

Advanced Warehouse Management in the Industrial Equipment and Machinery Sector



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Executive overview

Manufacturers and distributors in the industrial equipment and machinery (IE&M) sector are under severe pressure to increase the productivity and performance of their warehouse operations in the face of growing costs, complexity, and customer demands.

The warehouse management challenges in the IE&M sector are particularly acute as component and machinery manufacturers struggle to seize new market opportunities worldwide while sharpening their customer focus, increasing operational efficiencies, and even engaging in new product and service lifecycle management activities.

Best-in-class companies are recognizing these challenges as an opportunity to strengthen their competitive market positions and generate new business value. These top performers are meeting today's warehouse visibility, agility, and productivity challenges by investing in advanced warehouse management solutions.

The consequences of inaction are growing. As customers become increasingly demanding and supply chains increasingly global, the profitability of today's manufacturers and distributors is at risk. They cannot address rising customer expectations and seize new market opportunities with inadequate warehouse operations.

The immediate problems that are undermining warehouse management performance are:

- Ineffective order management
- Excessive labor costs
- Inefficient asset use

While market laggards remain wedded to processes, practices, and systems that perpetuate these difficulties, market leaders are taking warehouse management to new levels. They are adopting advanced systems that help them deliver the perfect order, reduce labor costs, and maximize the use of space and equipment.

These systems enhance warehouse operations by leveraging such next-level capabilities as inventory management, work and task management, radio frequency and voice direction, labor management, slotting, and kitting and light assembly.

Moving beyond the limitations of existing enterprise resource planning (ERP) systems, advanced warehouse management solutions position firms to operationally excel and drive profitable growth in today's hypercompetitive global markets.

The question that emerges now is: Which companies will perform as leaders and which ones will continue to act as laggards? Futures will turn on the chosen paths.

Market Drivers: Why IE&M Manufacturers and Distributors Are Rethinking Warehouse Management

In the IE&M sector, manufacturers and distributors are forced to reconsider their warehouse management practices, processes, and systems as they confront the challenge of entering new markets, meeting new customer demands, and, in some cases, providing lifecycle management for the products they sell. They are challenged to enhance warehouse productivity and visibility if they are to remain competitive, protect their profitability, and position themselves for continuing growth.

One trend is the growing power of customers relative to manufacturers. Big-box retailers such as Wal-Mart and Home Depot are pushing for the perfect order.¹ They want orders delivered more quickly, more accurately, and customized to their needs—all at lower cost. But this is true of original equipment manufacturers (OEMs) and other clients as well.

Manufacturers and distributors are expected to turn around orders on shorter notice than in the past. Indeed, they are punished with fines and chargebacks if orders are improperly labeled, packaged, or delivered. Unfortunately, heavy competition and big-box retail power mean that suppliers are unable to pass on the extra costs associated with these added demands. Such demands are also high for suppliers who make time-critical parts—whether for wind turbines or jet engines. OEMs will drop suppliers who are unable to meet their exacting specifications and accurately manage their orders.

Moreover, customers are increasingly demanding in terms of the value-added services they expect from their suppliers. Suppliers are expected to take on activities—such as assemble-to-order—that once would have been handled within the OEM's own facilities. That means machine manufacturers, in particular, must be prepared to manage and provide value-added services such as kitting and light assembly in their warehouses.

Yet another trend that puts pressure on warehouse facilities is the need to track the serial codes of machines. Suppliers must closely track the destination of their finished goods if they are to provide continuing services such as warranty, maintenance, and after-market parts replacement. As the machines themselves become more complex and product lifecycle management becomes an increasingly important factor in the IE&M sector, serial code tracking becomes central to success, and suppliers must ensure they have the inventories in the right places to service their customers on an ongoing basis.

¹ Industry Week, "The Perfect Order," January 1, 2007.

