

# GMA Manufacturing Excellence Share Group Meeting

*Orlando, Florida • August 10-11, 2010*

## EXECUTIVE SUMMARY



Special Thanks to  
**SIEMENS**  
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Manufacturing Excellence  
Share Group





Based in Washington, D.C., the **Grocery Manufacturers Association (GMA)** is the voice of more than 300 leading food, beverage and consumer product companies that sustain and enhance the quality of life for hundreds of millions of people in the United States and around the globe.

Founded in 1908, GMA is an active, vocal advocate for its member companies and a trusted source of information about the industry and the products consumers rely on and enjoy every day. The association and its member companies are committed to meeting the needs of consumers through product innovation, responsible business practices and effective public policy solutions developed through a genuine partnership with policymakers and other stakeholders.

In keeping with its founding principles, GMA helps its members produce safe products through a strong and ongoing commitment to scientific research, testing and evaluation and to providing consumers with the products, tools and information they need to achieve a healthy diet and an active lifestyle.

The food, beverage and consumer packaged goods industry in the United States generates sales of \$2.1 trillion annually, employs 14 million workers and contributes \$1 trillion in added value to the economy every year. Visit [www.gmaonline.org](http://www.gmaonline.org).

#### **About the GMA Manufacturing Excellence Share Group**

The GMA Manufacturing Excellence Share Group is a self-directed share group under the auspices of GMA. The group meets three times a year to exchange “peer-to-peer” dialogue on issues, trends, challenges and opportunities of interest to consumer products goods manufacturing executives. For more information on the Manufacturing Excellence Share Group, contact GMA.

## **SIEMENS**

The **Siemens Industry Automation Division** (Nuremberg, Germany) is a worldwide leader in the fields of automation systems, industrial controls and industrial software. Its portfolio ranges from standard products for the manufacturing and process industries to solutions for whole industrial sectors that encompass the automation of entire automobile production facilities and chemical plants. As a leading software supplier, Industry Automation optimizes the entire value added chain of manufacturers—from product design and development to production, sales and a wide range of maintenance services. With around 39,000 employees worldwide (September 30), Siemens Industry Automation achieved sales of €7.0 billion in fiscal year 2009. [www.siemens.com/industryautomation](http://www.siemens.com/industryautomation)

#### **Special Thanks to A. T. Kearney**

A. T. Kearney is a global team of innovative, insightful and collaborative management consultant experts who deliver creative, meaningful and, above all, sustainable results. [www.atkearney.com](http://www.atkearney.com)

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**BUSINESS  
STRATEGY:  
THE EFFECT ON  
MANUFACTURING  
ALIGNMENT,  
FOOD SAFETY AND  
QUALITY, AND LEAN  
MANUFACTURING**

**T**he GMA Manufacturing Excellence Share Group Executive Roundtable brought together nearly a dozen manufacturing operations focused supply chain executives from the consumer packaged goods industry for a meeting in Orlando, Florida, to discuss key issues of interest to the industry. Roundtable participants included sponsors from Siemens Industry Automation, guests from A.T. Kearney and the Packaging Machinery Manufacturers Institute, and members of the Grocery Manufacturers Association (GMA).

Following introductions, the roundtable began with a keynote address highlighting the many internal and external factors that can impact a company's manufacturing strategy. The keynote was followed by two open forum discussions, one on food safety and quality, and the other on lean manufacturing; each was followed by question and answer sessions. This paper highlights the keynote address and follow-on discussions.

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**KEYNOTE ADDRESS:  
BUSINESS  
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THE EFFECT ON  
MANUFACTURING  
ALIGNMENT**

**Sean Monahan**  
A.T. Kearney

A company's manufacturing strategy is influenced by a combination of many factors, including the brand strategy, manufacturing's role, value chain alignment and risk tolerance. External factors such as shifting demographics, globalization, natural resource availability and political systems also have significant influence on the strategy and execution of manufacturing strategies. Most importantly, the manufacturing strategy and supply chain design must be aligned with the overall corporate business strategy.



