



THE RIGHT WAY TO APPROACH A TURNKEY PLANT UPGRADE

Glacier Northwest opened its Santosh Pit crushing plant in 1969. 37 years later, that plant has been replaced with a totally new plant that has state-of-the-art automated controls for the cone crushers.

1969 was a very good year. It was the year that the first artificial heart was implanted into a human. Neil Armstrong and Buzz Aldrin landed the first manned spacecraft on the moon. The Woodstock Music and Art Fair opened in upstate New York. The Boeing 747 made its first flight. And Sesame Street began airing on the Public Broadcasting System.

Meanwhile, a ready-mix concrete company started up a new crushing plant in a sand and gravel pit near Scappoose, Oregon. For 37 years, that plant just kept chugging along with its 1960s technology consisting of totally manual controls. Today, that plant is gone. It has been replaced with a complete turnkey plant that features the very latest automated plant controls. And it is doing a lot more for the company than just chugging along.

“This new plant has been a huge plus for us,” said Mark Liefke, vice president and general manager for the Oregon-Southwest Washington Division of Glacier Northwest, Inc. “The automation on the plant has had a major impact on our operation. It has saved us a lot of time and effort.”

The real-world economics of time and effort are obviously important to Glacier Northwest. The company is the largest supplier of ready-mixed concrete, sand, gravel, rock, cement, and building materials in the northwest part of the United States.

The company has grown steadily over the years and continues to look for opportunities to expand. According to Liefke, the Oregon/SW Washington Division currently operates 12 ready-mix plants, a large quarry site, a sand-dredging operation, four sand and aggregate outlet yards, a pumping business, two building-material stores, as well as the Santosh aggregate facility. The company's most recent change was its merger with California Portland Cement Company (CPCC) about a year ago.

The planning and decisions involved in a total plant upgrade

Liefke emphasized that the planning and installation of the new crushing plant was a team effort. "A number of people deserve special recognition for their planning and

hard work on the installation that helped make this a successful project. Among them are Clint Wilkins, our aggregate divisional manager; Mark Tougas, our Santosh plant superintendent; and Gene Northway, our assistant plant superintendent."

In addition to their own personnel, Liefke said the company also called on expertise from several outside companies, including Overly & Associates of Seattle, Washington, a firm that provides project-management services, and Balzer Pacific Equipment Company, a company that specializes in supplying production equipment for the aggregate, concrete, and asphalt industries.

Craig Overly said Glacier Northwest got his company involved immediately after they decided that the old 1969 plant had to be replaced. "We helped them decide what they needed to do logistically. We provided them with cost estimates for the entire project. We helped them get their

permits. And we got the whole project engineered for them."

Overly said they looked carefully at five or six options, including different locations, different plant layouts, modular plants, portable plants, and so forth. "We wanted to come up with the best fit—economically and operationally speaking—for this project. Because of several factors, we decided that a portable plant would be the best."

It was at this point that Balzer Pacific entered the picture. The company has been in the equipment business since 1928 and serves as a dealer for several companies, including Telsmith, Kolberg-Pioneer, Inc. (KPI) and Johnson Crushers International (JCI). Balzer Pacific had supplied Glacier Northwest's



original crushing plant back in 1969—and they were pleased to be able to help the company with this plant upgrade.

“We got involved about two years ago,” said Mike Allen, chief executive officer and chairman of Balzer Pacific. “We worked with Overly & Associates to come up with a complete turnkey plant that would provide Glacier Northwest with the three key things they said they wanted: increased tonnage, operational economy, and better quality control.”

The planning team decided that the tonnage the company wanted would require two Model 57SBS cone crushers from Telsmith, each of which would have one of the new TRAC 10™ remote automation control systems from Telsmith. The new plant layout would also include conveyors from KPI and nine screens from JCI. All of the equipment would be portable to facilitate moving the plant to another location if it became necessary or desirable.

Glacier Northwest approved the plans for the new crushing plant in January 2006. Just six months later, it was crushing rock.

State-of-the-art automation for the cone-crushing function

According to Allen, the crushing circuit of the new plant was designed to produce about 650 to 750 tons (590 to 680 tonnes) of crushed product per hour. “At this time, their input feed can run between 800 to 1,200 tons (725 to 1,090 tonnes) per hour because they are pulling out the round rock for concrete before it goes through the cone crushers.

