ERP in Industrial Equipment Manufacturing

Rise of the Machinery

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ERP in Industrial Equipment Manufacturing: Rise of the Machinery

The products made by industrial equipment (IE) manufacturers are as diverse as they are complex. From gas compressors and air purifiers to speed changers and high-speed drives, these manufacturers have their hands full. Managing these manufacturing projects, many of them custom, requires intelligent structures supported by powerful technology. Enterprise Resource Planning (ERP) serves as the infrastructure and transactional engine to keep plant floors, and beyond, humming. It touches not just manufacturing operations, but every facet of the business, from product design to logistics and sales. This Sector Insight, based on data collected from 79 industrial equipment manufacturers, will explore how top performing organizations utilize ERP solutions to improve and integrate processes across the enterprise, reduce costs, and enhance visbility for decision makers.

Follow the Leaders

Aberdeen used five key performance criteria to distinguish the performance of Leaders from that of Followers (Table 1). These metrics were chosen because they are indicative of manufacturing success and efficiency, and also because they can be directly improved by ERP. Delivering as promised and on-time, reducing inventory, achieving greater accuracy, and improving internal processes keep customers happy, contain costs, and produce a stronger bottom line.

Table 1: Top Performers Earn Leader Status

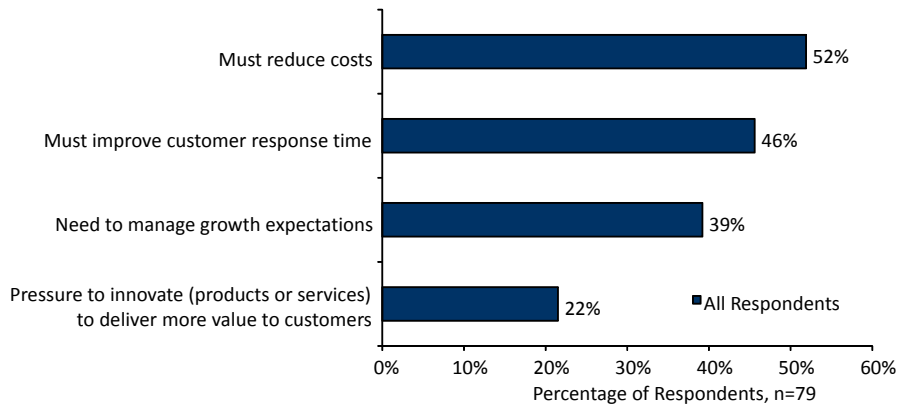| Definition of Maturity Class	Mean Class Performance
Leaders: Top 35% of aggregate performance scorers	▪ 4.69 days to close a month ▪ 95% complete and on-time delivery ▪ 18% reduction in inventory as a result of ERP ▪ 93% internal schedule compliance ▪ 96% inventory accuracy
Followers: Bottom 65% of aggregate performance scorers	▪ 6.49 days to close a month ▪ 82% complete and on-time delivery ▪ 1% increase in inventory as a result of ERP ▪ 75% internal schedule compliance ▪ 87% inventory accuracy

Source: Aberdeen Group, September 2012

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Business Context

Industrial equipment manufacturers face a dynamic environment fraught with challenge (Figure 1). The top pressure faced by IE manufacturers is the need to reduce costs (cited by 52% of respondents). This pressure is hardly unique to the world of manufacturing, but it is telling that costs are such a prominent concern within the industry. Top performing manufacturers recognize the potential of freed up capital for investment in business innovations and operational improvements. One aspect that 46% of IE manufacturers would like to improve is customer response time. Achieving this goal means accelerating internal processes and enhancing operations management. A customer who gets a quality product in a short timeframe is a happy customer, and one that is likely to return for repeat business.

Figure 1: Pressures Facing IE Manufacturers

Source: Aberdeen Group, September 2012

Thirty-nine percent (39%) of respondents cited the need to manage growth expectations as a top pressure. This is an offshoot of the need to reduce costs. All manufacturers want to grow, but overly ambitious expansion can become a financial burden and hamstring an entire enterprise down the road. IE manufacturers need to be self-aware and realistically assess what new endeavors their infrastructure, operations, and wallet can handle. Finally, manufacturers feel the pressure to innovate to deliver more value to customers (22%). This may mean exploring new or better products and improving service. We will soon see that Leaders distinguish themselves with proactive answers to this pressure (see sidebar).

