The router features built-in VPN for secure connections, one Ethernet port, one serial port, a sensor port for connecting Digi Watchport sensors, and a USB port for local data storage via a USB memory stick.

Octopus, which is available now from Alfa Laval, can remotely monitor and control every aspect of the sludge dewatering process. It is capable of automatically adjusting sludge feed, polymer levels and decanter settings 24 hours a day, thanks to advanced infrared sensors which keep constant watch on the levels of suspended solids in the sludge and centrate.

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