

VITAL ANALYSIS

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A Special Report from Vital Analysis



The Machinery & Equipment Industry

The makers of capital machinery & equipment provide the tools that power the industrial sector. A significant portion of the firms in this space also make replacement parts and provide maintenance/repair services for the equipment they produce.

The sector is quite broad and includes, at a minimum, companies in the following verticals:

- Engines & turbines
- Fluid power equipment
- Pumps, compressors, taps and valves
- Bearings and gears
- Ovens, furnaces and burners
- Lifting and handling equipment
- Office machinery & equipment
- Power-driven hand tools
- Mining & oilfield equipment
- Robotics
- Metal working and fabricated metal machinery
- Agricultural machinery
- Electrical transmission equipment
- Industrial machinery
- Materials handling equipment
- Service industry machinery
- Musical equipment
- Food manufacturing equipment

Machinery & equipment continues to be deployed wherever firms have jobs/tasks where:

- The work is dangerous to humans.
- Repeated perfection of tasks and outputs is a mandate.
- High labor costs are a competitive challenge.
- Super-human strength, endurance or capability would be needed to complete the task.

It is for these (and other) reasons that more machine tools and robots are appearing in both blue-collar and white-collar jobs.

"In the Netherlands, Philips uses 128 robots to make razors. The only humans are the nine workers who perform quality checks."

Source: *"The Rise of Robotics"*, **bcg.perspectives**, Alison Sander, August 27, 2014

The Industry Today

Manufacturing equipment essentially originated in the early Industrial Age. As time has passed, machines have gotten faster, more powerful and more sophisticated. But connecting one machine to another has been a bit of a challenge. Different technologies have been used to program individual machines (e.g., paper tapes, PLC (programmable logic controllers), hard wiring, etc.). Continued cost reductions, increased power and simpler programming of the semiconductors and other computing components embedded in modern machinery/tools, enable more productive manufacturing environments.

What's happening today is that businesses need machines, robots, controllers, packing machinery, stocking tools, etc. to all work together to reduce labor costs. There is a competitive advantage that is possible when machines work together. Not only are companies saving on payroll costs but they are also:

- Reducing injury-related claims from workers.
- Experiencing faster changeovers.
- Avoiding costs (e.g., building heating/cooling) in automated facilities.

Manufacturers need machinery to be competitive. Lately, the best manufacturers are upgrading both the equipment they use and the way these devices are integrated into ever more efficient processes.

One manufacturer we visited recently showed us how their firm had integrated the actions of several machine tools into a single, integrated process. The result of their integration efforts was that an entire production line now takes only one worker where older production lines needed four or more workers. Moreover, this manufacturer has reduced the labor component of its products to just 1.8% of total cost of goods sold. This firm's products can now successfully compete with companies from countries with low-cost labor. This firm also reported that they are now winning back business that had moved offshore a few years earlier.

"...as many as 85 million factory jobs could leave China in the coming years, according to World Bank economist Justin Yifu Lin."

Source: "China Inc. Moves Factory Floor to Africa", **Wall Street Journal**, Peter Wonacott, May 14, 2014

Machinery-driven savings can happen in most any firm. However, the firms seeing the greatest upside are those deploying machinery that:

- Integrates and automates large/entire processes. Standalone, non-integrated machinery is no longer competitively viable for many firms.
- Have integrated information systems that communicate with the machine equipment. The systems that schedule production, track inventory levels, etc. must communicate with the machinery/ equipment.

"Countries with a greater number of robotic programmers and robotic infrastructure could become more attractive to manufacturers than countries with cheap labor."

Source: "The Rise of Robotics", **bcg.perspectives**, Alison Sander, August 27, 2014

Looking forward, machinery/equipment will get even smarter. Just as the Internet of Things (IoT) phenomena is embedding smart, internet-connected or networked capabilities in all manner of devices (e.g., refrigerators, televisions, doors, etc.), the same abilities will be added to capital equipment. Entire factories will possess interconnected devices all communicating via networks or the Internet.