Streamlining, Integrating, and Innovating with ERP

Industrial equipment manufacturing tends to be project driven. Manfuacturers have to build machinery and parts that are often very large and complex. As such, careful planning and diligent management are needed to keep projects on schedule and within budget. Leaders are taking a hard look in the mirror and using ERP to improve existing processes and do

What is ERP?

Aberdeen defines ERP as an integrated suite of modules that forms the operational and transactional system of record upon which any business is based. With its roots in Material Requirements Planning (MRP), it is most ubiquitous in the manufacturing industries, but has truly expanded beyond these boundaries to become a mature business application that provides value to a far more extensive set of industries. ERP systems provide much-needed capabilities, such as management of financial, product / inventory, human capital, purchasing, and other transactional data within one environment.
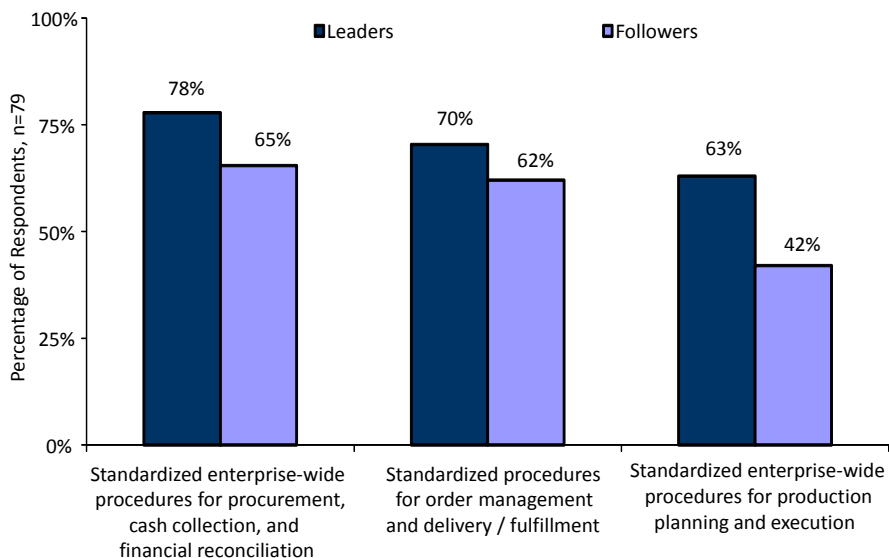
Leaders Get It

Leaders were 76% more likely than Followers to recognize the need to innovate to deliver more value to customers as a top pressure.

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more with what they have. These top performing organizations institute an array of strategies and capabilities to support their operations (see sidebar).

Leaders have pulled away from the field when it comes to standardizing procedures (Figure 2). Standarization ensures consistency across the enterprise, keeping projects and their accompanying cash flow on track. Seventy-eight percent (78%) of Leaders have standardized enterprise-wide procedures for procurement, cash collection, and financial reconciliation. This is an area where ERP shines as a transactional engine. Consistent financial practices across the enterprise means fewer mistakes and misunderstandings, which can cost both time and capital — two things IE manufacturers are bent on saving.

Figure 2: Standardized Procedures

Source: Aberdeen Group, September 2012

Managing orders and financial transactions becomes irrelevant if an organization cannot deliver on its orders, which is why 70% of Leaders have standardized procedures for order management and delivery and 63% have standardized procedures for production planning and execution. These procedures keep projects on track, allowing manufactuers to deliver to customers on-time and recognize revenue as planned. In constructing standardized procedures in multiple areas, decision makers can evaluate what planning methods and manufacturing operations work best and apply them to every area of the enterprise. Once all procedures are standardized, they can be supported organization-wide by ERP.

Aberdeen's October 2012 report *ERP Selection: Finding the Right Fit* revealed that functionality is the top criteria Best-in-Class organizations utilize when selecting their ERP solution. During the selection process, IE manufacturers must look for a specific set of features to support the complexity of their

Leading Strategic Actions

Leaders answer the pressures of IE manufacturing with the following big picture strategies:

√ Standardize business processes (63%)

√ Streamline and accelerate processes (63%)