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TRAC 10™ AUTOMATION FOR MONITORING YOUR CRUSHER OPERATIONS

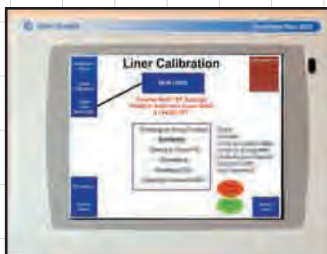
When Telsmith introduced the TRAC10 remote automation control system for its SBS cone crushers, the industry witnessed a major step forward in state-of-the-art crushing operations. The TRAC10 system monitors crusher operations, provides automated calibration and setting controls, and protects the crusher from overload.

As one user commented, “Having TRAC10 automation is like hiring an employee who is dedicated to looking out for the cone.”

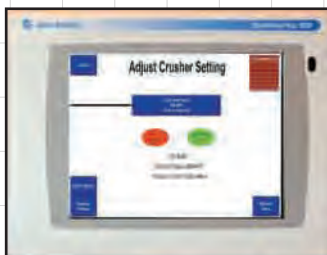
The TRAC10 system helps maintain the optimum crusher settings. The operator can initiate an automated calibration procedure via the touch-screen monitor. The settings can be changed at any time, even while crushing is in process.



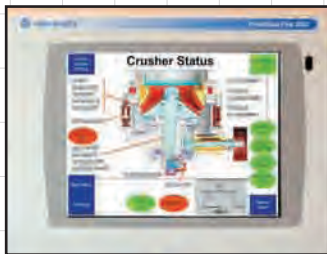
THE CRUSHER STATUS SCREEN is probably the most utilized screen on the TRAC10 system. It provides a great deal of information on a single screen: crusher setting; data on lubrication and hydraulic systems; percentage liner wear; hours of operation; and links to other screens.



THE ADJUST CRUSHER SETTING screen allows you to adjust the crusher quickly and easily. All that is involved in the process is just typing in a new setting. The crusher will automatically rotate to the new setting when it is entered... even while it is in the process of crushing.



THE LINER CALIBRATION SCREEN lets you calibrate the crusher from time to time to account for liner wear. The entire calibration process has been automated. And the system lets you know when liner wear reaches different points: 50%, 75%, 90%, 95%, and 100%.



A WARNING BANNER is displayed when there is an alarm of any kind. Some alarm conditions will automatically shut down the crusher, while others are only warnings of potentially troublesome conditions. Any warning banner remains there until the operator acknowledges the alarm.



THE LINER PARAMETER SCREEN is used to input data that pertains to liner thickness as new liners are installed. This allows the system to monitor liner thickness and provide a warning when liner wear reaches different levels (50%, 75%, 90%, 95%, and 100%).

They intend to work the plant four 10-hour days per week, instead of the 10 to 12 hours per day, 6 to 7 days per week with the old plant. Their productivity has improved substantially.”

Both of the TelSmith cone crushers are automated with the TRAC 10 system, a stand-alone remote-control system that monitors crusher operations, provides auto mated calibration and setting controls, and protects the crusher from overload. Allen explained the control system’s computers start up the motors in the crushers and then provide precision control while the crushing operation is underway. “The raw material is gravel that has been washed down the Columbia River,” said Allen. “Most of it is basalt. It is a hard, abrasive rock—which is why they really needed the TelSmith cone crushers.”

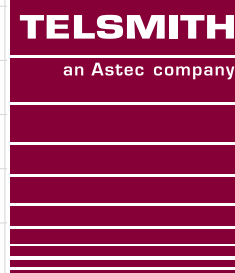
Allen explained that the feed to the crushing plant varies. Glacier Northwest is mining a gravel deposit that is both above and below the water level. Because of that condition, manual operation can lead to problems if the operator should happen to unknowingly provide the wrong feed to a crusher at one setting when the crusher should have been at another setting. “With a conventional manual operation,” said Allen, “the operator has to be very diligent in watching amperage draws and checking gradations. If he isn’t careful, he can have some problems.”

And that is where the TelSmith TRAC 10 automation control system helps. It opens up the crusher automatically if necessary while giving the operator that information so he can rebalance the plant.

The new automated controls have made a definite impact on Glacier Northwest’s operations. “The plant has met or exceeded our expectations,” said Liefke. “We are hitting our projected budget numbers for production. And our production costs have been in line with what we wanted. So far, so good. We are very happy.”

When asked if he would recommend state-of-the-art automation to other aggregate producers, Liefke was very positive: “Yes, I would recommend it. The automation has made our crushing circuit more economical by increasing efficiency and control, plus it lets our operator monitor the entire crushing operation from one location. It also eliminates most of the back-breaking labor that was common with the manual plant—and that has had a very positive impact on the guys who maintain the plant. “Our new plant has been doing everything that we wanted it to do.

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