Meanwhile, supply chain management has become increasingly difficult as companies source products, components, and materials on a global scale. Manufacturers that once sourced their materials regionally or nationally now turn to Asia, Latin America, Eastern Europe, or other overseas locations. Similarly, they are distributing their goods more globally as they seek to penetrate new and growing markets. That means products must travel far greater distances and be stored in more locations, exacerbating the challenges of visibility and threatening perfect order delivery.

Suppliers may need to set up new distribution centers in distant locations to meet the expectations of their customers—supplying HVAC manufacturers in Russia, for instance, or tractor manufacturers in China. Somehow they must address the demand from OEMs, distributors, and dealers in distant markets who want assurance that components and machines will be delivered accurately, on time, and on budget. To win and keep their business, they must often maintain a regional or even local distribution presence. As markets become more global, so, too, must their warehouse strategies.

But it's not enough to merely set up new distribution facilities. It's vital to ensure they are designed for visibility, flexibility, and scalability. Warehouse managers must have visibility into their inventories to ensure that customer requirements are met without interruption due to undersupply while ensuring costs don't rise inappropriately due to oversupply. They must have the flexibility to adapt their inventories to the needs of local markets. European countries, for instance, make many different demands on suppliers related to regulations and factors such as electrical standards. Scalability addresses the need to scale up to meet unexpected demand surges or scale down as demand shifts downward.

Given these factors, suppliers are faced with escalating costs and complexity—driving demands for greater productivity in warehouse operations. With distribution seen as a cost center, companies have no choice but to find ways to drive warehouse performance to new levels if they want to remain competitive and profitable. However, their existing ERP systems often lack the automated capabilities necessary to increase visibility into operations, enhance market agility, and boost warehouse productivity.

Business Challenge: Inadequate Order, Labor, and Asset Management Are Undermining Warehouse Performance

The limitations of many companies' warehouse operations are manifested along three key dimensions: orders, labor, and the warehouse assets themselves.

To drive performance and productivity gains in their warehouse operations that are in line with today's best-in-class performers, manufacturers and distributors in the IE&M sector will be forced to confront inadequacies in terms of how these issues are handled. Let's consider them one by one.

Ineffective order management. Today's customers are more demanding than ever. They increasingly expect the perfect order. According to AMR Research, this is an order that's delivered complete, on time, accurate, and in perfect condition.²

Best-in-class companies achieve 98% first-time order completeness (reducing rework), 98% on-time rates (reducing delays), and 99.7% order accuracy (reducing errors and mis-picks), according to Aberdeen Group.³

Most companies, however, are falling short on these key performance indicators. They are not only allowing service levels to diminish, they are vulnerable to lost business in the case of demanding OEMs, distributors, and dealers, and fines and chargebacks from powerful customers.

All research points to a strong link between perfect order performance and profitability—and for very good reason. More perfect orders mean fewer *im*perfect orders; and it's the costs of correcting those imperfect orders that eat into margins. Premium freight costs, excessive overtime, and extended cash-to-cash cycle times all erode overall profitability. And in an era of increasing customer focus, it's clear that orders themselves are becoming more complex and custom, requiring warehouse managers to have a tighter grip on their stocks, schedules, and available resources.

Excessive labor costs. Given the increasing complexities associated with today's customer and supply chain relationships, companies are struggling to meet performance expectations without raising labor costs. Indeed, 51% of respondents in a recent Aberdeen Group survey said they were "feeling the pressure to manage change without increasing staff."⁴

Meanwhile, best-in-class companies are "managing the disruptions and uncertainty of supply and demand changes" with less than 0.25% increases in labor costs, according to Aberdeen.⁵

Unfortunately, most companies are either seeing labor costs rise far beyond the levels of these best-in-class firms, or they are allowing performance levels to slip. Whatever the case, they are running the risk of being eclipsed by high-performing rivals. As customers demand more value-added services—such as light assembly work—from their suppliers, labor cost management takes on still greater importance.

² AMR Research, *Forget the Perfect Order, It's the Imperfect Order You Need to Measure*, December 2007.

³ Aberdeen Research, *Five Key Steps to Optimizing Warehouse Management*, February 2009.