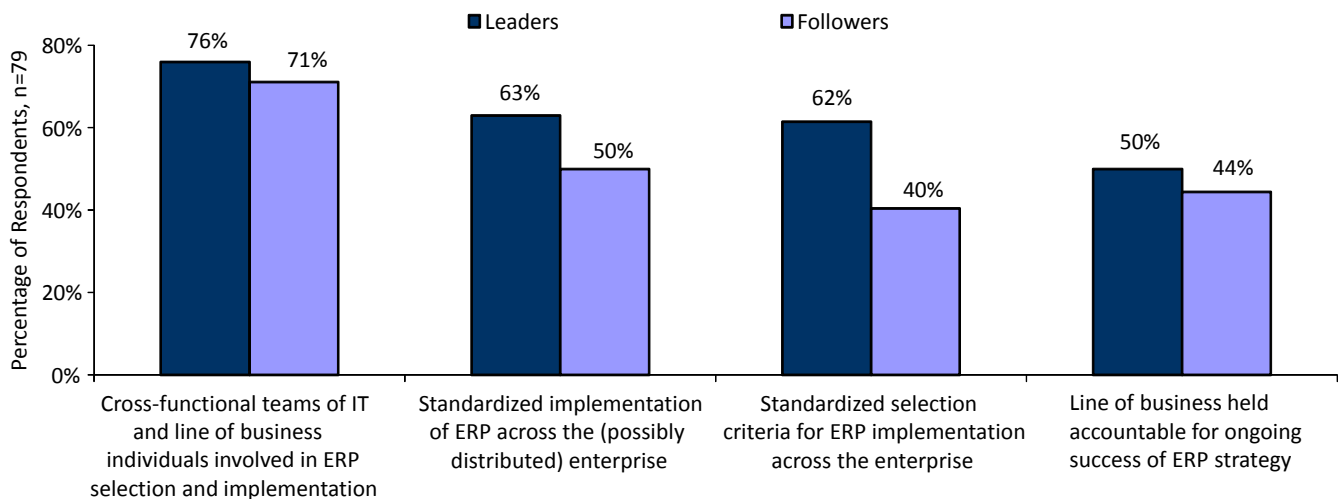√ Optimize the use of current capacity (37%)

Fast Facts

√ Seventy-five percent (75%) of Leaders give decision makers the ability to drill down from summary data to the transactions that form the fiscal and operational audit trail.

√ Leaders are 124% more likely than Followers to have the ability to automatically and immediately notify decision makers when certain conditions occur.

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products and meet the demands of a "to-order" manufacturing environment. This functionality includes shop floor control, project management, forecast and demand planning, and supplier scheduling. To obtain solutions with the proper functionality, top performing IE manufacturers enlist multiple perspectives and standardize implementation processes across the enterprise (Figure 3). Seventy-six percent (76%) of Leaders utilize cross-functional teams of IT and line of business indiviudals during ERP selection and implementation. Hearing the voices of both those who use ERP and those who support it will lead an organization to the right functionality and a smooth rollout.

> "ERP has enabled better integration of systems, from enquiry to end of service life. Also, it has reduced double entry of data and our data as a whole is much more up to date."
>
> ~ General Manager, Small Industrial Equipment Manufacturer

