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[Home](#) : [Operations](#) : [Energy](#) : [Playing The Hand That's Dealt](#)

Playing The Hand That's Dealt

A discouraging and unpredictable economy will challenge manufacturers to come up with winning strategies, including lean that's mean.

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By John S. McClenahan

Lean. Agile. Aggressive. Enlightened. Committed. Communicative. U.S. manufacturing executives and their companies will have to be all these things -- and more -- if they're to make the best of 2006. While the big-picture economic numbers are encouraging, even inspiring, they don't show the discouraging details nor do they take into account such upsetting events as a new surge in energy prices. And it's those details and events -- along with plain old market surprises -- that can make a mess of management's best-laid plans.

If you're a manufacturer in the U.S. and look to GDP growth as a performance benchmark, you have to be pleased with what the OECD sees ahead for the U.S. economy and overseas markets. The Paris-based group of 30 industrial nations, formally known as the Organization for Economic Cooperation and Development, expects the U.S. economy to grow at an inflation-adjusted rate of 3.5% this year, smack dab on its non-inflation potential. Elsewhere, the OECD foresees real GDP in Japan expanding at a respectable rate of 2%, and the euro-using nations accelerating their average growth rate to 2.1%. "With price stability being maintained, a powerful impetus arising from the Asian and U.S. economies and the re-spending of oil exporters' higher revenues, the case for a prolonged world expansion, finally extending to convalescent European economies, looks plausible," said Jean-Philippe Cotis, OECD's chief economist, as 2005 was coming to a close.

Robert "Doc" Hall demurs. There are too many wild cards, including higher energy prices, another disruptive hurricane season and shortages of copper, cement and steel, to have much confidence in any forecast, says Hall, a founding member of the Association for Manufacturing Excellence and professor emeritus of operations management at Indiana University's Kelley School of Business. "I am pretty sure that most of the larger companies have some concern over the continuation [and] stability of their supply base. And it could hit them where they really don't have some great options."

The solution, "by default," to their supply-chain problems is lean manufacturing, says Hall. During the past year or two, interest in lean has been growing, although with "not much understanding of what they're getting into," he claims. Rather it's been more of an attitude that lean is "just something you got to do to survive." And to make lean -- basically the streamlining of production and other

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manufacturing processes -- go well this year, several things must happen, Hall insists. First, he says, senior management has to understand that lean "is a people thing and they have to lead it." That could include, he says, a line worker calling a supplier or a customer to resolve an issue. Second, a company can't make the transition from whatever it's now doing to lean without adopting lean accounting, which is linked to something's value rather than to its cost. Otherwise, "you're always looking at it through a foggy set of numbers," says Hall. Third, leaders must resolve the conflict between an IT system that takes three or four months to change over to lean and their desire to change a process in two weeks. And fourth, there must be better collaboration between non-competing companies so that they can learn faster at the grass-roots level. "Denser learning networks" is the description that Hall uses. The Canadians, for example, have local consortia of plants within driving distance of each other. So if a manufacturer is trying to do a better job of setting up a screw machine, the company can turn to a guy 30 miles away who has done it. You go see him, go look at what he did and talk with him, says Hall. It's not a big deal. "It's not Marco Polo returning with a great message from the Far East or something."

In 2006, China's continued demand for raw materials will affect prices, including the price of steel, believes John Vande Vate, executive director of the Executive Masters in International Logistics degree program at the Georgia Institute of Technology in Atlanta. Also, "the continuing imbalance and large volume of exports coming out of China -- and frankly, globally -- will mean that transportation capacity is heightened and expensive," he adds. And North American manufacturers, especially automakers, need to be prepared for a "wave of imports from China that will just rip the bottom out of the market," warns Vande Vate. "The best way I can think to defend against imports from a country whose cost structure you can't compete against is to be able to offer the customer things you can't offer from that distance."