⁴ *Ibid.*

⁵ *Ibid.*

Such challenges are especially difficult to manage as supply and distribution chains lengthen and companies set up warehouses overseas to be closer to their customers. They must have the ability to scale up—or scale down—their distribution centers as demand requires. The question is whether they will be able to meet new levels of demand without being overwhelmed by disproportionate labor costs.

Inefficient asset use. Yet another factor limiting the performance of today’s manufacturers and distributors is the tendency to underuse assets such as equipment and warehouse space. Considering the growing demands they face, the natural tendency is to spend more on warehouse equipment such as forklifts, pallet racks, and conveyors. They are also likely to contract for more warehouse space—often at premium rates.

Rather than better leveraging the assets they currently possess, they see costs rise as they acquire still more assets. Once again, they are likely to be outmaneuvered by high-performing competitors with the capabilities to generate more from less.

In an increasingly global market, suppliers will need to open up new facilities overseas to meet the growing requirements and specifications of their customers in the countries they operate. The issue in the IE&M sector will be whether suppliers are capable of rolling out these new distribution capabilities in an agile and cost-effective fashion. They’ll need to manage their warehouse facilities and assets with exceptional skill if they are to remain competitive in today’s fast-moving markets.

Top Performers Earn Best-In-Class Status⁶

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	99.7% of orders picked accurately 98.6% of orders arrive at customer on time 98.5% of lines across all orders which can be filled complete -1.7% order turnaround time, trend +0.2% warehouse labor cost, trend
Industry Average: Middle 50% of aggregate performance scorers	96% of orders picked accurately 93.5% of orders arrive at customer on time 93.8% of lines across all orders which can be filled complete +0.5% order turnaround time, trend +1.3% warehouse labor cost, trend
Laggard: Bottom 30% of aggregate performance scorers	88.1% of orders picked accurately 88.5% of orders arrive at customer on time 86.2% of lines across all orders which can be filled complete +4.9% order turnaround time, trend +5.2% warehouse labor cost, trend

Source: Aberdeen Group, February 2009

One of the key factors undermining productivity and performance on all three of the key dimensions—orders, labor, and assets—is an absence of clear visibility into operations.

⁶ Ibid.

Reliant on existing ERP systems, most of today's manufacturers and distributors lack detailed inventory tracking capabilities. Thus, they face the challenge of being able to support the same product housed in different discrete locations within a warehouse. Different pallets become one bundle of inventory or lot in their systems. They are unable to track the lots and expiration dates of those pallets.

Existing ERP systems also tend to lack the capabilities necessary to proactively manage and monitor labor productivity. There is no way to direct activities in the warehouse for maximum efficiency, ensuring workers are performing in the most productive fashion. One can't monitor a shift that a person has performed in a given day, accounting for time and attendance.

Space optimization becomes another problem as workers fail to put products in appropriate bins or support the proper rotation of products out to customers. Principles such as first in, first out (FIFO) and first expire, first out (FEFO) become difficult, if not impossible, to follow. When warehouse employees grab the first product available, products expire in the warehouse and become obsolete—a growing liability in an era of equipment and machinery that requires continuous upgrades with high-value electronic components and parts.

By contrast, today's best-in-class companies are turning warehouse management into a competitive advantage. These leaders are setting a new pace in warehouse management and threatening to leave laggards far behind. Manufacturers and distributors that intend to remain competitive and meet growing customer demands—driving warehouse productivity to best-in-class levels—must move beyond their existing ERP systems and adopt advanced capabilities.

Business Solution: Advanced Warehouse Management

To reach new levels of warehouse visibility, agility, and productivity, companies in the IE&M sector are now investing in advanced warehouse management solutions. These proven systems help suppliers maximize product placement strategies, prioritize tasks, implement productivity standards, and increase logistics efficiency.

Such systems use factors such as item, location, quantity, and order information to manage stock. But while conventional warehouse management systems concentrate on merely locating inventory, advanced systems manage the whole process of material flow: receiving, put-away, cycle counting, picking, replacement, packing, and shipping.

