

New Trends in Manufacturing Optimization and Construction

Your company's success depends on how well you prepare for the future. Improved productivity, efficiency, and the ability to adapt to rapidly advancing technological changes will be critical. Existing facilities will be challenged to keep up with progress, and new demands for systems integration, remote solutions, and flexibility will be central to growth. In order to position your business for the future, it's important to understand the trends that will demand changes to your infrastructure, capabilities, and work force.

Between now and 2025, advancing technologies will introduce more complexity into virtually every business sector, industry, and institution. This will result in the need for more information management, information systems, advanced communications, automated techniques, and virtual documentation. Increased globalization and competition will require improved project management, infrastructure solutions, automation, security, and sustainability. In addition, keeping up with an evolving workforce demands continuous training, collaboration, and process improvements to ensure expertise, knowledge, quick response, and the ability to employ cutting edge technology.

According to the Boston Consulting Group, Manufacturers in the U.S. may be on the edge of a major industrial comeback. The U.S. Federal Reserve reports that while the economy was sluggish in the period between August 2010 and August 2011, output from manufacturing increased as much as 4%. Now manufacturers are responding to major shifts that will require them to take new approaches to stay current. These include the following:

- Increased competition – the U.S. currently commands third position in the top ten competitive global manufacturing countries. However, it is predicted that the U.S. will drop to fifth place within the next five years if manufacturers don't increase their competitive capability.
- Many manufacturers are finding that offshoring has created competitive weakness. Some are bringing their manufacturing back in order to avoid shipping problems, increased risk (including the loss of intellectual property), travel expenses, communication barriers, long lead times, and currency and payment issues.
- Shifting customer needs require new, advanced, and responsive manufacturing approaches. Manufacturers are also moving to solve structural impediments to respond to rapid changeability.
- Labor intensive traditional manufacturing is being replaced with sophisticated technologies including information management, advanced and automated

processes as well as manufacturing techniques, and innovative approaches to global supply-chain management.

- Mass customization and flexible design changes will be possible with new techniques, such as additive manufacturing, a technique that allows manufacturing of parts by adding layers of materials.
- Customers now expect and demand sustainable manufacturing. Manufacturers will need to integrate energy and resource-efficient techniques into products and processes.
- Streamlined fabrication processes will increase cost effectiveness.
- Manufacturers will need to design new processes to reduce waste while adding value. It will be critical to identify problems quickly.

Challenges you face in the future can be mitigated by how well you plan today. As you prepare to address these issues, you will need to establish new process improvements, develop plant optimization for the mid-21st century, and address the evolving roles of your workforce.

Superior Process Improvement

Operational excellence is not static – it requires constant attention and improvement. Manufacturing plants that were once efficient must evolve to meet new demands in order to stay current. The most successful manufacturers seek constant improvement in quality, capacity, sustainability, and reduced costs. In fact, a recent study reported that 87% of U.S. manufacturers identified superior process improvement either highly important or important to their company's success in the next five years. In order to achieve these improvements, they must reduce production time, achieve more flexibility in their operations, improve equipment and layout, automate and increase skills in the workforce, and anticipate future needs.

Seventy-two percent of manufacturers who operate at or near world-class customer-focused innovation consider process improvement to be highly important (vs. 42% furthest from world-class operations). These manufacturers develop new and modify existing processes that deliver more value, eliminating waste. This enables them to identify and solve problems quickly, reduce schedule delays and cost overruns, and minimize financial risk, rework, and errors.

World-class manufacturing includes continuous communication with all partners and suppliers as well as active collaboration. Pre-emptive planning allows for a strategic approach with enough lead time for proper estimates, forecasting, and identification of potential problems. Planned improvements utilize lean and ISO quality systems.

A recent U.S. Census study indicated that many manufacturing executives were unaware of or disregarded proven methods for increasing plant productivity, innovation, growth, and profitability. Research indicates that improved performance relies on a structured management approach including setting targets, metrics, and incentives for increased productivity and profitability. Performance monitoring helps improve higher rates of innovation. Process improvement has enabled more than 54% of manufacturers to improve productivity by more than 25% using advanced methods to measure returns.

Achieving superior process improvements and operational excellence requires specialized skills and experience with the manufacturing process. Selecting a specialist who has worked with many different manufacturing companies will provide you the insight you need to avoid process issues or barriers. Using your own manufacturing employees may be limiting as they are often too entrenched in current plant processes and configurations.

Plant Optimization

The rebound in the nation's manufacturing sector is based on modernization and investment in plant optimization. A number of manufacturing plants in the U.S. have lost efficiency and quality over the past few years. Even though many have been revamped or expanded, they lack the critical optimization that requires special planning skills and process experience.

While most manufacturers understand the steps they must take to remain competitive, there is often an implementation gap that may mean the difference between success and failure. Preparing facilities now for future growth will avoid a critical lag in profitability when competitors are moving ahead full steam. This involves building new manufacturing facilities or retrofitting existing plants to automate, upgrade, and streamline operations to meet evolving opportunities.