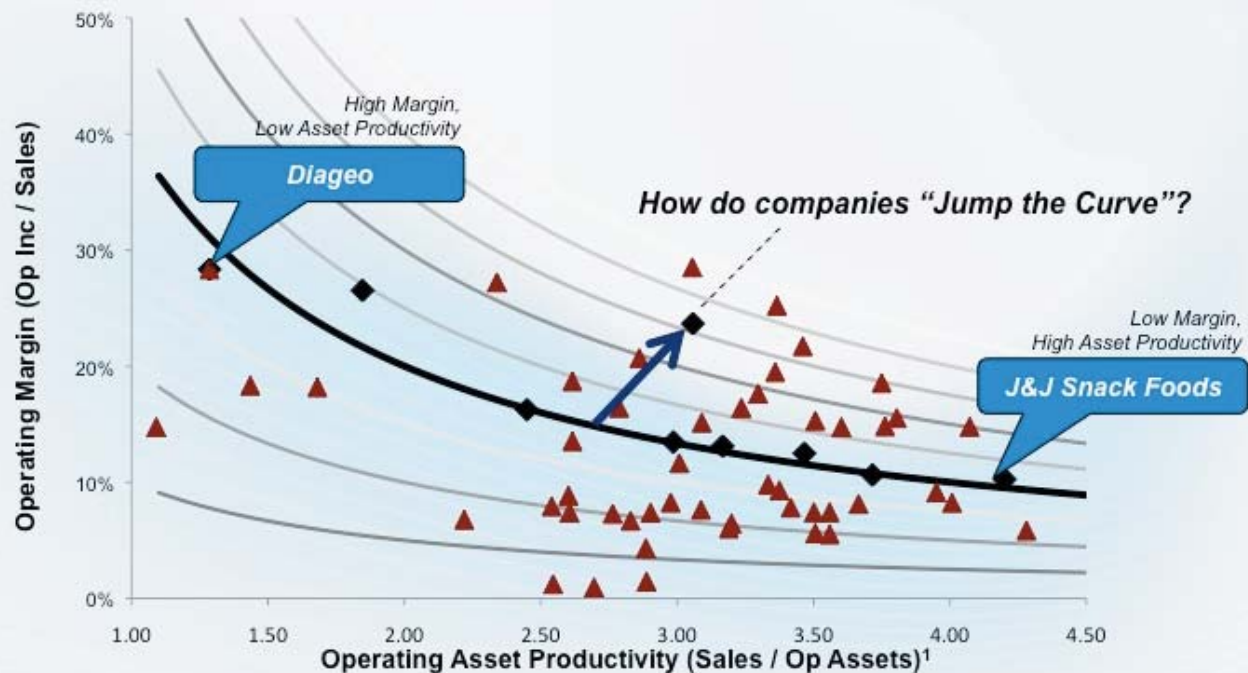
There is no “one best” supply chain and manufacturing strategy. Companies employ various supply chain strategies to achieve a balance between their desired margins and the return on their operating assets. For example, high-margin products that are manufactured in a low-asset productivity environment can bring the same return on operating assets as low-margin products that are manufactured to maximize asset productivity. Successful supply chain organizations are able to adapt quickly to changes in business strategy based on their explicit operating goals. (See *Figure 1*)

Across the food, beverage, home and personal care industries, manufacturers show a wide variance in their returns on operating assets—oftentimes as a reflection of their individual strategy and brand positioning. For example, global alcoholic beverage manufacturer Diageo has high operating margins despite low operating asset productivity—an indication of high value added and flexible manufacturing operations. J&J Snack Foods, on the other hand, has low operating margins but high asset productivity, indicating a strategy driven from efficiency and working with low-cost providers.

Today, given the economic uncertainty that surrounds us, we are facing a whole host of external forces that will affect our manufacturing and supply strategies. While “the old normal” was swept away by the events of two years ago—the credit collapse, spiking food and fuel prices and increased government spending—another major storm may well be just over the horizon, be it sovereign debt defaults, inflation, or the challenge of balancing increased global demand for resources against their increasingly volatile supply. (See *Figure 2*)

**Figure 1. Companies can achieve same exact Return on Operating Asset, aligned with their Business Model**

### Return on Operating Assets – 2009



(1) Operating Assets = Net PP&E + Inventory + A/R - A/P

(2) Sample set of Food, Beverage, Home and Personal Care companies, including alcoholic beverages and cosmetics

Source: 2009 Factset Data; A.T. Kearney analysis

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In addition to the economic and political forces, global demographics are shifting dramatically, with notable effect. Worldwide population growth is slowing, and will likely stabilize at 9 billion people by 2050, placing significant strain on resources. Standards of living are expected to increase as the middle class grows globally and urbanization continues. The demand for protein will increase, due to population growth and improved standards of living that create opportunities for meat in the daily meal choice. Increased food production will result in the need for more water for agriculture, a practice that already accounts for 70 percent of the world's water use. "Water wars" are a very real possibility; indeed, over the past 60 years there have been nearly 40 violent conflicts between nations stemming from disputes over water.

