

Manufacturing 4.0 on the Rise

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(Manufacturing Leadership - Jeff Moad: 1-21-16) A year ago, organizers of the massive German industrial trade show *Hannover Fair* released the results of a survey showing that, despite a rising chorus of attention devoted to the topic, *Industry 4.0* was a subject of conversation at only 50% of manufacturers. Keep in mind that many of the respondents to this study were from Germany, where the government embraced and invested in what it calls *Industrie 4.0* as part of its High-Tech Strategy 2020 Action Plan in the hope of establishing the country as a leader in integrated digital industrial technologies.

That led some to note that there was a significant gap among manufacturers between the *attention being paid* to Industry 4.0 (*we call in Manufacturing 4.0*) and *interest in investment*. No big surprise there. Hype around technology-based innovation often outruns reality.

Recently, however, we've begun to notice signs that manufacturers are indeed beginning to take Manufacturing 4.0 much more seriously. In fact, results of a soon-to-be-released Manufacturing Leadership Council survey strongly suggest that, not only are manufacturers internally discussing M4.0, a great many—37%—are already implementing discrete or companywide M4.0-related projects. Twenty-nine percent said they even expect substantially all their production and assembly processes to be digitized within the next five years. That's up from 8% saying those processes are already digitized today.

Forty-eight percent of respondents to the MLC study said the M4.0 notion of digitizing and integrating core processes for the purpose of improving real-time visibility and agility represents nothing less than a new era in manufacturing. Another 44% called it a significant trend.

(Full details of the Manufacturing Leadership Council *Factories of the Future* study will be published in the February issue of the Manufacturing Leadership Journal.)

This was reinforced on a recent Critical Issues roundtable discussion call for

Manufacturing Leadership Council Members entitled “Plant Floor Migration Strategies to Manufacturing 4.0.” On the call, which featured a presentation by Prof. Dr. Detlef Zuehlke, Founder of Germany’s Smart Factory Consortium and a leader in the Industrie 4.0 movement, several manufacturers said their companies are either researching and planning their M4.0 roadmap or actively implementing smart factory technologies.

A top manufacturing executive from a large industrial firm said his company is aggressively educating itself on M4.0 opportunities while assessing the current machine footprint in its factories.

An executive from a large maker of industrial materials, meanwhile, said his company has launched a M4.0 adoption effort. Central to that effort, he said, is training and education for workers and executives intended to help them understand how their roles and their thinking will need to change in a M4.0 era.

A manufacturing executive at a large pharmaceuticals manufacturer said his company is creating a roadmap that will allow it to transition from focusing on smart devices in its plants to entire smart factories. The initial focus, he said, is on strengthening connections between manufacturing execution systems and equipment control systems.

And an executive at a large, diversified industrial company said, after having spent the past two years researching M4.0 and planning for adoption, her company is launching pilot implementations across dozens of plants worldwide.

These manufacturers said the opportunity to reduce operating costs—through improvements such as predictive maintenance and greater equipment utilization—is only part of what’s driving their interest in M4.0. Even more important, they said, is the opportunity to become much more agile and responsive to increasingly demanding customers by reducing cycle times, getting new products to market faster, and delivering greater value through smart, software-enabled products.

Indeed, said Dr. Zuehlke, M4.0 represents an opportunity for manufacturers to correct some of the damage that has resulted from a narrow focus on cost reduction over the past few years. That focus has resulted in outsourcing, long lead times, long

product lifecycles and, ultimately, compromised customer satisfaction.

“Customers expect to be able to order by mouse click and to receive extremely fast deliver,” said Dr. Zuehlke. “So we have to change our production strategy and bring production closer to the customer.”

Dr. Zuehlke emphasized that the road to agile, digitized, and smart factory networks will be a long one for most manufacturers. He estimated this will be a five-to-ten-year process, with plenty of challenges along the way. Standards that can support modular, plug-and-play smart M4.0 systems are still incomplete. And, he said, manufacturers will need to think differently to develop new business models that can take advantage of smart factories and smart products.

Given such challenges and the extended time frame that will be required for widespread adoption, it’s certainly possible that manufacturers will, over time, lose their enthusiasm for the concept and that M4.0 will be just another buzzword footnote. (Remember Computer-Integrated Manufacturing?)

But, at least for now, manufacturers’ commitment to M4.0 seems to be on the rise.