



FGR Automation and Cumulocity IoT improve safety in the field

Customer reference story



"By teaming up with Cumulocity IoT we can now use IoT—along with our deep knowledge of a diverse range of industry systems—to give our customers the ability to turn their data into value."

— Paul Gillott | Vice President, FGR Automation



Customer Profile

Established in 1985, FGR is an engineering firm that specializes in systems that offer significant improvements in overall plant efficiency, control and profitability with the total automation of manufacturing processes.

FGR has developed and installed integrated control systems around the world for refineries, power, water & waste water, truck & train loading, and pharmaceutical product packaging, among many others.

New challenges

- Monitor and collect data from remote installations
- Optimize data and create alerts
- Empower IoT while continuing focus on OT solutions

Software AG solutions

- Internet of Things & Analytics

Key benefits

- Increases ease and speed of pre-permitting for mines
- Enables real-time alerts for operational issues at mine sites
- Improves safety for people in the field
- Reduces manual intervention

IoT keeps heavy industry safe and sound

At a phosphate mine deep in the Utah desert, a mining company is drilling boreholes. These fields leech phosphate-laden water. Phosphate, a fundamental component of life and a valuable element in fertilizer, is dried via solar evaporators and the crystals are collected for transport.

There is no utility-provided electricity available and certainly no internet. Communications are limited to company satellite phones. If anything happens in one of the boreholes—if the soil is unstable and the hole collapses, for example—one of the workers would have to call for help. He might need parts, or even an ambulance, if someone was injured. But the nearest town is 80 miles away. It would take hours to get medical help—or a crucial part. In the meantime, work must be stopped, with inevitable losses to production.

The ability to monitor and remotely supervise the boreholes is not just for compliance reasons, but also for safety. If the miner had to rely on people collecting the data, particularly in winter, it would require several people and a snowcat to get to it. The lake bed that the rig is on is comprised of Bentonite clay, and after a rainfall it sticks to truck tires or shoes, making it impossible to move.

"Before IoT, this would have taken four people to traverse the land, with a mass the size of Rhode Island," explained Paul Gillott, Vice President at FGR. "By the time they came back with the data it could be a month old. Everything could have changed by then and there could be ecological problems that go unattended."

Turn data into value

This was the kind of problem that engineering firm FGR was brought in to solve. In this mine and dozens more, there was critical data that the mining companies needed to be able to collect and turn into value.

FGR assessed the situation and knew that the mine would first need power to fuel the internet connections. If the borehole mine had Internet of Things sensors on the equipment, the mining company could monitor the holes for pressure, temperature and moisture. Any potential problems would be flagged before they became critical. Handheld devices with dashboards would alert the workers in the field, while full-blown dashboards would be flashing at headquarters.

FGR designed, built and installed solar panels to provide a means of communicating data from the mine—and sending it to the cloud for analysis. It then designed, built and installed sensors that could monitor and relay conditions in real time.

What FGR needed next was a trustworthy partner to provide an IoT platform to capture the data, analyze it for patterns that signal problems and then send real-time alerts back to the field.

"We wanted better analytics, so we began the road to partnership with Cumulocity IoT," Gillott said. "This [phosphate mine] was our first use case powered by Cumulocity IoT."

Working with FGR and Cumulocity IoT, with its component analytics, the mining company can now monitor borehole soil quality to ensure there are no pressure or moisture changes that will compromise it. Because ambient temperatures in the desert can vary by plus or minus 50 degrees Fahrenheit in the same day, external sources of data, like weather, are taken into consideration.

Pre-permitting

Another benefit of having the IoT solution is that the soil measurements can be completed before the drilling takes place, to reassure government officials that it is stable enough for a borehole operation. Using Cumulocity IoT, the data can be fed directly into government forms, making pre-permitting a much easier—and quicker—process.

"A lot of data is needed for these government forms for pre-permitting," Gillott said. "The data is essential for proving that the soil is stable enough for the operation."

In other mines, FGR and Cumulocity IoT's combined solution is used to monitor rock containment walls. A large rock wall collapsing would be disastrous, releasing possible toxic mine tailings into the environment. By monitoring the walls for vibration or movement, you can stop a potential reputation-destroying accident.

New projects

FGR's latest project with Cumulocity IoT involves monitoring car parts in Brazil. Hose clamps being built for BMW and Tesla come off a production line with ten different parts. The joint solution monitors all data coming from the production line in real time to ensure the quality of the parts. The data goes into an analytic database, with added contextual data, to spot and prevent production flaws and failures. It also enables the company to optimize material usage.

"This is predominantly to ensure that bad parts do not get into the good parts container. This is achieved by several stages of automated quality control as the parts are made and tracked along the production line. Additionally, the data gathered allows for analysis of the machine tooling," said Gillott. "Then the reporting of production is accurate and not misrepresented by unauthorized human intervention."

Other possible future uses for Cumulocity IoT include monitoring water quality. Wastewater for treatment sometimes comes from miles away and it must be monitored in case of spills. Also, IoT can help predict if a treatment plant is overburdened, due to bad weather that means a surge in storm water, for example.

"Wastewater treatment from mining is very important, and the IoT solves a lot of problems," said Gillott.

Cumulocity IoT has an out-of-the-box solution for water management, which will likely be deployed by FGR.

Conclusion

FGR can now collect and analyze critical data from truly connected mines and factories with the use of Cumulocity IoT and its component analytics tools. That data has measurable value in terms of safety, quality and time savings across industries.

"We are an operational technology company and we want to stay that way," said Gillott. "By teaming up with Cumulocity IoT we can now use IoT—along with our deep knowledge of a diverse range of industry systems—to give our customers the ability to turn their data into value."

ABOUT SOFTWARE AG

Software AG began its journey in 1969, the year that technology helped put a man on the moon and the software industry was born. Today our infrastructure software makes a world of living connections possible. Every day, millions of lives around the world are connected by our technologies. A fluid flow of data fuels hybrid integration and the Industrial Internet of Things. By connecting applications on the ground and in cloud, businesses, governments and humanity can instantly see opportunities, make decisions and act immediately. Software AG connects the world to keep it living and thriving. For more information, visit www.softwareag.com.

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