Labor-intensive manufacturing processes will need to be replaced with automated processes that reduce human intervention. The use of new systems, sensors, information processing and other improvements will enable plant optimization for future competition, but manufacturing plants must be ready for the shifts in production. Successful manufacturing operations are responsive and adaptable in order to reduce costs.

Advanced manufacturing, while utilizing increased automation, will rely on the quality of the infrastructure, innovative techniques, and advancements in materials. Combining process improvements, work flow planning, and improved systems design will allow manufacturers to accelerate output, build superior products, and meet customer demands if they are prepared. Establishing cross-functional capabilities for more

flexibility will demand an investment in new processes and equipment resulting in continuous improvement and innovation.

For example, new advances in plant optimization include electrical solutions such as remote monitoring, maintenance and control. There is a growing demand for new automation as installation improvements, efficient power and control devices, and other electrical advancements provide cost and efficiency benefits.

Smart manufacturing links automation with other processes such as digital supply-chain management and global systems to address manufacturing as an ecosystem. It incorporates the life cycle of products and systems into the manufacturing process, creating efficiency, reduced cost, and recyclability to protect the environment. Increased data enables the system to prepare and respond to changes quickly with improved flexibility. Smart manufacturing will become increasingly important as manufacturers plan for plant optimization, reducing risks and adding capability.

Facility Growth

Manufacturing isn't the only sector that will experience growth. In fact, many commercial and institutional sectors will expand, consolidate, upgrade, and renovate facilities. Health care construction, for example, has increased due to the demand for new buildings, hospital additions, and upgrades to existing facilities in order to accommodate new technologies and patients.

Food manufacturers must control costs and ensure food safety while they keep pace through automation and employing lean processes. In fact, 17.4% have automated their entire plants, while 49% are highly automated. Over a third use robotics in their packaging areas. Upgraded construction techniques and process improvements have allowed them to protect against safety issues and verify compliance with regulations. Safety and green sustainability are top concerns for food manufacturers – over 80% believe green initiatives are important, and 54% are currently using energy conservation methodologies. By employing motion control lights, skylights and other safety and energy-saving devices, they also save on expenses.

Evolving Roles

With advances in manufacturing, technology, and other challenges in the future, employee and management roles will evolve. Project managers, for example, will need to be more proactive and plan for any unanticipated problems. They should be prepared to develop more complex solutions and work with advanced technology.

Subcontractors can be a roadblock to success, and new strategies will be required to manage both subcontractors and suppliers. Streamlining interactions, improved

communication and collaboration, and consolidation should increase. Bringing all parties together earlier in the process will ensure that every team is involved and on the same page.

Over 65% of manufacturers currently seek outside support for regulatory and compliance issues. Sixty-four percent of manufacturers obtain help for operations improvements as well as workforce skills development. By turning to contractors who manage all facets of an operation, they are able to avoid discontinuity and interruptions through one point of contact.

Sustainability

Conventional energy sources will be less desirable in the future as prices increase, and alternative energy will become more popular and affordable. The number of U.S. solar manufacturing plants is expected to increase dramatically in the next few years.

Smart manufacturers employ reuse and retrofitting to obtain energy efficiency to significantly reduce emissions. However, they must select the right contractor to make sure appropriate materials are used in the retrofit. Environmental benefits may be lost if materials with high embodied energy are selected.

As an element of plant optimization, sustainability is important to cost-conscious companies. By improving the efficient use of resources, companies eliminate wasted effort. Results include energy reduction from retrofitted factory lighting and compressors, recycled materials, products that are recyclable or reusable, full scrap recycling, and paper and plastic recycling. The use of solid-state lighting has increased by 100% each year for the past five years, providing significant environmental benefits and efficiency.

Sustainability is increasingly important to U.S. manufacturers. By 2011 the majority (59%) of manufacturers believed it was important to their success – a 24% increase from just two years before. A significant driver has been customer demand for sustainability and social responsibility.

By using international key performance measures to improve their environmental performance, manufacturers are creating sustainable manufacturing and closing critical information gaps.

Partner with Storee to Prepare for the Future

New construction, factory expansions, renovations, upgrades, and consolidations can pave the way to remaining competitive and staying on the leading edge. Preparing for the future now will reduce the risk that you will fall behind your competitors when future demands suddenly arise.

As specialists in advanced construction techniques, Storee is one of the leading industrial contractors in the Midwest with years of experience in complex manufacturing, distribution, and commercial applications. We specialize in commercial and industrial building construction, renovation, modification, equipment moving, facility relocation, electrical systems and controls, equipment and conveyor installations, safety improvements and custom metal fabrications.

Using a proactive approach to maximize results, the Storee team focuses on each client's specific, customized needs. By recommending cost and efficiency savings, suggesting alternative materials, and implementing streamlined improvements, we meet your most demanding requirements in a timely and cost-effective way. We provide experience-tested, full-service solutions and partner with you to provide project integration and excellent communication.

To find out how you can optimize your operations and facilities for the future, contact us at 888-736-2032. We will provide a priority assessment for you at no charge.