Industry Challenges

Even in a robust economy, producers of machinery & equipment face a number of obstacles. These challenges include:

- A growing global marketplace for machinery & equipment.
- The need to provide customer financing for purchases.
- Dependency on a healthy and robust economy.
- Dependency on the health of related industrial sectors.
- A robust market for used equipment that can depress new equipment sales.

Let's look at these briefly.

Machinery & equipment producers do not operate in a vacuum. They can only book new sales when their customers are experiencing growth. For example, makers of CNC machines struggle to sell to automotive suppliers if the automotive sector is in a slump. Likewise, producers of earth-moving, hand tools and others equipment struggle when new construction declines. These

dependencies imply that machinery & equipment producers must have scalable, highly efficient businesses. The technology needed for this sector must be able to scale up and down while delivering very effective process results.



Capital, industrial and machinery equipment is, by and large, expensive. These purchases often require significant advance planning and engineering input before purchase. Buyers will heavily negotiate these purchases to get favorable pricing, timely payment terms, beneficial service, complete warranty terms and low-cost financing. Machinery & equipment producers must operate at the widest possible margins to withstand the negotiations that occur in competitive deals. This implies that machinery & equipment producers must be operationally excellent at all times. Technologies to support this space must, along with other items within the cost structure of equipment producers, be affordable to license, cheap to use and yet maintain the producer's margins.

The long-lived nature of machinery & equipment creates an active re-sale market for used and/or refurbished equipment.

Equipment and machinery producers that can design more environmentally-friendly, energy-efficient products are finding more receptive buyers than those selling unchanged or antiquated solutions. Technology solutions for this vertical must provide support for research & development, product engineering, innovation, etc.

The market for capital equipment is truly a global space although the United States remains a dominant force. As certain nations continue to modernize (e.g., China and India), their consumption of machinery & equipment rises as does their desire to develop native firms that make this machinery & equipment. While the overwhelming majority of machinery & equipment sub-verticals have globalized, some may never. Large mining excavators, for

example, are too large to ship any material distance. These are usually made close to the point of need. Notwithstanding these exceptions, the market for machinery & equipment began its globalization in earnest in the 1980s.

The sale of machinery and equipment generally tracks with the GDP (Gross Domestic Product) of a nation. Figure 1 shows GDP for the top 15 economies of the world. Great equipment and machinery producers must have a presence in these markets to take advantage of the economic growth present there. Yet, the growth of these economies often coincides with the development of in-country manufacturers of machinery and equipment. While global growth expands the total available market for these goods, it also triggers growth in the number of competitors.

The opportunity for makers of machinery and equipment demands that:

- Supply chains must be global to access low-cost labor and component parts.
- Customers may be anywhere in the world but major economies may be the best markets for many of these goods.
- Technology to support equipment and machinery makers must possess strong global capabilities.
- Technology must support the totality of the equipment lifecycle: parts sourcing, manufacturing, repairs, spare parts, etc.

Figure 1

Country	GDP (Millions of US\$)
United States	\$16,768,050
China	\$9,469,124
Japan	\$4,898,530
Germany	\$3,635,959
France	\$2,807,306
United Kingdom	\$2,523,216
Brazil	\$2,246,037
Russia	\$2,096,774
Italy	\$2,071,955
India	\$1,876,811
Canada	\$1,826,769
Australia	\$1,505,924
Spain	\$1,358,687
South Korea	\$1,304,468
Mexico	\$1,260,915

