

Quarry Prevents Downtime Due to Storms with 24/7 Web-Monitoring Tool

By Dan Phillips

Irving Materials, Inc. is a building materials supplier that operates in the Midwest and southern United States. IMI Aggregates, a division of the company, provides crushed stone, sand and gravel from their many Indiana locations.

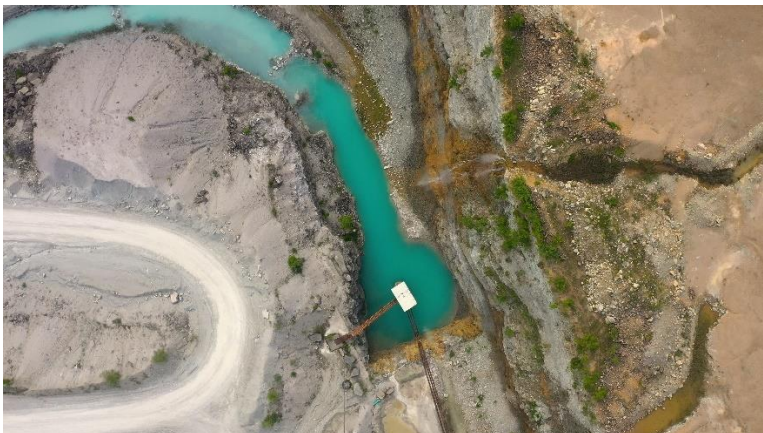
One of their sites has several dewatering basins on-premises designed to capture rain, ground or seepage water. These are located in remote areas of the quarry and help keep water away from the production pits.



In a typical quarry, these types of basins may flood after heavy rainfall, causing water to overflow into the production area. This can cause equipment failure, resulting in downtime. An hour of downtime could cost thousands of dollars; so an outage from flooding can add up fast, especially during heavy rainfalls, which may occur several times a year.

As part of IMI Aggregates' risk mitigation planning, they wanted to prevent this from happening at their operation. They looked for a monitoring system to provide instant notifications of such problems as pump failure, power outages, phase loss and rising water to provide predictive warnings.

Prior to searching for such a system, company personnel monitored the pumps via visual inspection. This could take hours to complete and this was done more frequently with increased rains or storms. IMI Aggregates knew that there was a better way to monitor.



The company reached out to Regal for assistance. Regal suggested a cost-effective 24/7 monitoring solution for the quarry to provide visibility to pump operation, water levels, motor phase loss and motor power. By having the ability to monitor these key production assets, IMI Aggregates could ensure process

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optimization that would help prevent the pits from flooding. The Perceptive Technologies monitoring solution from Regal fit these requirements.

Using the industrial internet of things (IIoT) to monitor pump performance, the Regal Perceptive Technologies solution provided the necessary hardware, software and cloud-based server to measure a variety of machine health parameters on the pump systems operating at the IMI Aggregates site. The flexible online system monitors pump operation, water levels, motor phase loss, motor power and communication status — providing simple web-based access to plant operation. A battery backup ensures the availability of power in case power is lost from a lightning strike or other event, and there is also built-in notification if cellular coverage is lost. Personnel can check the quarry's dewatering basin pump health and water levels from anywhere with a web browser or internet connection on any smartphone, tablet or computer.

Systems were supplied in a NEMA®*-rated enclosure that contains the data acquisition hardware for signal processing, power supply, and terminations for power and signal leads, and remote access to the cloud-based server. These systems are very modular and flexible so that any number of sensor inputs can be accommodated. Factory testing was done before the solution went into the field, and installation was very straightforward when completed after a three-month trial.



Now during a weather event quarry personnel can immediately be dispatched to take proactive measures. This solution — which includes a dashboard via the internet and application program interfaces (APIs) — advises company personnel and is more efficient because all the data related to the facility operation, including motor and pump status, reside there.

With the new technology in place, heavy rainfall is not a problem; the company won't miss a notification if water levels are rising. The company can proactively manage the motors and pumps and address any issue prior to flooding. If there is a complication with the motor or pump, they can fix it before the water rises and creates a flood condition. Or, if the water levels are increasing too fast, portable diesel-powered pumps can be brought in to lower the water levels. This has been a simple and effective solution for ensuring productivity and profitability, reducing downtime and providing a foundation for connected operations at IMI Aggregates.

"Twenty-four hour, seven days a week monitoring definitely helps with keeping an eye on the production and making us immediately aware of any issues," said Craig Gibson, manager at IMI Aggregates. "We chose Regal, as they are very innovative and have the engineering backing to build the product that we were after. We're gaining production due to less downtime when we do have issues with pump power, supply power or water levels."

When choosing this solution, the company wasn't looking for "bells and whistles," such as vibration monitoring or motor analytics. But if needed, those things are now possible. While the current solution is centered around monitoring the motor and pump systems, it also provides the foundation or platform for more extensive smart/connected quarry operation. There's no limit to what could be connected. When



ready, the customer can easily add information from their scale houses, record the number or truck loads leaving, track workers on their site, monitor electrical usage and more.

After a year in operation, the automated solution is running smoothly. In addition, the company has implemented this predictive technology in two other locations with multiple pump systems for web-based access to its plant operations.

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Our company is comprised of three operating segments: Commercial and Industrial Systems, Climate Solutions and Power Transmission Solutions. Regal is headquartered in Beloit, Wisconsin and has manufacturing, sales and service facilities worldwide. For more information, visit RegalBeloit.com