Among the key capabilities of an advanced warehouse management solution are:

- **Inventory Management.** This ability enables identification and tracking of inventory with sufficient granularity to allocate, fill, and deliver orders as accurately as possible, as often as possible. It allows viewing and monitoring of the location, condition, and amounts of all finished goods, components, and raw materials in your warehousing operation, as well as rotate your inventory according to FIFO/FEFO principles and other relevant factors. Lot control, serial number capture, date code tracking, catch weights, inventory aging, and expiration dates provide additional visibility and flexibility.
- **Work and Task Management.** This concept involves managing the ebb and flow of demand by balancing workloads and tasks with available resources. Multitasking enables increased productivity through the use of common workflows, customer requirements, and business processes. Task interleaving allows grouping of work orders and locations with similar or complementary attributes into batches and waves so that orders are received, picked, packed, kitted, and shipped in a timely fashion. Individual worker productivity improves by combining complementary tasks to increase output and limit travel time.
- **Radio frequency (RF) and Voice Direction.** These capabilities help improve the productivity of distribution and fulfillment processes by using scanners or hands-free connections and advanced speech recognition technology to voice-enable order selection, replenishments, put-aways, transfers, and receiving. Workers can operate without reliance on cumbersome lists and labels or go hands-free and vastly improve their productivity and order accuracy.

- **Labor Management.** This ability enables optimized worker performance in the warehouse. It provides workforce planning, staffing, and execution capabilities, along with the ability to monitor direct and indirect labor and provide feedback to workers and supervisors as picking, packing, and shipping activities are completed. Real-time performance measurement gives supervisors visibility into their operations so they can identify bottlenecks, labor performance problems, and other barriers to productivity and take corrective action.
- **Slotting.** This capability helps to maximize productivity and minimize travel time from location to location by determining the most advantageous arrangement of SKUs within a range of pick faces or slots. It minimizes disruptions that result from demand variability by enabling adjustment of product placement according to seasonality, special promotions, and changes in customer order patterns.
- **Kitting and Light Assembly.** This ability allows adoption of postponement strategies and mass-customization of products at the time of distribution and fulfillment to ensure customer requests are fulfilled correctly at the lowest total supply chain cost. You gain greater ability to accommodate changing customer tastes and product requirements. Kitting and light assembly facilitates personalization and other product enhancements, packaging and labeling operations for existing products, and complex final assembly operations for customer-specific products.

Benefits of Advanced Warehouse Management Systems

Companies in this sector can reduce costs, protect profitability, and enhance their overall market competitiveness by remaining focused on the key performance indicators now driving warehouse performance. Through the implementation of advanced warehouse management solutions, they can:

- **Strengthen order management.** With customers now demanding the perfect order, manufacturers and distributors can leverage advanced solutions to reach 98%+ order completeness, 98%+ order on-time rates, and 99.7%+ order accuracy—putting them in the best-in-class performance category.
- **Increase labor productivity.** With labor cost pressures rising in relation to new demand and supply changes, companies with advanced capabilities can enhance workforce performance and accomplish more with less. Labor cost increases, which otherwise would have risen heavily, will be minimal or nonexistent. Indeed, companies can increase labor productivity 15% to 40%.
- **Maximize asset use.** Rather than invest more capital in equipment and warehouse space, companies will rely on their advanced systems to fully deploy their existing warehouse assets.
- **Reduce inventory costs.** With most ERPs and legacy warehouse management systems (WMSs), one can only identify inventory by location, not holistically. However, an advanced WMS enables one to make inventory buying decisions based on visibility into inventory throughout one's entire network and make intelligent decisions on intra-facility movement of that inventory relative to buying more. Since inventory is a tremendous cost burden, companies can drive clear and compelling return on investment by addressing this area.
- **Enhance customer relationships.** Having dynamic and responsive warehouse operations enables suppliers in the IE&M sector to deliver increasing levels of customer value. They can meet new and more demanding specifications in a cost-effective way. But they can also generate new revenue streams associated with such product lifecycle management activities as warranty, maintenance, and aftermarket parts replacement. Indeed, the products themselves may be increasingly viewed as generators of predictable and profitable service revenue.

