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How small shops can start the march towards digitalization

Recently, I was asked what smaller shops, mold-makers and tool-makers can do to begin their march towards digitalization. I think the first thing is trying to get knowledge. It may seem old-fashioned, but one very important first step is reading the trade magazines. They demonstrate much of the emerging technology, often with real-world examples of shop-floors who are actually implementing it. Then, dedicate one person at your shop to learn about digitalization. It should be someone in your organization who has an open mindset and will get knowledge about what digitalization means for your operation, because digitalization is so broad. It's about connectivity, it's about data gathering and it's surely about the analysis of that data to develop a smart action plan.

There are so many buzzwords and acronyms such as OEE, big data, Industry 4.0 and MTBF, as well as our own company's concept of digitalization. You need to make yourself comfortable with these ideas from the beginning, so you know a little bit about what direction you want to go in. Talk to people inside and outside of your organization, listen to podcasts, and go to tradeshow, conferences and events.



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Most shops, even the smallest ones, have obviously been gathering data and logging it in a production-schedule format of some kind for many years. Therefore, digitalization, with the focus on data, is not an entirely new approach to machine tool utilization and the process of evaluating the overall performance of your shop. It's about making this process as easy and fail-proof as possible.

Then, the second step is to find a partner you can work with—someone who will support you throughout the entire process, from an initial evaluation to implementation and the new protocols of action required. This could be a small consulting firm or even one person, who brings an outside perspective into your machine shop. Be sure it's someone who knows your industry, because that will reduce your startup time.

There are many kinds of partners out there, including ones with deep experience in mold-making, tool-and-die work or contract manufacturing. At Siemens, our Mindsphere group has many solution partners. For example, we have one in Chicago, the home of our American machine tool business, that we work with, because they know the small machine shop market as well as our company's CNC hardware and software. Maybe your perfect partner is someone you're already working with or who is advising you on your CNC machines already. They can visit Siemens and we'll educate them about digitalization, we'll help them, and then we'll go together to your shop with a proposed solution. It's critical that this person or advising group knows your process flow and has the trust of your entire organization.

Next, search within your shop for somebody whom you can ask to play the role of Digitalization Consultant for your side—and then start slowly. Pick one or two focus machines. Don't think about all your equipment at the beginning. Take one or two focus machines where you want to get data and start tracking it. Talk to all of your machine operators. Get them onboard, so they know what is happening at the shop. It's so important that it's not somebody saying they are installing something to improve quality, but that everybody is onboard with the entire

conversion process. Make it visible. Get a large display screen for the data you're gathering. Invest at the beginning. Place the screen in the middle of the shop where everybody can see it, so that everybody can see the data you're capturing, everybody can look at it and ask why is it red or why is it green? Seems simple, but this is the beginning of a process, where you need to re-focus the mindset of your people. Let everyone have access to this entire process, so they "buy into it," as the saying goes. Then you could also get their reactions and they'll come up with more questions about why is this data or that data not showing on the screen? Why are we not showing it in a prioritized way? Wouldn't that be more productive? Get everybody onboard with a little investment in visibility at the beginning and you'll receive great feedback from every level of your organization.

Talk daily about the data. People will ask questions, like "Why aren't we tracking our daily downtime?", so ask the operators, because they will have different opinions on what data are being tracked, why a certain value isn't shown, or why cycle times are varying on the same part on the same machine. By getting their input, you will be able to work on those together to make the first return on your investment. Seems basic, but this starts the process of using technology to make data more valuable as a tool for improvement in your shop.

So, in four short phrases: inform yourself, get a strong partner—maybe somebody you're already working with on the shop-floor—ask actively for highly visible data, and then dedicate one person inside your organization who drives the entire process on your behalf. When that person can become a champion for digitalization in your shop, you'll be on your way.

Communicate the plan to all the people in your shop and talk about what you see as often as possible.

The old Chinese proverb says the journey of 1,000 miles begins with a single step. Take it.

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