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Bridging the skills gap via workforce development

In his keynote presentation at the 2017 Siemens' Manufacturing in America Summit, Michigan Governor Rick Snyder told attendees that one of his top priorities right now is to create jobs and to build an environment for success. That means not turning his back on manufacturing – and investing in education for engineers and the “new” skilled trades.

“We are redefining what the skilled trades are,” Snyder said. “It is not just welders, plumbers and electricians, but also industrial automation experts and robotics technicians.”

Fostering a new manufacturing culture, in which people and technology work collaboratively, is the way of the future workforce. It's an issue that cuts across every industry. But in food and beverage, where consumer demands for mass customization is creating more SKUs and the need for flexible processing and packaging lines, there's an urgent need for workforce development. Last year, The Economist Intelligence Unit surveyed 800 business executives in the global food and beverage industry,

70% of which said they face labor challenges as a result of more complex technology-driven operations.

“We're seeing more and more manufacturers embracing robotics, embracing digital manufacturing, as well, and just automating as much as possible,” says Kinda Younes, executive director of ITAC, a non-profit organization delivering affordable consulting services to manufacturers in New York city. “But with that comes a whole new set of challenges because you have to train your workforce. You have to figure out what to do with your existing workforce. But you also have to figure out how to train the new guys that you are bringing in.”

Another [report by Deloitte and the Manufacturing Institute](#), says that over the next decade, nearly three and a half million manufacturing jobs likely need to be filled and the skills gap is expected to result in 2 million of those jobs going unfilled.

In order to address the skills gap, the Deloitte report echoes Younes'

statement, saying that manufacturers not only have to train new workers with the right skillsets to meet tomorrow's advanced manufacturing requirements, but they must also develop the skills of the existing workforce:

“The executives see developing their workforces as the most effective way to remedy the problem, with 94 percent agreeing internal employee training and development programs are among the most effective skilled production workforce development strategies, and 72 percent agreeing involvement with local schools and community colleges is effective. This reflects an understanding of the multidimensional nature of the skills gap as manufacturers see the need to develop the talent pipeline both in their companies and communities.”

To that end, manufacturers, suppliers, schools and government must all work together. We are starting to see signs of this:

- In June 2017, the current administration expanded apprenticeships in America to prepare workers for the jobs of the future with “workplace-relevant knowledge and skills.”

- During that same timeframe, Joe Kaeser, President and CEO of Siemens AG, an industrial manufacturer of hardware, software and services, met with the President at the White House to announce a \$300 million investment in a Siemens U.S. facility which will create about 700 new jobs through 2026. To support that effort, Kaeser also announced a commitment to nearly double Siemens' industry-leading apprenticeship program, hire and train hundreds more veterans per year, and provide an additional \$2 billion in in-kind grants of its Product Lifecycle Management (PLM) Software for academic and institutional use.
- In February 2017, Siemens also introduced the Lifelong Educational Advantage Program (L.E.A.P.) to provide high school and technical school students with training on machine tool knowledge, from numerical control to human machine interfaces (HMI) and hardware simulators.
- In the Fall of 2017, Lewis & Clark Community College in Edwardsville, IL, will add a degree program for instrumentation and control technology in addition to the school's existing process operations technology degree program – which uses Siemens controller and HMI technologies and the Siemens SIMIT simulation software to give students a virtual experience of what happens in a plant.

And manufacturers like Nestle Waters, are diligently working on ways to change the way people think about manufacturing. "Company culture is everything in developing an innovative and entrepreneurial mindset," says Ty Brannen, vice president of operations at Nestle Waters North America.

"We need to unlock and unleash the potential with our frontline employees... and scale that, replicate it and implement it quickly. We can't solve the same problem in ten different locations ten different ways. When we solve it in one location we've got to use technology to again rapidly disseminate this information and make sure it's implemented. And [then] we move faster on our innovations."

The good news is, the next generation workforce is a generation of digital natives – they grew up gaming, surfing the web and using smartphone apps. Millennials are natural collaborators and manufacturers can harness the energy of these digital natives to create a new work environment that is about team building and learning new skills together. And for the baby boomers and Gen Xers who have decades of tribal knowledge in their heads, there are digital ways to transfer that intellectual property. Either through a collaborative PLM application or even via augmented reality that shows a visual computer-generated image over the user's real view of the world, thus making it easy to understand steps in a process.

"We can get more tools like iPads in [people's] hands where they scan barcodes on a machine and it gets them the operator manual or the parts list," says Alicia Lomas, automation and controls manager at Chobani. "But we also need to work on our training programs, because we need to deal with the people first and foremost."

Ultimately, all of this means that people will need to change with the technology transformation – and that could be the hardest part of digitalization.

"What is the hardest thing to change in a room? People!" says Wei Lik Chan, human resources manager at Wonton Food. "You can change the process. It's very easy for me to get someone to build a machine. It's very easy for me to get someone to design a software or ERP system. But fundamentally it's the people. If you don't have people that are willing to change, if you don't have it in your DNA within a company that [is] willing to change, it's like trying to turn the Titanic."

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