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What C-Suite Executives Need To Know About Smart Manufacturing

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C-suite executives tend to delegate manufacturing strategy to the manufacturing experts and IT strategy to the technology experts. Historically, that was a good strategy. Now, with the emergence of new technologies that collectively comprise what's known as smart manufacturing or "Industrie 4.0," it's time for C-suite executives to reconsider their hands-off approach.

This is the conclusion reached by MESA International, an organization dedicated to improving business results and production operations through the application of information technology and best management practices. (Full disclosure: I'm on the MESA Americas Board of Directors). As practitioners on the front lines, MESA members are working to implement smart manufacturing technology to achieve business goals. The organization's experience shows that such a fundamental transformation is more effective when

the C-Suite is aware of -- and involved in -- capitalizing on the opportunities smart manufacturing offers.

"C-Suite executives need to know that digital transformation is happening," says Srivats Ramaswami, Sanmina's vice president of information technology, expressing the concern that C-suite executives, more often than not, are unaware of what's happening in their factories.

MESA President Mike Yost agrees, noting that the traditional disconnect between "what goes on in the factory and the top levels of the business" has to change. "We're at a point where the speed of business requires leaders to have an answer for where modern technologies fit into the business strategy," Yost says. "You can't ignore it any longer, and you can't plead ignorance because the stakes are too high."

The danger is that executives who don't integrate smart manufacturing into their strategic plan will miss the business opportunities made possible by smart manufacturing.

Here's what you need to know.

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Raffaello Lepratti
*Vice president of Siemens
 PLM Software*

How Smart Manufacturing Is Different

Unlike earlier technology, which for the most part simply sped up existing processes or created new standalone functionality, smart manufacturing is fundamentally transforming how manufacturing companies compete. The technology integrates traditionally distinct processes, so that “core systems deliver effective cross-functional collaboration between product design, process planning, production execution and automation,” Raffaello Lepratti, vice president of Siemens PLM Software, explains.

Once connected, these modern technologies increase the speed, agility and flexibility throughout a company’s value chain, from product creation, through production and delivery. With smart manufacturing strategies, companies gain powerful capabilities to drive competitive advantage. Factories cut costs, reduce time-to-delivery and increase order accuracy. With C-suite involvement, businesses will capture market share, enter new markets and boost margins.

How Smart Manufacturing Creates Competitive Advantage

To understand the importance of smart manufacturing, it’s helpful to review how manufacturing has changed over the past two decades.

Capacity fulfillment vs. customer fulfillment: Not long ago, a factory was judged by capacity -- how much product it could make. Now factories are judged by the variety of products they can produce. What’s important is not the capacity of the factory but its capability to meet a wide variety of customer needs. The primary metric today is based on whether a plant is agile enough to meet customer needs. Factories must transform practices and strategy so they can make a thousand different products rather than a thousand copies of one product. This is a complete about-face, requiring not only a technology change but a business strategy overhaul. Production professionals must be redirected from inward-facing strategies that optimize production to outward-facing strategies that serve customers who demand a unique product.

Productivity vs. agility and responsiveness: For today’s factory, the concern isn’t as much about productivity as it is about agility and responsiveness. As businesses are forced by customer demand to constantly shift from making one product to another, how effectively they can respond becomes more important. It’s critical to note here that smart manufacturing is not driving this change -- the customers are. Companies are shifting to the agile and responsive mindset because that’s what they need to do and what customers demand. Smart manufacturing technology is the enabler, helping factories become more agile and responsive.

Low-cost labor vs. knowledge workers: Old-school thinking involved searching out low-cost locations where unskilled workers could churn out mass-produced goods cheaply by repeatedly performing the same task. In new-school thinking, the location of the plant increasingly is determined by the location of the customer, and the choice of worker favors the knowledgeable worker. In today’s factory, workers are production professionals who must be able to run specialized equipment and work with high-end computers. Furthermore, they must be able to shift quickly among multiple processes to produce a wider variety of products.

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Mass production factory vs. digital factory: All these changes pull (or should be pulling) the factory increasingly closer to the center of manufacturing business strategy. As factories are digitalized, they become more integrated into the value chain. Product design is more tightly integrated with planning and production requirements, which is tied more tightly to delivery requirements. This can't be accomplished simply by making old processes run faster or having traditional production professionals work harder; it requires an integrated digital factory -- a smart factory.

Smart Manufacturing Is A Business Strategy

It's a mistake to view smart manufacturing as an IT strategy or a manufacturing strategy -- it's a business strategy. The tight integration of each manufacturing business function that is made possible with smart manufacturing has the power to upend business models and redefine industries.

It wasn't so long ago that it seemed everyone believed U.S. manufacturing was dead. Well, it turns out that isn't the case. As well, we've learned that smart manufacturing elevates the importance of production to a new level. Smart factories can become your company's secret weapon, playing a vital role in meeting fast-changing market expectations and customer needs. But that can only happen when smart manufacturing is integral to your business strategy.

It's still early. For decades, manufacturing and IT leaders have made great strides toward achieving the end-to-end integration made possible by smart manufacturing. The next step is to more closely integrate manufacturing operations into the business. Manufacturing business leaders must start now to create a vision for how they will leverage smart manufacturing.