Figure 3: Selection and Implementation

Source: Aberdeen Group, September 2012

When it comes to selection, Leaders continue the trend of standardization, as 62% have standardized selection criteria for ERP across the enterpirse. Leaders know they need ERP systems that understand project-based manufacturing, and they keep this mind time and again when making selections. Less successful IE manufacturers try to shoehorn their project management needs into existing ERP solutions, and ultimately pay the price on their bottom line. Selecting ERP is only half the battle, however, and so 63% of Leaders employ standardized implementation of ERP across the enterprise. If ERP is gong to support processes and individuals that span states, countries, and even continents, it will greatly serve the enterprise if the solution is always implemented the same way. However, succesful ERP initiatives do not end after selection and implementation. Half of all Leaders hold the line of business accountable for the ongoing success of ERP strategy. It is up to decision makers and business users to ensure that ERP fulfills its mandate and is utilized to its full potential.
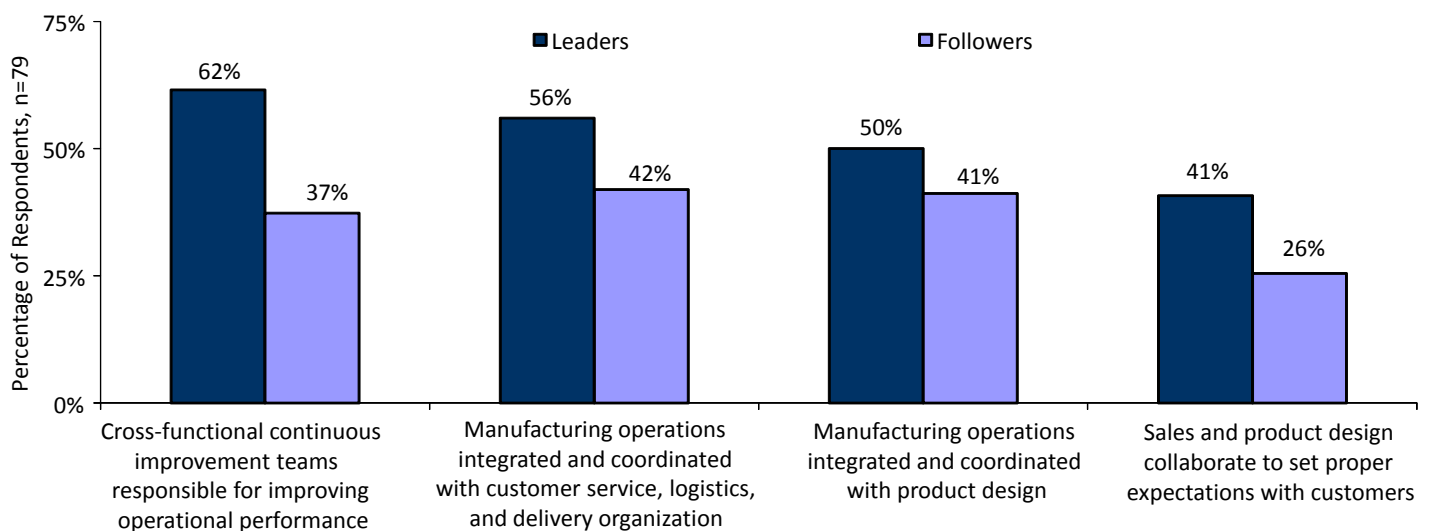
The project-based manufacturing used for industrial equipment requires a constant feedback loop, and ERP can help achieve that level of collaboration.

> "Our ERP system has successfully streamlined our processes and made us more efficient."
>
> ~ Manager, Small Industrial Equipment Manufacturer

Managers need to gain insight from the folks on the shop floor and quickly turn that information around to deliver fresh marching orders. To keep the flow of actionable information going, technology is paramount. Leaders build integration into their organizational structure to promote collaboration and drive improvements across the enterprise (Figure 4). Sixty-two percent (62%) of Leaders utilize cross-functional continuous improvement teams that are responsible for bolstering operational performance. These are the folks who will drive the innovations that deliver more value to the customer.

Figure 4: Collaboration and Integration

Source: Aberdeen Group, September 2012

Leaders have established a trend for further integration across the enterprise, as 56% coordinate manufacturing operations with customer service, logistics, and delivery. An ERP system facilitates the integration of shop floor operations with processes such as order entry, estimating, shipping, inventory management, purchasing, and scheduling. Establishing such a culture of collaboration through technology fosters the constant feedback needed for project-based manufacturing.

Collaboration is also valuable before production begins. Half of all Leaders integrate manufacturing operations with product design. New product designs can be optimally rolled out to gel with the manufacturing schedule. Such coordination gives manufacturing decision makers an avenue to relay recurring issues that can possibly be fixed by the design team. This capability can also help with the pressure to manage growth expectations, as the design team gains a better understanding of the complete process that turns vision into reality.

Finally, collaboration is valuable to industrial equipment manufacturers away from the shop floor. Leaders are 58% more likely than Followers to have
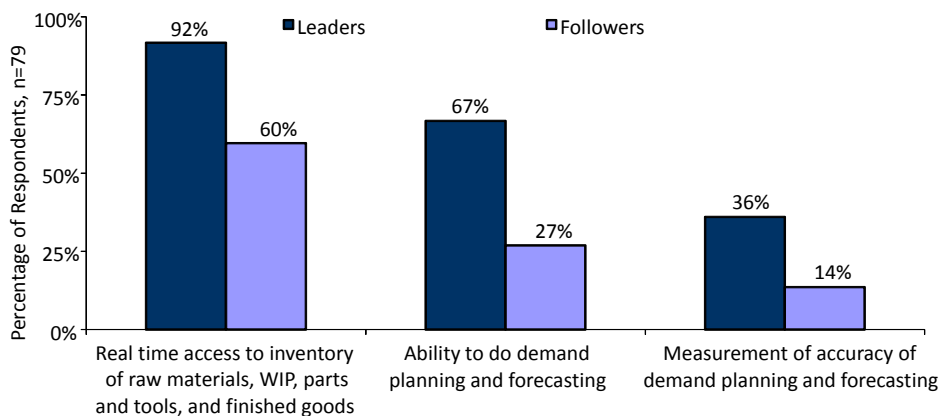
"ERP has streamlined and integrated everything from quoting to accounting. We have to be leveraging technology pretty heavily to accomplish our level of sales with a small staff."

