

Maximization



Before and after photos of Baker Rock Resources' parts area.



Baker Rock Resources tracks each hour of a component's use so it knows when that component is scheduled to be replaced.

BY VIRGINIA DEMAREE JOHNSON

Baker Rock Resources' employees do a variety of jobs at five locations around northwest Oregon, from mining rock to paving roads to creating signs. What these varied efforts have in common is a data-focused business approach to improve operations, collect information and reduce costs.

"We have a huge diversity of equipment doing different things all over the place," says Brian Young, Baker Rock's equipment division director.

Since September 2012, the company has used the principles of Total Process Reliability (TPR) throughout its operations. According to Baker Rock, TPR is a structured business approach that targets equipment efficiency and asset management. TPR builds on the work of a Japanese engineer named Seiichi Nakajima, who emphasized improving quality through equipment efficiency.

One company that specializes in helping others use TPR to increase equipment uptime and lower repair costs is TBR Strategies, a Raleigh, N.C.-based consulting firm. Baker Rock President Todd Baker first thought about using TPR when he heard Preston Ingalls, president and CEO of TBR Strategies, describe the process during a workshop.

“With TPR, we have so much more information today and so many different things we’re looking at,” Young says. “With so many different tools, we’re able to manage so much better.”

Getting started

Baker was a member of a peer group whose companies had improved using TPR, but he knew everyone in his company needed to be ready to achieve such change. Baker Rock employs about 100 people most of the year. The family-owned company started nearly 60 years ago with quarry operations in the 1950s. It added trucking and asphalt operations along the way and has a highway sign shop now, too.

Baker says he wanted to be sure his company was ready to reap the benefits of TPR before he committed the company to it.

“I knew from talking to people in my peer group that it was a big undertak-

ing and not something you just implemented and then forgot about,” he says. “That’s one of the reasons I waited for a little while. I didn’t think at the time we were ready or that everybody would embrace the change.”

Baker says he was initially drawn to two parts of TPR: the improved system for organizing repair and storage facilities and the operator care program, through which an employee who operates a piece of equipment takes on a bigger role in caring for it.

“That means operators knowing and being responsible for their equipment,” Baker says. “I think historically, when the company was smaller, it used to be that way and we had gotten away from that.”

Using TPR, the company created a workshop system where every tool has a place, and everything is labeled. This saves time and effort previously spent tracking things down.

Ingalls teaches companies how to use the 5S system, a process for organizing a workspace and keeping it in good order. The process includes several steps, including sort, set in order, shine, standardize and sustain. Each step covers an entire process a company can go through to maximize organizational efficiency.

Further improvements

Much of the improvement in the company’s shop had already been accomplished when Young arrived about a year ago to lead the equipment division. The company’s next task was to extend this improved organization to its warehouses and parts storage.

“The technicians would just wander around and sort of know by memory where something might be, and it was located in a few different places,” Young says.

Now, parts are in one central loca-


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tion, and technicians can use a computer system to check for spares.

“Everything is counted weekly and we have an inventory management system, so the parts department has changed dramatically,” he says.

Changing maintenance practices is another key component of TPR. The goal is to reduce maintenance costs and increase equipment uptime by using data to determine the most efficient ways to use and maintain equipment. For example, companies track when a part will wear out or need lubrication. Then it can use preventive maintenance to keep the equipment running, reducing time and money lost on emergency repairs.

Baker Rock has all kinds of equipment – from mining equipment, to



Baker Rock President Todd Baker

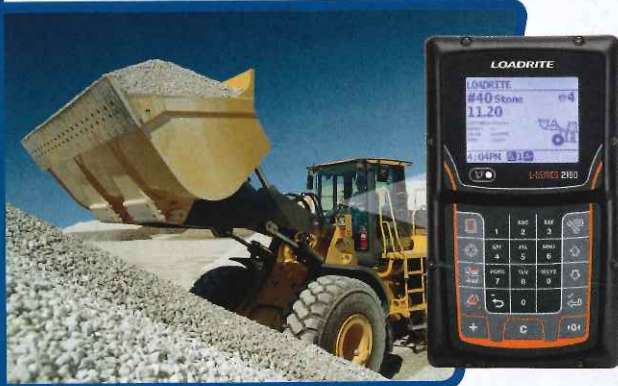
trucks for hauling aggregate and asphalt, to spreaders, pavers and bulldozers. The company created predictive charts for each piece of equipment and its key components. Using a manufac-

turer’s recommendations and data drawn from its own experiences, the company predicted the life of each component. The company tracks each hour of use so it knows when that component is due to be replaced and so it can avoid running it to destruction.

A work order is generated each time maintenance or repairs are done, so Baker Rock can track costs in greater detail. The company uses software systems to track these costs and has a GPS-enabled system that can track where equipment is and when it has downtime.

“We’ve created a lot of charts where we’re analyzing cost per hour, so we’re looking at what a piece of equipment is actually costing us so we can decide whether to rebuild or replace it,” Young says.

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Increased efficiency

According to Baker Rock, improving maintenance efficiency has been one of its biggest TPR successes. The company says it has reduced its emergency downtime to less than 5.5 percent. Even with running two shifts through the busy summer season, the company kept emergency downtime to 7 percent. This allows the company to keep projects on schedule, fit more work into the season and increase profitability.

The man-hours spent on emergency maintenance were 50 percent from 2009 to 2013. That has dropped to 5.5 percent so far in 2014.

"In the past, the company didn't track the numbers; [it] flew by the seat of their pants," Young says. "Now we have the ability to measure, and we're making good business decisions based on hard data. That's helping us tremendously."

Dedra Oliver, the TPR coordinator for Baker Rock, says the program's prin-

ciples are becoming an ingrained part of the company's culture. While initial efforts focused on the main facility in Beaverton, Ore., employees in other locations started to apply principles such as 5S and operator care for equipment, she says.

"One of my favorite things about the TPR process is getting the employees more involved and using their ideas to help better our company because they ultimately know what tools they need to make their job more efficient," Oliver says. "We have recently taken the team approach to help design the new layout of our main facility. This will get employees involved and using their ideas on how to lay out a better functioning facility."

Young said that part of TPR's value is its adaptability. TPR provides a set of standards to aim for, based on best-in-class and world-class ratings. Companies can research the tools that are best for its individual situation.

TPR can also be used across the company, Oliver says. For example, Baker Rock's administration department developed 60 process flow diagrams to streamline its work, and the trucking department created process flow diagrams to help teach operators how to move equipment safely. The company applied TPR analysis to its computer-purchasing program and now has a scheduled plan to replace computers, which saves money and avoids emergency repairs trying to keep old machines going.

Current efforts are also focused on plant efficiency for the crushing and asphalt plants, measuring overall equipment effectiveness, component history tracking, and failure modes and effect analysis. **P&Q**

Virginia Demaree Johnson is a freelance writer and editor based in Raleigh, N.C. She has more than 12 years of experience as a reporter, editor and copy editor at newspapers in North Carolina and Virginia and for The Washington Post.

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