

Software Monitors Spindles, OEE for Incentive Payout

For the Advanced companies (Owasso, OK), FactoryWiz Monitoring software from Refresh Your Memory Inc. (San Jose, CA) is monitoring spindle utilization OEE and providing a baseline to evaluate company performance for its employee incentive program. The Advanced companies—Advanced Plastics Inc. and Advanced Machining and Fabricating Inc.—are contract manufacturers that machine titanium, nickel alloys, Monel, 15-5 and 17-4 stainless, PEEK material, cast nylons, engineered thermoplastics, carbon fiber, and Inconel for the aerospace and defense and oil and gas industries. A shop's overall equipment effectiveness (OEE) score is determined by availability, efficiency, and quality and is an important measure of actual machining time.

"We have spent a great deal reinvesting in our equipment over the last 15 years and into multitasking equipment," said S. Scott Shortess, president, Advanced Plastics. "Our approach is to integrate a pallet system with a horizontal machining center and a five-axis machine. We believe this type of manufacturing configuration enables us to compete in the extremely cost-sensitive aerospace industry and business jet submarket. Typically, our parts are small in nature, and very complex with a very tight tolerance. Work envelopes of our machines handle parts 12 x 24 x 7" [305 x 610 x 178 mm]. That's about the biggest workpiece that we run. We process up to 7" thick titanium on the waterjet," said Shortess.

About three years ago, Advanced implemented an incentive plan, something management had been talking about for years. Last year, Advanced installed FactoryWiz Monitoring software to get real-time information to control the shop more efficiently and evaluate performance objectively. "What we needed was a way to validate our OEE score for spindle utilization," said Shortess. "FactoryWiz gives us the



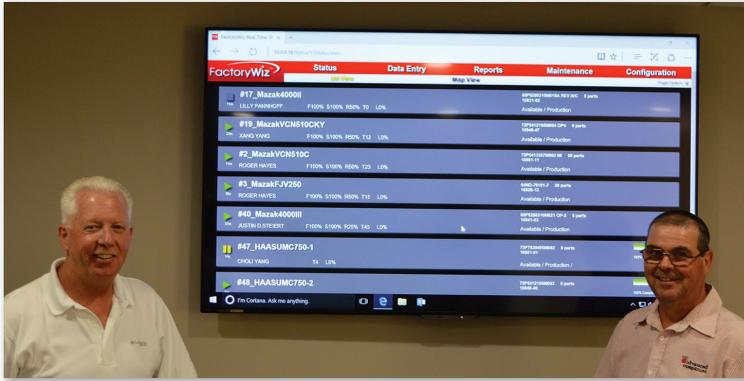
Tablet with FactoryWiz monitoring being used by Forrest Vaught, CNC programmer, at Advanced Machining & Fabricating.

ability to loop back and compare estimated time to run a job, especially ones that you haven't quoted and run before, with actual performance. That's where the profit is and that's where FactoryWiz is so effective," said Shortess. "But first we had to establish a baseline and needed the ability to verify the OEE score we had determined manually. We needed to know our current state in order to create a plan that we thought was quickly attainable."

Advanced companies have 55 employees in both Advanced Plastics and Advanced Machining & Fabricating. All employees participate in the incentive plan. "Our incentive plan is pretty straightforward," said Shortess. "We want employees to know exactly how they can affect the company's results in a positive manner. There are four considerations: customer returns, on-time delivery, scrap as a percentage of sales, and the OEE spindle utilization."

SHOP SOLUTIONS

The results could not have been more eye-opening when Advanced installed FactoryWiz Monitoring software to monitor its machine spindle utilization. FactoryWiz provided the ability to spot trends as they happen. Real-time information monitored includes productivity, idle reason tracking, offset tracking, and preventive maintenance. "Each is weighted at 25% in this phase. During our next phase of implementation, we will begin adjusting the weights of the KPIs to align more closely with the department's contribution to each individual metric," said Shortess.



FactoryWiz machine status page at Advanced Machining & Fabricating, President Kim Parrish (left), Jeff Rogers, CNC programming manager.

Information is displayed on 10 large screen monitors that are strategically located throughout the shop where leads and operators and other personnel can easily view them. Other screens are located in the programming/planning area, in the production manager's office, tooling, scheduling and the break room, among others. In addition, 12 wireless tablets are available to monitor machine spindle utilization, and the plan is to position one tablet at each workcenter.

"Leads and operators can easily view the shop floor and their groups via the large screens which make them aware of their program/production scheduling OEE score. It's like an on-line Pager, with visibility for each piece of equipment," said Shortess. "Visibility first and foremost gives us the ability to take steps to become lean. A Shop View Map on the large screen display contains a CAD drawing of the shop with all 21 machines that are monitored. Each machine is Green if running, Blue if idle, and Red if in an alarm state.

"The FactoryWiz Monitoring escalation of notifications feature is extremely valuable when dealing with alarms and

idle equipment. We follow a 10-10-10 minute rule to get the experts involved who can resolve a problem," said Shortess. "We set the Red alarm escalation at 10 minutes which means the first notification is to the operator; after 10 more minutes the lead is notified, and after half an hour, if the problem still isn't resolved, the president gets an e-mail and walks out to the shop floor. That's powerful incentive to resolve the problem as quickly as possible," said Shortess.

"The bottom line of the incentive program is to get the results that you're planning for, measure them in a very objective way, and reward the people that are doing the work. We do have an on/off switch governing the program. If the revenue threshold level for the quarter isn't reached, then there is no payout for that quarter." Advanced has paid out an incentive for 12 straight quarters since it started the incentive program.

"What we're trying to do with FactoryWiz Monitoring is identify the reasons why a machine is idle and not running and be able to generate continuous improvement activities based on the analysis of those reasons. One refinement to our program has been to start adding team-based metrics around our day shift and night shift operators. It will require better communication and teamwork between our day and night shift operators who will be scored on their OEE," said Shortess.

"FactoryWiz has direct native Ethernet connections to Advanced CNC machines, including Mazak Matrix and Fusion controls, FANUC Focas, Haas, and a DMG Mori with MTConnect. Native Ethernet connections (including newer Heidenhain, Mitsubishi EZSocket and Okuma THINC) can be utilized for monitoring as well as for sending/receiving files. FactoryWiz DNC has a built-in FTP/FANUC Focas software module that is greatly improved over RS-232 communications. Simplified training is achieved because we have standardized practices to make sure operators have the same look and feel on each machine," said Shortess. ➔

For more information from Refresh Your Memory Inc., go to www.factorywiz.com, or phone 408-224-9167; for more information about the Advanced companies, go to www.advcosinc.com, or phone 918-664-5410.