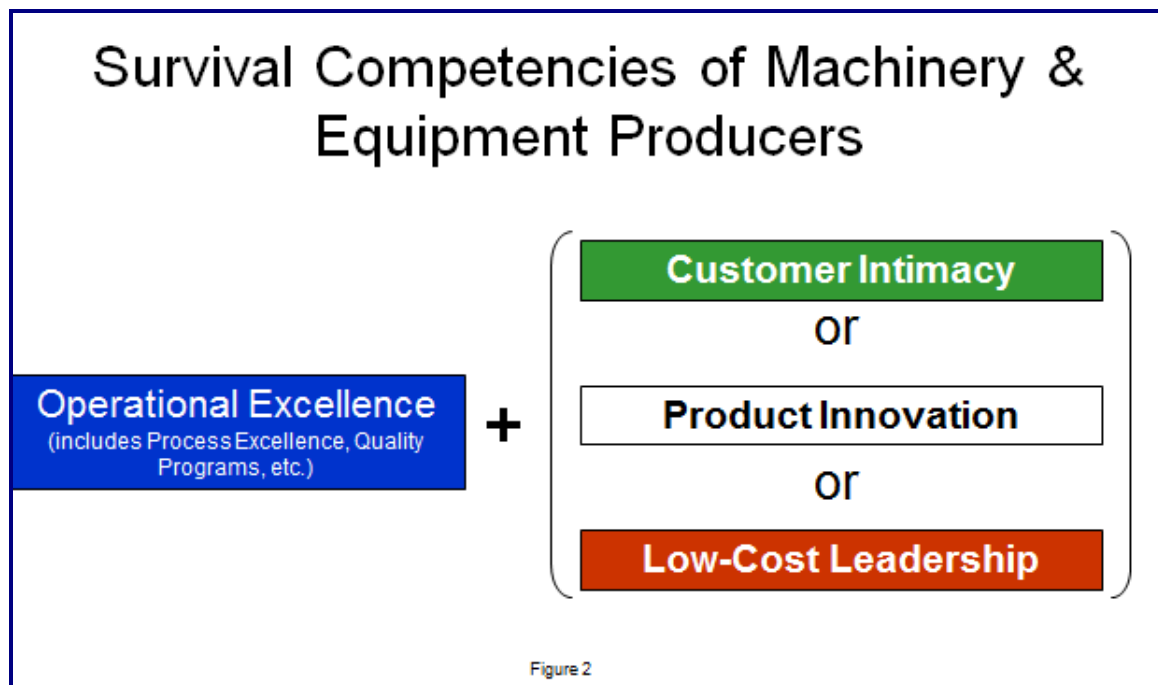
Source: "Report for Selected Countries and Subjects", World Economic Outlook, International Monetary Fund, October 2014, Retrieved October 8, 2014 via Wikipedia.org

Successful Business Strategies for Machinery/Equipment Producers

In reviewing the machinery & equipment vertical, we see two material business imperatives emerge. The first indicates that all machinery & equipment producers must be operationally excellent to exist for any period of time. As we have previously discussed, an industry with thin margins, high capital costs, volatile business demand, global competition and tough sales negotiations cannot support firms that have disconnected, inefficient or expensive processes. Instead, these firms must operate as efficiently and effectively as possible. This business condition is not optional in this vertical – it is a business imperative. Operational excellence is the foundation that all machinery & equipment producers must possess.

Once a producer of machinery and equipment is operationally excellent, then the firm must achieve its next imperative: it must possess one of three core competencies (see Figure 2):

- Product Innovation
- Customer Intimacy
- Low-Cost Leadership



The Needed ERP Solutions

Research and customer interviews suggest that machinery & equipment firms:

- Have very long lead times for key product components (e.g., power plant, imported steel, engines) yet customers are constantly pressing for ever shorter delivery times.
- Must produce most of their larger products on a make-to-order basis. The carrying costs associated with maintaining a finished goods inventory are too high or the uniqueness of each solution are too great to make standardized, off-the-shelf solutions.

- Create spare parts on a make-to-stock mode.
- Are embracing LEAN manufacturing principles. Parts/inventories are kept to an absolute minimum.
- Must carefully track the manufacturing process. Their products are difficult to fabricate and assemble. Considerable expertise, specialized equipment and knowledge are required to complete the assembly of these products.
- Must use solutions that reduce the time needed to introduce new products.
- Require global solutions to, at a minimum, procure components and serve local or global customers.

