



by Jimmy Myers, senior editor

INTELLIGENT SAWING

A new approach to software and monitoring technology offers insights into the sawing process



Automobile owners no longer rely on the mileage stickers on their windshields to know when it's time for an oil change – the technology built into their cars tells them. For owners that fail to adhere to a proper oil change schedule, an alert on the dashboard offers a nagging reminder until, finally, they concede and take it in for service.

Fortunately, the day has come when bandsaws can do the same to “nag” an operator when it's time to perform a hydraulic oil change. And that's just skimming the surface of what new technologies can offer.

The era of preventative maintenance, while already on the rise in machine shop applications, is becoming part of the Industry 4.0 movement in bandsaw technology for one company in particular: HE&M Saw. As Doug Harris, president of HE&M Saw, knows, saw operators can procrastinate as much as anyone when it comes to changing oil.

“Something's not operating right,” is a phrase Harris hears often from operators who have had a saw for several years but never changed the hydraulic oil. What they might not understand is that as oil is heated, cooled and exposed to air over and over, condensation eventually works its way in, creating a substance that can foul up the machine. Because of this, oil needs to be replaced, at the very least, once a year.

To help operators stay on top of maintenance duties, Harris and his team of engineers created a software solution called Smart Saw Connect (SSC). The software can be embedded into the saw, so “it will talk to you and let you know it's time for service.” But that's only a fraction of what SSC brings to the table.

GETTING CONNECTING

HE&M Saw designers undertook the SSC project to provide customers with more information on many aspects of their saws, from when it's time for an oil change or a blade change to



Manufacturers using equipment such as the VT120 vertical bandsaw can use Smart Saw Connect to gain many insights into how their saw is operating.

operator productivity and many other features. This allows managers to do more offline to gain visibility into their processes, maximizing the utilization of equipment.

The software is built to be compatible with MTConnect, the non-proprietary manufacturing technical standard designed so data can be exchanged

between software applications and equipment on the shop floor.

Max Harris, head of engineering at HE&M, said MTConnect is designed to allow machine tools to speak a common language for the purpose of visualizing efficiency and data, and it's becoming the standard in the United States for all CNCs. →



Max said HE&M wanted to make sure it was not only staying on top of what others in the industry were doing, but also leading the pack in offering many different features, particularly those related to Industry 4.0.

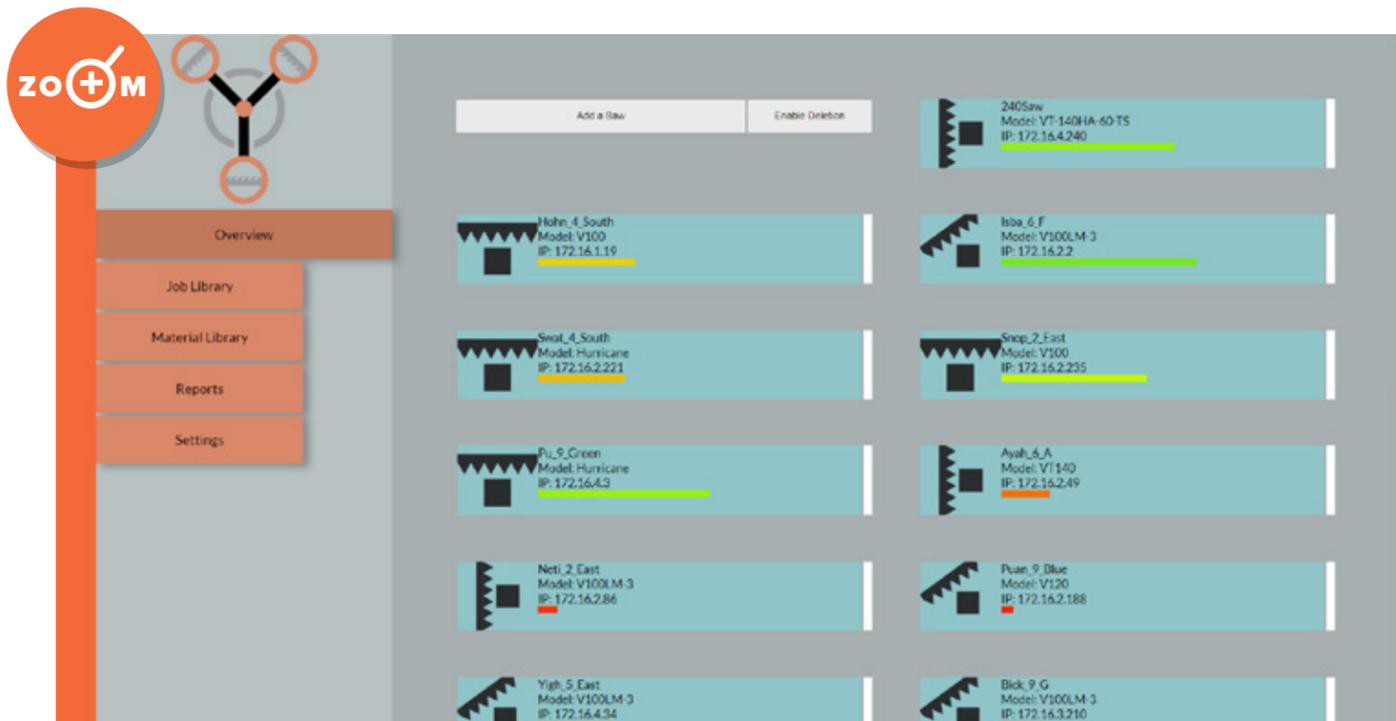
“Industry 4.0 isn’t so much about data,” Max says. “It’s about flexibility – being able to see what your current processes are and how you can speed them up or make them more flexible.”