~ Executive, Small Industrial Equipment Manufacturer

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their sales and product design departments collaborate to set proper expectations with customers. This will prevent sales from promising anything to customers that product design cannot deliver on. Also, design can add value for customers by keeping sales abreast of the very latest products and their functionality.

Top performing IE manufacturers are also using ERP to manage the sales and operations planning (S&OP) and demand planning processes (Figure 5). Real-time inventory and process visibility is practically universal for Leaders, with 92% reporting real-time access to inventory of raw materials, WIP (Work in Progress), parts and tools, and finished goods. This level of visibility is needed in order to ideally fit individual projects within the sales cycle and the flow of operations. Leaders use an arsenal of technology solutions to bolster their planning and forecasting abilities (see sidebar).

Figure 5: S&OP / Demand Planning

Source: Aberdeen Group, September 2012

The performance benefits of demand planning and forecasting are manifest in the fact that Leaders are 148% more likely than Followers to have the ability to perform such an analysis. Forecasting gives IE manufacturers a solid, quantitative look at demand so that they can plan their complex production schedules accordingly. Additionally, manufacturers can optimally map their projects to meet demand as ERP lets decision makers know what they have, where it is, and how soon they can use it. Leaders are 157% more likely than Followers to measure the accuracy of their demand planning. Such measurement can unveil areas where forecasts consistently miss the mark and lead to more accurate forecasts in the future. More accurate demand planning means a better designed production schedule, cutting out delays that will increase costs and disappoint customers.

Reaping the Benefits

Leaders and Followers alike were able to quantify or monetize numerous business benefits derived from ERP implementations (Table 2). Responding organizations were asked to indicate the metrics for which they could

The Leader's S&OP Tool Belt

Leaders use the following enterprise tools / extensions to develop and support their sales and operations planning:

√ Quality Management System (QMS) – 48% of Leaders / 15% of Followers

√ Financial Planning and Budgeting (stand-alone) – 44% Leaders / 17% Followers

√ Manufacturing Execution System (MES) – 44% Leaders / 40% Followers

√ Enterprise Performance Management (EPM) – 42% Leaders / 2% Followers

√ Enterprise Asset Management – 32% Leaders / 6% Followers

√ Product Lifecycle Management (PLM) or Product Data Management (PDM) – 32% Leaders / 8% Followers

√ Project / Portfolio Management (beyond ERP module functionality) – 25% Leaders / 6% Followers

√ Supply Chain Planning (beyond core ERP functionality) – 24% Leaders / 6% Followers

quantify or monetize an improvement resulting directly from ERP. Unsurprisingly, Leaders relieve the top pressure of cost reduction at a much higher rate than Followers. Still, ERP has helped all organizations reduce both operational and administrative costs, in addition to increasing profits. ERP even helps drive innovation by enabling increased New Production Introductions (NPI). The disparity in benefits achieved speaks to the foresight of Leaders when selecting ERP and their understanding of the project-based nature of industrial equipment manufacturing.

"ERP has had a very good impact on organizing and presenting financials, passing audits, and generally measuring the business."

~ CFO, Large Industrial Equipment Manufacturer

Table 2: Measurable Benefits Achieved Through ERP Implementation

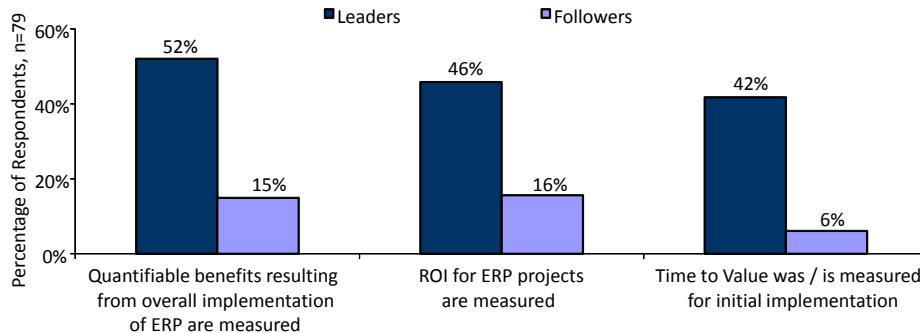| Benefit	Percent of Leaders Reporting Benefit	Percent of Followers Reporting Benefit
Reduction in operational costs	62%	18%
Increased profits	58%	18%
Reduction in general administrative costs	44%	18%
Better utilization of resources	39%	19%
Improved project cost tracking	37%	20%
Increased NPI	35%	12%

