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## Technology: The Secret Life of the American Factory

[IndustryWeek](#)

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Earlier this year, two 60-inch monitors appeared over a couple of machining stations at Mazak's Florence, Ky., machine tool plant.

They didn't display anything groundbreaking, just a simple real-time feed of the output, uptime and overall efficiency of the machines. Exactly what you'd expect.

Mazak had just begun a total technology overhaul in Florence, building what will eventually become a very impressive, very sophisticated plantwide top-to-bottom connected system that links together all 58 of its machine tools, grinders, lasers, robots and systems.

This was its first test: 15 machines wired together through their open MTConnect protocol, feeding massive amounts of data into a powerful new industrial analytics program, the results of which were displayed right overhead.

It's all textbook advanced manufacturing stuff, really, but it created a new experience for the workers on the floor.

While management played around with reporting platforms and behind-the-scenes functionality of the software, the operators were left staring at these giant screens, watching their efforts pay off in real time for the first time.

"For the first month, we didn't do anything but put those monitors out there," recalls Ben Schawe, vice president of manufacturing at Mazak. "All it did was show the operators how their actions affected the utilization of the machines -- whether it was changing tools or running over to change parts on a machine to keep it running."

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The key to productivity, he says, is to keep the spindle of the machines running as long as possible. So he showed the operators how long they were helping them run.

And that had a curious effect.

Without any additional training, without making any changes, without management really lifting a finger, those operators increased their utilization of their machines by 6%, independently, in under a month.

That was just the beginning.

## New Data: New Fruit

"This is the promised land," says Doug Woods, president of the Association for Manufacturing Technology and MTConnect champion.

"At the end of the day," he explains, "after you've invested in hardware and machines, at some point it all comes down to how do you wring the maximum amount of productivity out of them? How do you get the ultimate efficiency out of the facility?"

The only way to be confident you're doing that, he says, is to really understand what is going on with all of the equipment in the factory all of the time. And that, he says, comes down to having "really good data."



And that is what makes Mazak's Florence

experiment so exciting.

After 95 years of manufacturing state-of-the-art machine tools and perfecting its manufacturing processes down to the leanest detail, Mazak seemed just about as efficient as it could get.

So, as with any other efficiency-minded team, Schawe's crew spent their time focusing on incremental increases, shaving seconds off jobs, streamlining workflows, optimizing efficiencies wherever they could -- fighting for every half percentage point improvement they could get.

Because that's how it works once all of the usual "low-hanging fruit" has been picked, Schawe says: You fight your way along, tightening up everything you see.

When he hit the switch on that first machining cell, however, the data told a different story.

"In terms of basic machine utilization and plant efficiency, we thought we had a pretty good idea where we were," Schawe says. "Turns out we were wrong."

Suddenly Mazak's new system started spitting out reports highlighting layout issues, staffing problems, part irregularities, training issues and programming errors that had gone on unchecked and undetected for decades -- a whole new forest of low-hanging fruit ready for the picking.

Once they showed up on the radar, it provided Schawe with the opportunity to make improvements to the cells that impacted the entire factory. In an industry marked by incremental improvement, he was able to pick up a 17% utilization increase just by picking off the ripest, most easily accessible morsels.

And now, he says, the real work begins.

"The low-hanging fruit is easy. You can grab that in the first few months. But after that you really have to start digging down to see what are the root causes to see what you have to do to improve the utilization."

"That," he says, "is where we head next."

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