SSC allows managers to see how many cuts they’re getting over a specific period of time, how many parts they’re putting out, how fast they are doing it and to identify where issues occur that keep them from reaching their production goals.

“This is mostly intended as a method to be able to determine where your bottlenecks are and how you can improve efficiency,” Max says of tracking production goals.



Watch the video to learn about HE&M’s VT100LM-60 vertical metal cutting bandsaw.



Utilizing the right software, manufacturers gain more visibility into their entire production process.

TESTING THE MARKET

HE&M debuted a version of SSC at IMTS this summer, and Fabtech attendees got a peek at it in November, but it’s currently in beta testing and a full release isn’t expected until the middle of 2019.

Doug explains that in developing a smarter product, artificial intelligence (AI) has become part of the package, and as more and more data is

gathered, they’re learning how to translate that into information that managers can find useful.

“Every time the bar feeder is moving – it’s learning,” he says of the AI. “We put learning routines into this (software) so it knows what’s going on. We’re trying to develop more and more intelligent pieces of equipment ... that’s why we have to have our beta sites.” →



Looking at what machine shops are doing with their equipment has validated Doug's vision of what SSC will do for HE&M customers. For example, it is common for a machine shop running at 35 percent efficiency to be classified as "good," whereas a shop running at 45 percent efficiency ranks as "outstanding." SSC is prepared to redefine "good" and "outstanding" for saw operators.

"One machine shop I visited said they were operating as low as 30 percent," he recalls. "After creating their own (monitoring software), they were at about 70 percent. It is validation on what we are doing with SSC."

GAINING ACCOUNTABILITY

A manager can walk through a shop and see saws running, parts being made and everything seemingly going as planned – but they don't know exactly what's going on with the numbers. In most cases, a manager won't know the numbers until the end of the day. SSC brings a reporting tool to the table that

gives real-time answers to provide actionable insights regarding productivity.