Advanced warehouse management solutions promise to reduce direct operating costs and increase overall revenue. As the experiences of best-practice firms suggest, these gains are clearly within reach. In fact, some companies are further maximizing the benefits they realize by smartly integrating their warehouse management capabilities with new or existing ERP, supply chain management (SCM), and transportation management systems (TMSs). The seamless real-time exchange of data among such systems can contribute to increasing agility and differentiation in today's hypercompetitive markets.

Case in Point: Generac Power Systems

Founded in 1959, Generac Power Systems of Waukesha, Wisconsin, prides itself in being able to respond quickly when a residential, commercial, or industrial customer's power goes out. It was the first company to engineer affordable, home standby generators, and also the first to develop an engine specifically for the rigors of generator use, according to Logistics Management.⁷

Up until three years ago, Generac's shipping strategy centered on sending out product to its powerless customers as the orders came in. Hurricane season, for example, often found the firm scrambling to fill orders from frantic, powerless customers in Florida. "There was almost no transportation planning involved whatsoever," says Brian Randleman, the company's logistics manager. "We were an execution-type company: if we had a product, we shipped it out."

That changed in 2006, when Generac began shopping around for a WMS and TMS. Already using an ERP system from Infor, the company "decided that the ERP itself wasn't managing our supply chain requirements," says Randleman, who developed a list of Generac's business and functional requirements before considering solutions from six different WMS and TMS vendors.

Generac, which was shipping from three plants via less than truckload (LTL) and some flatbed carriers, had a few goals in mind for its new supply chain system. For starters, Randleman says the company was looking to participate in a "pool-based" transportation system, which finds different shippers "filling" a trailer as a group, rather than using LTL shipments individually. A new finished goods distribution center using the WMS would execute this new strategy, and nearly 80% of all shipments would originate there now. To participate, Generac required a TMS that could track its loads from the warehouse to final delivery.

Generac found the answer in the supply chain management solutions offered by its existing ERP vendor. "Not only did we already have a relationship with Infor, but its WMS and TMS offerings met our supply chain requirements," says Randleman.

Once the TMS and WMS were in place, Generac had to switch from 47 years of a "ship it as the orders come in" mentality, to a planning-based approach. As a result, the company has been able to reduce its manpower needs in the warehouse and improve its fill rates, inventory control, and customer satisfaction ratings. On-time ship rates are now over 90%—up from 35% to 40% three years ago. Generac has also moved from a strategy of "fill everything as soon as possible" to a more optimized approach. "Just because we get an order today doesn't necessarily mean we have to ship it today," says Randleman. "Using our supply chain solutions, we can optimize our logistics to achieve the best possible savings while still meeting customer demands."

In the warehouse, Generac has equipped workers with scanners that allow one person to receive and put away products with a single action. "We can also do inventory cycle counting that we couldn't do before, so we know where the product is at all times," explains Randleman. "We now have all of the functionality that we need to operate our business efficiently, while providing our customers with the best product as quickly as possible."

⁷ McCrea, Bridgette, "Logistics Technology: State of ERP/To Plug or Not to Plug," Logistics Management, July 1, 2009.

Conclusion: Winning in Hypercompetitive, Global Markets

As the experiences of best-in-class performers clearly demonstrate, companies can realize enormous gains in warehouse performance by implementing advanced systems. Manufacturers and distributors in the IE&M sector that have invested in advanced warehouse management solutions are strengthening order management, increasing labor productivity, and maximizing their use of warehouse assets.

As customer demands rise and markets grow increasingly global, companies will need to drive gains in warehouse productivity and performance to avoid crushing costs. But, just as important, these investments promise to pay off in terms of greater warehouse visibility, agility, and productivity. Such moves enable suppliers in this sector to become increasingly customer-focused and meet growing expectations. They lay the foundations for profitable growth and market success in the hypercompetitive, global markets of today and tomorrow.

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