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Smart Automation Prompts Need for Skilled Workforce

While smart automation tools are designed to take over repetitive fast-moving plant work, the smart tools require a skilled workforce for installation and maintenance.
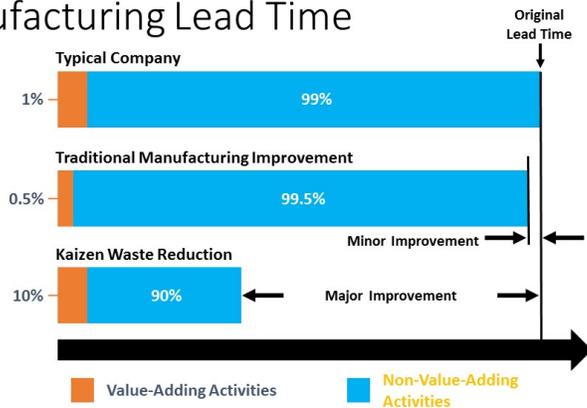
by: Rob Spiegel in Automation & Motion Control, Automation on June 05, 2017

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Can advanced manufacturing deliver a clear ROI? This may be an especially thorny question when it comes to retrofitting a plant with aging assets.

According to TBM Consulting, a firm that helps manufacturers balance their technology and workforce, the biggest mistake manufacturing industry managers make is relying solely on smart automation tools as the solution to downtime and lost revenue. While manufacturers are pressing ahead with data analytics systems, TBM analysts see a skills gap that can hamper the effectiveness of smart manufacturing tools.

Manufacturing Lead Time

Original Lead Time

Typical Company
1% — | 99%

Traditional Manufacturing Improvement
0.5% — | 99.5%

Minor Improvement →

Kaizen Waste Reduction
10% — | 90%

← Major Improvement →

■ Value-Adding Activities   ■ Non-Value-Adding Activities

One of the keys to implementing advanced manufacturing is creating a team that can run the smart tools effectively. "With downtime being a silent killer, it's essential to build a smart workforce around the supplemental systems and analytics that track root cause and counter measure tools in real time," Ken Koenemann, VP of TBM Consulting, told *Design News* . "Workers need to understand the results and adjust certain lagging aspects to avoid further issues."

Searching for the Skilled Workforce

Though advanced tools can help reduce a manual workforce while delivering efficiencies, it may not be enough to offset the need to invest in workers will a higher skillset. "What does smart automation mean when it comes to the type of resources you need? You take people off the production line, but the more automation you have, the more skills you need to maintain the automation," said Koenemann. "It's a net-sum game, and in some cases, it's a net loss."

Skilled workers are necessary to support data analytics and other new automation, but those workers are in short supply. "You're going to have to have more skilled workers who can maintain the equipment or that equipment will lose effectiveness. You'll need more skilled operators," said Koenemann. "Someone has to load the program and monitor the equipment, and companies are struggling with finding resources such as computer numeric operators. A lot of our clients are having trouble finding good solid engineers."

Augmented reality (AR) training tools might help solve the problem of a dearth in skilled workers. "Augmented reality could be very powerful in teaching tasks to workers," said Koenemann. "AR can be used as a training tool without having to have somebody stand there and train the worker."

Choosing the Right Tasks to Automate

Another challenge in deploying advanced automation is deciding what tasks to automate. The goal is to let the machine do what it does best while letting humans do what they do best. "If you look at what Amazon is doing, you'll see they're using automation to bring the products to the people who pack it," said Koenemann. "That is a good use of automation, and it's going to drive tremendous benefit to the company. It's not a matter of packing faster. Humans do that pretty well."

One of the tasks that is gaining traction in automation is vision systems that can examine fast-moving lines without losing focus or attention. "There are certain processes that cannot be done by humans. Several of our clients are using visual inspection and it's occurring at high speed," said Koenemann. "Using an optical inspection

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Automation and robotics has been described as best doing the "4D" class of tasks: Dangerous, Demanding, Dirty, or Dull. Inspection certainly is demanding and dull, and so it is a very good candidate for automation. Inspection systems may not require a completely new machine, unless the intent is also to add new functionality by correcting faults instead of just rejecting faulty items. Flexibility, is an entirely different situation, since it really requires a different business plan.

William Ketel June 7th, 2017

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Smart Automation Prompts Need for Skilled Workforce: Page 2 of 2

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with an automated blade that cuts the bad spots out of a potato is a good use of technology. You're not going to get a human who can do that quickly."

Automating Piece by Piece

Another challenge facing manufacturing is deciding what to automate across a factory full of exiting assets. Most manufacturers can't afford to replace much of their equipment. "While there are lots of new capabilities, if you look at most organizations, they cannot afford to overhaul their complete business by automating everything," said Koenemann. "This is a matter of focus. How do you find the right automation to improve quality, productivity, and safety when you can't automate everything?"

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The emerging automation tools are flexible. They can be deployed in a variety of settings. Yet these tools do not come cheap. Manufacturers have to pick and choose what to automate and how. "The automation itself probably works in any plant environment, but it's the amount of capital that is needed to do it that's a challenge," said Koenemann. "That's going to take time. Companies have 15- or 20-year-old equipment and replacing that will cost a lot of money."

In the industrial setting, technology adoption is gradual, and the benefits come slowly. It took many years for networked systems to pay for themselves. Fully automated plants are probably inevitable, but that doesn't mean they're coming quickly. "In the early 2000s, we heard that the internet was going to change how companies bought and sold their products. Yet it's only been in last two or three years that has really taken hold," said Koenemann. "Over time, the things we're hearing about automation and robotic optics will continue to develop, but a lot of companies have significant infrastructure and it will take time to bring this in to create a lights-out factory."

CAN ROBOTS FILL THE SKILLS GAP?
With labor costs increasing and robot costs declining, collaborative robots have become an alternative to human labor in some cases. They are becoming less expensive, more flexible, and

increasingly filling a skills and cost niche. But are they the answer to the increasing need for manufacturing labor in the face of baby boomer retirements and government/regulation changes? Register today for ATX East , June 13-15 in NYC, and find out the answer to this question and more!

Rob Spiegel has covered automation and control for 17 years, 15 of them for Design News *. Other topics he has covered include supply chain technology, alternative energy, and cyber security. For 10 years, he was owner and publisher of the food magazine* Chile Pepper.

Graphic courtesy of TBM Consulting

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