China's role in the future will continue to be crucial. As its internal and external dynamics change, so too will its standing in the global community. The long-term effects of the one-child policy are becoming clearer, as China's workforce, as a share of its total population, will begin to shrink in just a few short years. Projections for 2035 show one in three of China's citizens to be 60 years old or older. Chinese labor costs are also rising rapidly, with expectations that one unit of output will soon be more costly there than in the United States due to the gap in the two nation's productivity rates. Future value chains are likely to be shorter than today's in terms of geographic distance, as countries like Vietnam, India and Mexico are likely to be more cost-com-

Figure 2. Wide range of challenges likely to impact your organization and shape your manufacturing strategy



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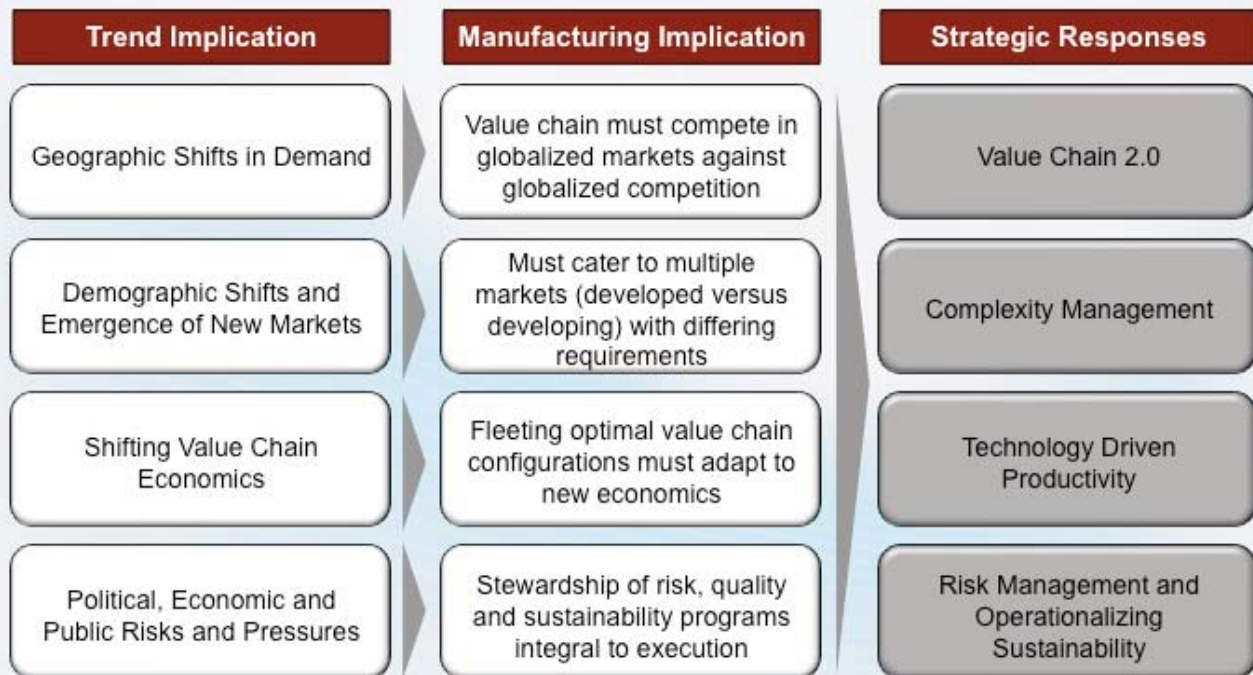
petitive than China by the middle of this decade. For the first time in many years, China had a foreign trade deficit in March 2010.

Even with all the talk of shifting dynamics and the emergence of powerful new economies, it is expected that the European Union and the United States will continue to have the world's largest economies through 2025 and beyond. Companies will need to manage the flow of information and increase transparency in hopes of raising their trustworthiness in the eyes of Western consumers armed with instantaneous information on pricing and peer reviews of products and services. A changing world will require new manufacturing strategies for success, including a new approach to the value chain, improved complexity management, productivity driven by technology, and risk management coupled with a sustainability focus. Given the dramatic change occurring with technology, and the uncertainty of global economies and political systems, an agile value chain is a definite requirement. (See Figure 3)

“Value chain 2.0” will consist of modular and scalable “plug-and-play” value chains, with networked operations replacing siloed operations. These networks will extend beyond the corporation’s four walls to include partnering, pooling, licensing and an array of outsourcing that includes near- and off-shoring.

