



## CONSTRUCTING A CULTURE OF **TOTAL PROCESS RELIABILITY**

*How S.T. Wooten Corporation redefined equipment management to improve fleet issues*

BY E. VICTOR BROWN

For any heavy construction company, it is the synergy between people, processes and equipment that determine whether it will flourish or fade. Clearly, equipment maintenance and uptime are what determines that synergy. Consequently, lowering the major costs of equipment maintenance, while dramatically increasing uptime, are challenges that require a companywide cultural shift in terms of improving and capitalizing on that synergy.

For North Carolina's S.T. Wooten Corporation, the ongoing journey to achieving that goal started like that of most of their peers throughout the country. Without a reliable, detailed and thorough process in place, maintenance processes were reactive, rather than being proactive. The implementation of total process reliability (TPR) principles has become the framework for changing the culture of their company. As a consequence, it has helped the company develop maintenance control processes that are making it more competitive and profitable.

S.T. Wooten specializes in heavy highway construction, design-build and commercial site work, along with ready-mix concrete and asphalt materials. The company's scope ranges from small to large civil and

commercial infrastructure projects across North Carolina and other southeastern states.

The company encompasses 17 ready-mix concrete plants, 11 asphalt plants, maintenance shops, commercial construction offices and 950 employees across Central and Eastern North Carolina. While S.T. Wooten is known for its high-quality work, it has dealt with the same equipment maintenance and cost challenges that plague its peers. With a large diversification of equipment, divisions and jobsites, equipment maintenance and uptime had become problematic and costly. In addition, it had become difficult to maintain the proper replacement cycle of the company's fleet. The result was an abundance of old and extra equipment.

Although the heavy construction firm had begun a strategy of retiring and disposing of all of the excess equipment, the scope of the initiative in terms of maintenance protocols and associated functions posed an unwieldy challenge. The interrelationship of S.T. Wooten's challenges and goals was not lost on President Chris Wooten, who had seen the company struggle with a unified approach. The multipronged,

interrelated goals included reducing emergency maintenance and increasing preventive, predictive and corrective maintenance.

### ASSESSING CHALLENGES

By fall 2013, Wooten knew they needed a different approach to tackle the challenges in a holistic way. Upon recommendations and a thorough vetting process, he engaged the services of TBR Strategies, a North Carolina-based maintenance and reliability consulting firm, which would bring its customized TPR approach to bear in tackling the problems.

The TPR process was adapted from total productive maintenance (TPM) principles devised by Japanese Engineer Seiichi Nakajima. TPM principles enabled companies to learn how to increase equipment reliability, decrease downtime and create a unified asset management process.

“The TPR methodology would facilitate tackling our ongoing process challenges in a unified way to reduce equipment costs and maintenance challenges while increasing efficiency and uptime,” said Wooten.

With so many divisions having such diverse needs, the company worked with TBR to adapt the process to their specific needs. The first step was a full maintenance effectiveness assessment (MEA) of the entire company in late 2013. According to S. T. Wooten CFO Doug Godwin, TBR’s approach was based on facilitating cultural change as well as process change, which was paramount for the company.

### GROUNDWORK FOR PROCESS & CULTURAL CHANGE

Based on the MEA and a customized TPR approach, S.T. Wooten

established a steering council comprised of the company’s vice presidents to oversee the companywide process. Implementation teams made up of upper management from various departments were formed to tackle specific improvement development plans for each division.

Once the steering council vetted and approved the plans, they developed task teams formed around specific tasks and goals to be accomplished. “The task teams consisted of a cross section of people throughout the company, and based on our different tasks, we ended up with 23 teams that set goals and timelines with monthly meetings,” said Equipment Division Manager Brett Wilber.

Simultaneously, a TPR division was created and tasked with the overall responsibility of running the TPR program companywide. “Our goal was to uncover and deconstruct core company process structures, and rebuild them in a way that facilitated constant and ongoing improvement,” said Wooten.

Utilizing MEA data, the company began creating process flow diagrams (PFDs) and standard operating procedures (SOPs), while responsible, accountable, consulted and informed (RACI) charts were created to identify the responsibility and accountability roles in maintenance and repair process completion in the form of process guides. These online and print tools enabled an organized, step-by-step process and role structure for everyone to follow, which was supported by infrastructure and technology upgrades.

### OPERATOR CARE

The centerpiece of the S.T. Wooten TPR approach is its operator care (OC) program, which trains equipment operators to monitor, maintain and perform regular maintenance. This program also includes





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corrective maintenance and emergency maintenance repair categories as the basis for assigning incoming repair incidents.