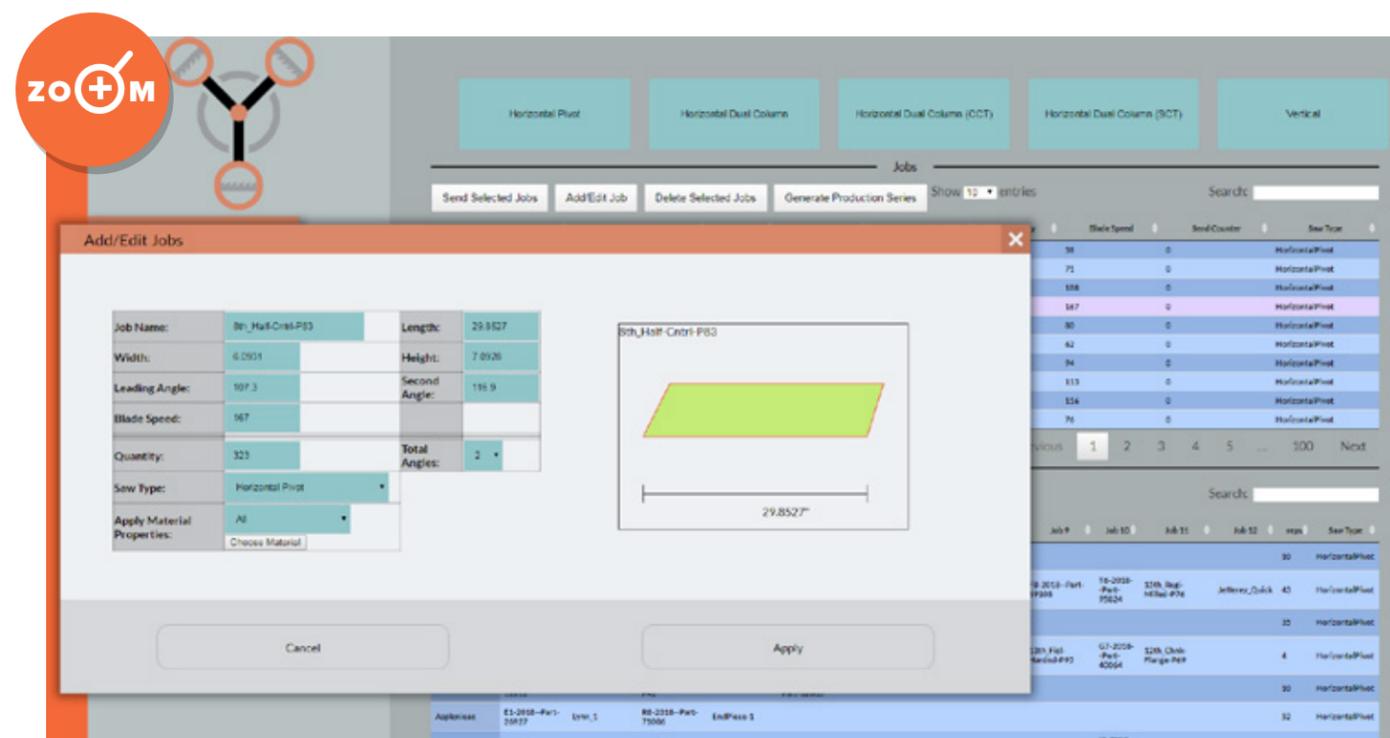
For example, if the projected parts total on a saw is set at 500 and only 300 parts were made during a shift, SSC reveals the source of the bottleneck. Perhaps the saw sat idle for three hours or a blade broke causing downtime – those problems would be picked up by SSC and included in the report.

Another proactive aspect of SSC is that management can be alerted when a problem occurs. If a blade breaks or a bar feeder malfunctions, an alert can be sent to management, giving them the information they need to get on top of the problem and avoid further downtime.

It's not always a problem with the saw, and SSC is also able bring light to that. For example, an operator can be told what is expected of them and have all the tools at their disposal to get the job done, but still fail to perform. →

"We can see today that companies that have looked toward the future are flourishing. Those that have not, are perishing."

Doug Harris, president, HE&M Saw



With an easy-to-use interface, operators have access to all their cut lists and can program custom cuts if needed.



The Industry 4.0 movement is making its way throughout U.S. shop floors, including bandsaw technology, such as HE&M's Smart Saw Connect.

Doug says they are working toward developing the software to give information to management that reveals such things. As he says, "you can tell somebody what's expected of them, but unless you track it, you can't quantify what they've done."

But can this level of monitoring impact employee morale? Can this level of accountability work against productivity? These are questions Doug is quick to prove have no standing in today's market, mostly based on the fact that manufacturers aren't just competing on a local, regional or national level – it's global.

"There is always that fear," Doug says. "It's like when we get a robot. We tell people it will actually give you better job security because it keeps us more competitive in the marketplace. The way I explain it to my employees is we have to be competitive in the workplace – that's where it goes back to being efficient – we have to be more efficient. This will protect your job – not take away your job."

FUTURE EXPECTATIONS

In the end, it's really all about return on investment, which is why customers that buy a saw today expect more out of it than the one they bought 10 years ago.

"We've got to see greater productivity," Doug says, repeating what he hears customers say over and over these days. He also adds that advancements in sawing tools is less about mechanical engineering and more about improving software that can gather data, and this has already led to improved safety.

While today's saws essentially do the same thing as yesterday's saws, which is cut material, they are doing it safer due to the data the industry has gathered on the process. In the past, Doug estimates that an extremely high percentage of sawing accidents occurred when a piece was cut and the operator reached in to grab it while the blade was going full speed. He

says those kinds of accidents are actually rare now because the speed is drastically reduced following a cut, lessening the chance of an extensive injury.

"So by using this intelligence now," Doug notes, "we have created a safer piece of equipment. What we see now is that it's becoming very rare that there is an injury from a saw blade."