Complexity management will be necessary to deal with multi-class markets that

**Figure 3. How organizations can strategically respond to future trends and potential implications for their organization**



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require a broad portfolio of products to meet a wide range of requirements. Value-creating complexity will need to be understood in terms of “above the skin” and “below the skin” factors; figuring out what the consumer values and what product attributes are most important to maintain. Modular value chains will help companies manage the complexity introduced by diverse requirements.

The demands of the extended enterprise combined with globally distributed customers will require greater technology-driven productivity; information-intensive processes will drive the ability to collaborate at marginal costs. Global teaming and coordination will be assisted by improved collaborative technologies that affect the ways in which businesses organize and add value. Continual manufacturing performance improvements will come through specialized manufacturing information systems.

With the acceleration of globalization and increasing scarcity and other supply disruption threats, global resource, market risk management and sustainability will become more important. Operational risk management for globally networked value chains need to be approached with the same vigor as financial risk management. Sustainability combines new approaches to risk with potential opportunity as companies reengineer processes and products alike to get by with less.

With all of the expected, and unexpected changes that will occur, it is important to

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develop a planning framework that can accommodate unforeseen events. Alternative scenarios, their implications and potential responses must be considered, and value chain capabilities aligned with the organization's strategic intent. Ultimately, flexibility and the ability to adapt to changing internal and external factors will prove to be the key to supply chain and manufacturing success.

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## GROUP DISCUSSION SUMMARY:

Moderated by  
**David Donnan**  
A.T. Kearney

## DISCUSSION TOPIC: FOOD SAFETY AND QUALITY

**F**ood safety and the increased scrutiny by the public and regulatory agencies was a high priority topic for the share group. The safety of food and consumer products has gained increased attention due to food safety incidents including the recent egg recall, melamine found in milk powder processed in China, and the salmonella contamination of peanut butter. Companies continue to increase their focus on product safety, but doing so requires collaboration across the industry and all value chains—any “weak link” in the chain can bring devastating consequences that can harm the reputation of suppliers, manufacturers and retailers alike, regardless of who is at fault.

In addition to public safety concerns, the financial cost of product fraud, tampering and mishandling have risen significantly in recent years. GMA has recently published two industry reports on the issues associated with food contamination and safety:

*Consumer Product Fraud: Deterrence and Detection* and *Recall Execution Effectiveness: Collaborative Approaches to Improving Consumer Safety and Confidence*.



### Food safety and consumers

In a world of instant communications that easily circumvents traditional media outlets, public relations efforts in a crisis take on new importance. Getting ahead of the message is critical, as are transparency and openness. A safety related incident with a branded product generates negative impressions that can take a long time to overcome. Data suggests that as much as 4 percent of a company’s consumers are permanently lost following a food safety issue.

Participants noted that keeping abreast of threats and coming to grips with new standards is an ongoing challenge, especially as conditions continue to evolve. Unexpected hazards such as leaded paint on children’s toys, tainted pet foods and *Salmonella*-laden peanuts point to the need to expect the unexpected. Suppliers based in low-cost countries such as China and India require due diligence upfront through pre-certification and continued vigilance via audits throughout the duration of the relationship to

**GROUP DISCUSSION  
SUMMARY:**

**DISCUSSION TOPIC:  
FOOD SAFETY AND  
QUALITY  
(cont.)**

ensure that supplier plants and sources meet proper requirements for food, product sanitation and safety. While companies are learning how to undertake systemic examinations of the supply chain to determine where breakdowns have occurred or bad inputs were introduced, it is a struggle to introduce control from the beginning of the manufacturing process. Foodstuffs, equipment, handling processes and even packaging can introduce contaminants. The use of third-party inspection agencies has delivered mixed results, placing the full burden for inspection and detection squarely on the shoulders of manufacturers and their value chain partners.

### **Safety standards and compliance**

A number of roundtable participants have made substantial investments to earn Safe Quality Food (SQF) or British Retail Consortium (BRC) food safety standard certifications in order to meet retailer requirements. There is a perception gap between the corporate perspective and food safety experts around how quickly industry standards are improving. In some cases, the executive suite may not fully grasp the size and complexity of the challenge. While some are willing to commit funding, human resources to ensure that improvements are made may not be included.

Low-margin suppliers face a significant challenge complying with customer standards due to the costs associated with new practices and resources to verify and enforce them. The inconsistency in standards from customer to customer further strains suppliers and contract manufacturers, pointing to the need for industry standards. Inconsistency from site to site due to differing levels of maturity among suppliers also makes the enforcement of corporate standards difficult.