As evidence of the customized nature of the OC program, the ready-mix division added equipment specialists to look after the mixer fleet, evangelize and support OC to the operators, and provide support to the mechanics of the equipment division. This includes crafting master equipment repair lists and working directly with the fleet foremen. Ready-Mix Division Vice President Jeff Radack explained the importance of the division's OC approach and its outcomes.

"We've seen a dramatic reduction of the amount of concrete chipping and scaling that has to be done on these trucks prior to a repair, which often tied mechanics up for half a day," said Radack. "Like all aspects of OC, it requires regular operator training and auditing to ensure that these improved processes are consistently performed."

## PLANNING & SCHEDULING

Preventive maintenance (PM) protocols are divided into five categories with different levels of performed maintenance. "The PMs currently apply to the company's Class A (critical fleet) equipment where we provide the training, protocols and kits for the

repairs," said Wilber. This is accomplished through planning and scheduling.

## THE ROAD TO CULTURAL BUY-IN

Companywide process and cultural change cannot be accomplished without buy-in from all levels of the company. To ensure program success, question and answer meetings were conducted to facilitate employee input and further refining of the OC program. "We started doing team interviews, involving everyone from management to labor, so that they had a stake in how this thing worked so we could instill a sense of ownership rather than just a mandate," said Wilber.

Vice President of Equipment William Hammock said the company began TPR because the team knew it needed to look at its business differently. "TPR provided a structure we could repeatedly utilize to make improvements to our current processes or develop new processes to further streamline our efforts. The result is maintenance and operations divisions that now share common goals designed to allow us to operate in a more proactive manner."

To overcome challenges, equipment division leaders headed up training and retraining where needed for each plant and division. According to Radack, that



buy-in required total commitment and involvement from division vice presidents and managers: "Accountability is everything, so if the VPs aren't fully onboard, managers will also lack full commitment," said Radack. "If they aren't positive, upbeat and willing to go out there and look at the equipment, ask questions, find out why OC is not being performed and holding their managers accountable, it's not going to work. It's not just the TPR department's responsibility. Supervisors needed to explain that OC can mean the difference between a \$50,000 repair and a \$1,500 repair."

### BENEFITS OF A TPR CULTURE

While the TPR department and ownership are instrumental in keeping the TPR program at the center of the company's daily culture through regular audits, division vice presidents reinforce the support network for employees across the company. Monetary incentives for passing OC audits provide additional motivation for operators. "Our goal is to help them understand that they are a key part of helping the company lower costs and improve uptime as opposed to being just operators," said Wilber.

As the centerpiece of the TPR program, OC includes the elements of clean, lubricate, adjust, inspect, repair and eliminate (CLAIRE) and equipment improvement team (EIT) training, as well as "5S" events (sort, set in order, shine, standardize and sustain). In this training, five-person teams are assembled from different divisions across the company that work together for a week with equipment and facilities to learn how to transform them to a high-quality condition. The benefits go far beyond uptime, cost reductions, higher maintenance standards and organization.

### THE RESULTS

With S. T. Wooten currently in its fourth year of TPR, results include:

- Reduced emergency rate from 50 percent to the current 6 percent
- Millions in savings

- PM compliance rate of nearly 100 percent
- Significant reduction in fleet size
- Increased uptime and operational quality
- Reduction in the total maintenance cost against the total replacement value of equipment from 30 percent to the current 14 percent

As to equipment rotation based on residual value versus the repair costs, the company has dramatically increased rotation with a higher resale value since it is better maintained and rotated long before end of life. This has enabled the company to narrow its vendor list, get better vendors and control parts inventory. Fewer vendors has also allowed the company to leverage its purchasing power to improve pricing.

As part of the TPR approach, the company transferred its light fleet needs to a lease management company to streamline costs, freeing up Wilber and improving efficiency and fleet performance. "We've been able to eliminate one of our two shops, and improve morale by providing newer trucks on a 3-year cycle rather than running vehicles for a decade and logging well over 200 thousand miles," said Wooten.

With TPR seeing steady improvement and buy-in across the board, the company plans to cut events from 18 per year to 12. The goal is to bolster communications and incentives in order to increase compliance and accelerate process improvements. The OC standards have been streamlined to increase efficiency.

TPR now permeates all aspects of the company as a methodology for solving any type of challenge. Small teams are now regularly formed to tackle challenges beyond maintenance and make informed decisions quickly and with surety. **CBO**

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