Source: Aberdeen Group, September 2012

IE manufacturers cannot know if they are getting the full value out of their ERP implementation unless they check (Figure 6). Followers continue to live up to their moniker when it comes to measuring the impact and value of ERP. Leaders are 247% more likely than Followers to measure the quantifiable benefits resulting from the overall implementation of ERP. These organizations are able to identify which ERP functionalities deliver value. They can also recognize which areas of the enterprise are not benefitting from ERP and tailor their solutions accordingly.

Fast Fact

Leaders are 76% more than Followers likely to have role based homepages.

Figure 6: Measuring ERP's Impact

Source: Aberdeen Group, September 2012

"Thanks to ERP, we have a lot more vision about what is happening in our manufacturing process. Inventory control is significantly improved and we were able to reduce administrative staff by 20% because of paperwork reductions and improvements in process flow."

~ CIO, Small Industrial Equipment Manufacturer

Leaders are also 188% more likely to measure Return on Investment (ROI) for ERP projects. An ERP solution represents a significant investment for any manufacturer, and quantifying the return and impact of that investment is a best practice. Organizations that recognize solid ROI from an ERP solution are also more likely to wisely reinvest in additional ERP projects. Finally, a paltry 6% of Followers measure Time to Value for initial ERP implementation, compared to 42% of Followers. Leaders are 600% more likely to see just how fast ERP can have a positive impact on the entire organization. They can also recognize areas where ERP's worth has been slow to emerge and adjust implementation processes to more rapidly deliver value.

Key Takeaways

Industrial equipment manufacturers use ERP to enhance processes, foster collaboration, and intelligently prepare for the future across the entire enterprise. Doing so has delivered numerous measurable benefits that can be traced directly to ERP. Manufacturers looking to answer the pressures of the day and maximize operational effectiveness should take the following steps:

- **Standardize and streamline processes to reduce costs and delays.** The top two pressures IE manufacturers face are the need to reduce costs and improve customer response times. Standardizing and streamlining processes addresses both these pressures by promoting consistency, reducing mistakes, and accelerating business flow. IE manufacturers benefit enormously from leveraging ERP to standardize procedures across multiple areas of the enterprise, from procurement and cash collection to order management and production planning.

- **Select an ERP configuration that meets the specific needs of industrial equipment manufacturing.** Certain ERP solutions meet the specific demands of IE manufacturing better than others. Enlisting the opinion of cross-functional teams and standardizing

criteria and implementation will lead to a successful selection and smooth rollout. Shoehorning project management and other IE manufacturing needs into existing ERP solutions is best left to Followers.

- **Foster collaboration and integration across lines of business and job functions.** Managing IE manufacturing projects requires a constant feedback loop and open collaborative channels. All areas of the enterprise should be in communication, from the shop floor to product design and sales. ERP is the engine to drive this integration and manage all levels of operations intelligently. Strong interdepartmental communication and understanding will improve operations and nurture innovations that can benefit the entire enterprise.

- **Use ERP to maximize the effectiveness of S&OP and demand planning.** Top performing manufacturers utilize ERP to manage the sales and operations planning and demand planning processes. Nearly 100% of Leaders have real-time access to inventory, allowing them to optimize their production schedule. ERP solutions can include an arsenal of tools to help with these planning processes. Manufacturers leveraging ERP during planning can see what they have, where it needs to be, and how to get it there.

Taking these steps will equip manufacturers with ERP solutions that accelerate processes and reduce costs while improving planning and project management — all invaluable benefits when facing the current and future challenges of industrial equipment manufacturing.

For more information on this or other research topics, please visit www.aberdeen.com.

Related Research	
ERP Selection: Finding the Right Fit; October 2012	*ERP in Aerospace and Defense Manufacturing*; February 2012
ERP in Manufacturing 2012: The Evolving ERP Strategy; July 2012	*To ERP or Not to ERP: In Manufacturing, It Isn't Even a Question*; April 2011
Manufacturing Operations Management (MOM) and Lean; May 2012	*ERP in Complex Manufacturing*; March 2011
ERP Implementation and Training: A Guide to Getting Your Business in Gear; April 2012	

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