### **Improving manufacturing processes**

Improved machinery and equipment may decrease the risk of contamination, and some companies are partnering with suppliers to design improved processing equipment to reduce risk. Recent contamination issues with a Canadian food manufacturer have highlighted the impact of equipment design on the ability to contain and neutralize contaminants. Obviously challenges remain with the use of older equipment.

For many companies, procurement is slowly shifting some of its focus from cost to safety and attempting to define what sort of metrics can be used to define success in this new realm. As with public relations, those who oversee procurement are much more concerned with how many incidents took place, not how many were prevented. The call for safety standards poses something of a conundrum. Industry is striving to share best practices in food safety in the interest of consumer safety and confidence.

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## Q&A Session: FOOD SAFETY AND QUALITY

### Q: What is the reporting structure for food safety?

**A:** For the majority of companies in our roundtable, the vice president of quality reports to the senior vice president of supply chain/operations or the equivalent. Quality tends to be a “global horizontal” function, with local quality and supply chain people reporting on a dotted-line basis to the global quality chief. At one innovative company, Quality reports directly to Legal.

Varying approaches are taken to implement corporate food safety strategies. At some companies, top-down control is used to ensure that facilities follow directives to the letter. Other companies emphasize direct oversight at the facility level.

### Q: What approaches are used at the plant level to deal with the increased focus on food safety?

**A:** While every company is paying to improve food safety, not all are doing so by adding head count. Some are employing dedicated resources at each plant, while others are paying to better engrain practices into the local culture. Some have found it challenging to recruit qualified quality assurance professionals.

The previous decade’s emphasis on business continuity planning has given some companies a leg up on dealing with food safety situations, as they are prepared to switch manufacturing from site to site. Some practice “recall drills” that help them better identify and eliminate potential risk points.

- Keeping allergens out of facilities poses a range of difficulties. Employees and visitors may be required to certify that they have not had a recent fever or other signs of illness prior to entering a facility. Some companies go so far as to require capped shoes and the use of air locks in addition to paying employees for the time it takes to properly don uniforms, adding significant expense. Color-coded smocks may be utilized to designate which employees are permitted to be in which portions of the facility in accordance with hygienic zoning practices. As companies attempt to limit traveling pathogens throughout the plant, unintended circumstances may emerge i.e., wearing smocks may increase clothing tangles in moving machinery; disinfecting footwear may increase slipping incidences, etc., and should be considered.

### Q: What technologies are used?

**A:** Roundtable participants are curious whether there are technologies currently available to improve food safety, and whether an industry-wide standard for audits and improvement could be established. While quality checks and information are gathered, an improved method of sifting through this data is desired. Other industries, such as pharmaceutical and high technology, offer opportunities to learn best practices in product safety, with a potential high reward for a small investment in exploring how other sectors grapple with these issues. And it was also noted that different technologies are necessary at different points in the farm-to-fork value chain.

Top-level executives may be lagging in their awareness of trends in food safety, especially around some of the technical issues. Manufacturing personnel are vested in “Top

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up” food safety information exchanges and look to GMA to provide safety/science, manufacturing, procurement, and other food safety related value-chain information that can be effectively shared within their organizations.

Early collaborations with equipment manufacturers on next-generation equipment that is built to emphasize quality and safety shows promise for improvements. GMA has launched an initiative for manufacturing and engineering executives called Product Safety Solutions Group to support this point in the value chain where equipment manufacturers and consumer products goods and food and beverage manufacturers must collaborate.

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**GROUP DISCUSSION  
SUMMARY:**

*Moderated by*  
**David Donnan**  
A.T. Kearney

**DISCUSSION TOPIC: LEAN MANUFACTURING**

**W**orld-class manufacturing systems require the best in processes, people and technology. On the process side, full supply chain integration from raw materials to finished goods is made possible through tight discipline and control over all business processes, the elimination of waste and consistent, reliable equipment performance. Manufacturing practices must be linked to key business performance metrics, backed by problem-solving processes that support continuous improvement.

The people to lead and maintain the implementation of world-class manufacturing thrive in a progressive culture that expects high performance, promotes self development and rewards superior achievement. These organizations strike the proper balance between centralized corporate control and culture with the flexibility to adapt to local markets. A common vision drives these organizations to sustain momentum.

Manufacturing capabilities are maximized when products are designed for ease of manufacturing, with processes that utilize technology appropriately. Information can drive informed decision making when it is available at the point of use.