Following the trajectory of the "Internet of Things" and Industry 4.0 is about more than just following trends. Doug, who was raised in the San Francisco Bay Area, had it ingrained in him early on that those who don't constantly look to the future are phased out. →

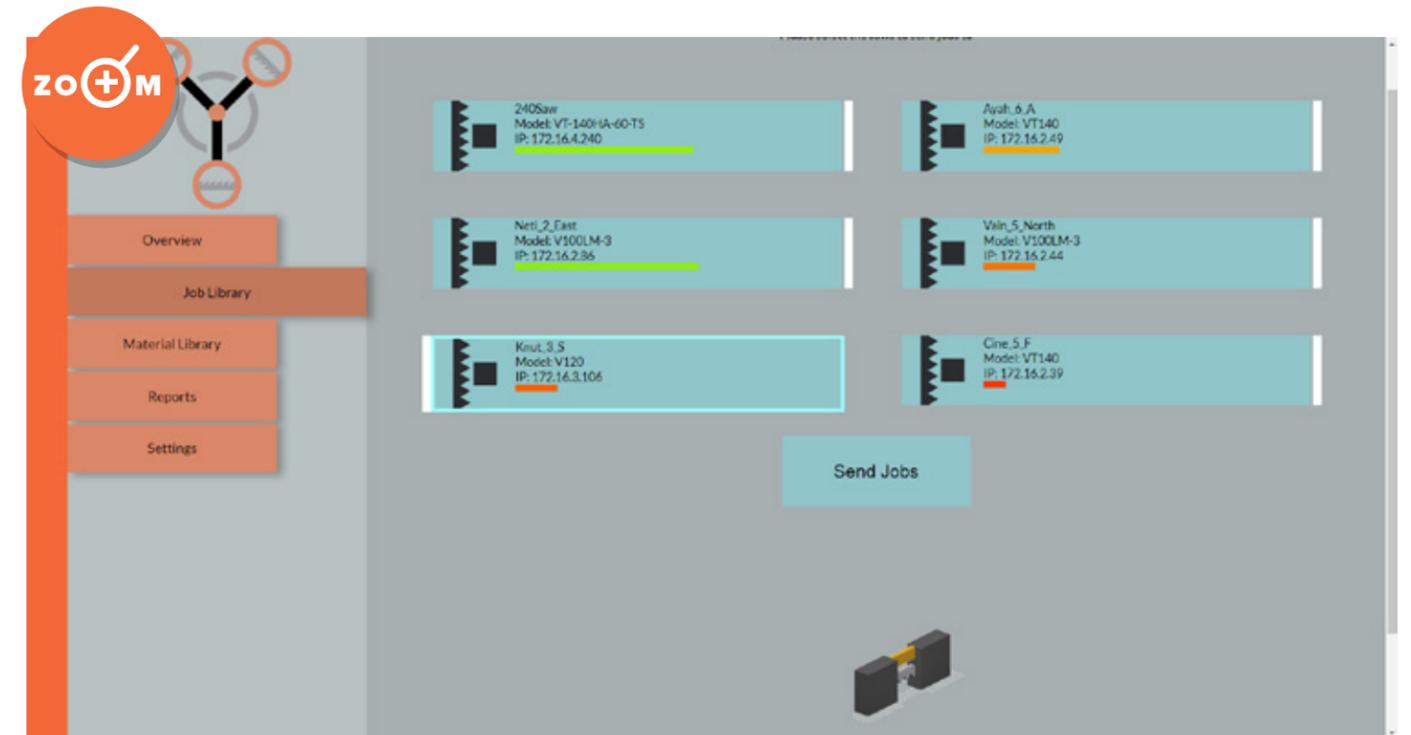
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HE&M engineers designed software tools that manufacturers need to pinpoint problem areas and make fact-based decisions about improving productivity.

“Going to college in San Jose and growing up in the Silicon Valley area,” Doug says, “I realized you always have to be looking toward the future. We can see today that companies that have looked toward the future are flourishing. Those that have not, are perishing.”

In that spirit, Max says the team at HE&M continues to work on SSC with more to look forward to in the near future.

“This is a small portion of what SSC is capable of,” he says of what they shared

with *Sawing Productivity* thus far.” The HE&M Saw team is working toward creating a way to not only program the machines remotely, but eventually optimize cutting jobs along with schedule cutting operations to minimize waste of raw bar stock. We are hoping to lead the way into the future with a truly smart saw.” ■

HE&M SAW 