At the same time manufacturers are confronting these marketplace realities, they must recognize that their use of lean techniques to reduce inventories is on a "collision course" with global sourcing to reduce component costs, he contends, adding that "it's hard to be lean from 5,000 miles away." Vande Vate has studied the impact of lean and global sourcing on several industries. While his data show the number of days of inventory have dropped an impressive 40% since 1991 for Nissan, 82% since 1995 for Nokia and 61% for Hewlett-Packard, and 73% since 1999 for defense contractor Northrop Grumman, these are net percentages. He emphasizes the percentages and attendant cost savings would have been even greater but for global sourcing, which adds inventory days to the supply chain, somewhat offsetting the reduction in inventory days resulting from making manufacturing processes leaner. "North American manufacturers have been guilty of a somewhat knee-jerk reaction to the opportunities for global sourcing," making it an all-or-nothing decision, he laments. "The real question [to be asked] is what aspects of our manufacturing process -- what components -- should we be sourcing, if any, and what aspects of the process should we be delaying to the last minute?" The best answer, he believes, has come from cell phone manufacturers, who have divided their manufacturing process into building the hardware and product completion, essentially component production and assembly and packaging.

Manufacturing executives faced with rising energy costs also have a choice, insists Peter Tertzakian, chief economic officer for ARC Financial, a Calgary-based investment management and

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merchant banking firm focused on Canada's oil and gas industry. Executives can see high energy costs as damaging to the business and complain about them, or they can see higher prices as an opportunity and seize it to distinguish their companies from their peer groups by becoming a low-cost producer. For example, without naming names, he cites "progressive" companies in forest products that have made synthetic natural gas from waste bark and chips, believing the payback period for their investments would be only two to three years compared with a predictable six or seven years when energy prices were lower. "And in at least one case that I am quite familiar with, it turns out the payback period is even less than that," Tertzakian relates.

During the last half of 2005, and particularly during the final calendar quarter, prices for such commodities as steel, copper, oil, natural gas and plastic resins were "extremely volatile," leaving manufacturers with higher costs and limited opportunities to pass those costs through to customers, states Pat Furey, senior commodity manager at Sunnyvale, Calif.-based Ariba Inc., a company that advises manufacturers on sourcing strategies. That situation promises to continue for at least part of this year, with raw material costs "squeezing" manufacturers' margins, he says. But entering into short-term contracts for such commodities as steel and plastic resins is a strategy "a lot of people" have been pursuing to try to remain competitive, he reports. "Where traditionally they may have gone with an annual contract for their steel buy or their resin buy, maybe now they are going quarter-to-quarter" in hopes prices will decrease in three months or market volatility will be less. Manufacturers also are lining up alternative sources of supply to guard against market disruptions from such things as hurricanes. And it's a strategy with a bonus. "In an environment where you don't necessarily have supply restrictions, you can use those backup sources to create a little competition and manage some of your costs," notes Furey.

Finally, Matt Tormollen, chief marketing officer of Austin-based Pavilion Technologies, sees the need for manufacturers to invest in what he calls "more flexible but obedient infrastructure." Put into the form of a question, companies need to ask whether they have the equipment and software that will allow them to react quickly to changes in the business environment. Specifically, he says, does the company have the capability of quickly accelerating production of a high-margin product to something close to its theoretical maximum while simultaneously driving costs out of commodity products? Pavilion's answer to making it happen for Cemex SA de CV, a Mexican company that is one of the world's three largest cement producers, was process optimization software for milling operations. "What we have been able to do for Cemex is to simultaneously increase production while reducing energy costs per unit and maintaining environmental emission limits," reports Tormollen. "That trifecta has really the bottom line of what you can get through this flexible obedient infrastructure."

Best Practices From Best Plants

Some manufacturers have strategies in place that promise to serve them well again in 2006. And the 125 plants that have been finalists in [IndustryWeek's annual Best Plants competition](#) since 2001 especially have best practices that other plants can put to work this year. The use of specific practices depends upon the segment of manufacturing and individual plants. But among the tools

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that have been proven to be useful are benchmarking, applying the Theory of Constraints, implementing the Toyota Production System, implementing lean manufacturing, implementing Six Sigma quality processes, implementing agile manufacturing, adopting continuous replenishment or just-in-time, adopting cellular manufacturing practices, separating standard and build-to-order production, adopting quick-changeover methods, and implementing self-directed or empowered work teams for production workers.

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