Too often, manufacturing improvement efforts become overly focused on a specific facility, limiting their impact. While the right techniques may be touched upon, they tend to be too high level to apply to a single site. Lean techniques, considerations of factory physics, Six Sigma, the theory of constraints and total productive maintenance are better applied to a manufacturing network rather than a single plant.



**GROUP DISCUSSION  
SUMMARY:**

**DISCUSSION TOPIC:  
LEAN  
MANUFACTURING  
(cont.)**

**Q&A Session: LEAN MANUFACTURING**

**Q: How have companies implemented lean manufacturing and continuous improvement?**

**A:** Lean manufacturing is generally implemented in four steps, coupled with a range of supporting methods. As with any change, it begins with an analysis of the current process—in this case, using the procedures of standard work. A process-based layout centered on manufacturing cells is then designed and implemented, followed by initiation of the Kanban system, which establishes a schedule of what to produce, when to produce it and how much to produce. The shift is then made to one-piece flow, the pace of production needed to meet customer demand. Supporting methods include overall equipment effectiveness (OEE), waste elimination, Five Sigma/visual control, and zero quality control, among others.

At one company, lean was taken on as a project rather than an entirely new way of working. This yielded mixed results. Specific groups undertook lean practices and achieved savings, but did not fully embed the change, in part for lack of senior management understanding and support. When the company treated it as a project, the lean techniques drove temporary improvement in the areas in which they were applied but not on an ongoing basis. Another company embedded lean in its U.S. plants and at some key suppliers, but saw the effort as more of a reinvigoration than a reinvention of its practices. All companies agreed, however, that ongoing “lean” change management must be embedded in corporate culture.

**Q: How are measurements used?**

**A:** Manufacturing improvement has a strong cultural component that makes its emphasis on metrics and numbers less daunting as the drive toward continuous improvement begins. While individual improvement plans are required for each site within a manufacturing network, these plans are very much people based. One round-table participant noted that lean manufacturing resembles a total performance management approach to organizational effectiveness. Another commented that lean is not a program, but the way a company undertakes its work, always training people to achieve continuous improvement.

**Q: What technologies and tools have been used?**

**A:** While lean manufacturing utilizes a collection of technologies, some companies have been challenged in terms of how to use the voluminous data collected. At one company, it took half a decade after systems’ implementation to learn how to read the patterns in the data and identify opportunities. Another took a year to do so after putting a manufacturing execution system in place. Layers of data must be read. While “one-click issue detection” is promised, execution optimization required diligence and thoughtful action. Data can validate the claims of workers on the shop floor to build business cases. Some are employing data clearinghouses to mine data. Several companies have employed technology such as Microsoft SharePoint sites at different levels of the organization to define best practices, communicate leadership directives and standards, reinforce work practices and store data.

For one company, the use of Six Sigma, value-stream mapping and continuous improvement greatly increased employee engagement and helped to eliminate waste. Driving lean practices down to those who actually perform the work is critical. Engaging employees around improvement programs can leverage their practical experience to increase run rates and otherwise improve operations. Cost-cutting programs are not nearly as sustainable as improvement efforts; employees must have a stake in the outcome through incentives, process changes and redeployment of freed-up resources. Even ideas as basic as pairing maintenance engineers with operators to work hand-in-hand on equipment issues or having maintenance resources work shifts as operators to obtain insights into the operator perspective can yield tremendous results. Some managers have gone so far as to eliminate most of the maintenance force and have operators perform maintenance, balancing the loss of technical depth against the improved shop-floor perspective.

Remote monitoring was discussed in several contexts, including the possibility of engaging equipment manufacturers directly from the shop floor about issues, using a “remote rabbi” to monitor plant conditions and verify that food is prepared consistent with kosher practices, and employing high-speed cameras to verify operator claims and tie shop-floor realities to the picture portrayed by the data.

**Q: What are some of the implementation challenges?**

**A:** Leadership at the supervisor level has become a challenge for some companies, with a widening gap in technical skills and problem-solving abilities needed from front-line supervision. As these people are promoted, finding qualified and skilled replacement personnel can be difficult.

Because customers appear likely to continue to submit smaller orders with expectations of faster deliveries, companies will either need to adapt their practices or find ways to shift their customers back toward desired order patterns.

While companies are often tempted to address cost reductions within individual silos, this approach typically fails to achieve deep system-wide cost improvements. Manufacturing can be made more efficient, inventory can be reduced or customer service levels improved, but it is only when all areas are considered holistically that meaningful improvements can be made.

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