With these needs representing core requirements, we believe the following applications are essential to machinery & equipment producers:

- Advanced Planning & Scheduling – to manage the intricate parts scheduling, fabrication and assembly process of very unique items.
- Sophisticated Financials – to help manage capital, track expenses, assess customer and product profitability, etc. often with multi-currency, multiple entity, etc. support
- EDI (electronic data interchange) – to accurately communicate with a bewildering array of global suppliers.
- SCM (supply chain management) – to successfully orchestrate the movement of parts to support LEAN manufacturing, minimal inventory carrying costs, etc. Also, these systems must monitor supplier performance (e.g., per quality, timely delivery and price measures).
- Lot Traceability – to monitor performance of suppliers and to facilitate recalls, engineering changes and more.
- Quality Control – to minimize reverse logistics, warranty repairs and other costs as well as to ensure conformance with engineering specifications.
- Project Management – to monitor total manufacturing costs, payment schedules, timeframes, change orders and customer expectations.
- CRM (Customer Relationship Management) – to make the transition from sales proposal to finished good to product delivery a seamless, error-free process.
- Inventory Management – to cost-effectively manage raw material, work-in-process and finished goods inventories and to accurately cost products, meet customer demand and forecast replenishments.

Key SYSPRO Modules

Financials

- Accounts Payable
- Accounts Receivable
- Cash Book
- General Ledger
- Fixed Assets
- Electronic Funds Transfer

Manufacturing

- Lot Traceability
- Bill of Materials
- Engineering Change Control
- Requirements Planning
- Quotations and Estimating
- Projects and Contracts

Distribution

- Inventory Control
- Purchase Orders
- Return to Vendor
- Return Material Authorization
- Sales Orders/Invoicing
- Sales Analysis
- Forecasting
 - Optimization
 - Families & Groupings
- Landed Cost Tracking
- Trade Promotions

SYSPRO Quality

SYSPRO Analytics

Customer Relationship Management

Electronic Data Interchange (EDI)

Executive Dashboards

SYSPRO Reporting Services

- Production Management – to track and minimize scrap and to efficiently utilize production resources so that maximum profits are realized while simultaneously holding changeover and labor costs to a minimum.

SYSPRO Case Study: A.L. Lee

Many manufacturers of machinery and equipment are make-to-order firms. The customers for these products often require special adaptations and engineering to the needed product. Standard, off-the-shelf items are seldom an option. Likewise, the cost of these devices is often so great that it does not make business sense for a manufacturer to have these products in inventory.

The market for machinery and equipment can be quite uneven. As a result, these manufacturers need solutions that scale well and provide insights into productivity and efficiency opportunities within the firm. Great ERP software solutions fill this market need.

For example, let's look at A.L. Lee Corporation. This firm creates specialized underground mining equipment. Virtually everything it produces is a make-to-order item as the unique requirements of individual mines often dictate the need for one-off, specialized equipment. The company has three production facilities and sells its products globally. The demand for its products is heavily dependent on the world market for coal and can be adversely affected when alternative fuels are cheaper or environmental forces alter the economics of the industry. A.L. Lee has moved through good and bad economic conditions over its storied history.

The company currently uses a number of financial and production/manufacturing modules within the SYSPRO product line. It began using SYSPRO in the mid-1990s and continue to operate the software in an on-premises deployment. Other functionality in use includes quotes and sales order processing. SYSPRO ERP is integrated with its CAD (computer aided design) software.

Recently, we spoke with John Allen, IT Manager at A.L. Lee. He described SYSPRO's solution as 'high-end and robust.' He considers the SYSPRO products to be reliable and may use their lot traceability application in the future.

SYSPRO's fit for A.L. Lee and the machinery and equipment sector appears solid. The company possesses core ERP and financial applications as well as support for made-to-order, made-to-stock and other manufacturing disciplines. Additionally, the software possesses numerous financial, cost accounting and other reports/applications to monitor costs and facilitate efficient operations.

Who is SYSPRO?

SYSPRO is an internationally-recognized, leading provider of enterprise business solutions for mobile, on-premises and cloud-based utilization. Formed in 1978, SYSPRO was one of the first software vendors to develop an Enterprise Resource Planning (ERP) solution. Today, SYSPRO is a global business solutions vendor, represented on six continents and by more than 1600 channel and support partners. Over 15,000 licensed companies across a broad spectrum of industries in more than 60 countries trust SYSPRO as the platform on which to manage their business processes.



Customer focus is a core component of SYSPRO's corporate culture and is one of the key reasons why SYSPRO maintains a strong leadership position in the enterprise application market. By focusing on people and building lasting relationships with customers and partners, SYSPRO consistently excels at guiding customers through all aspects of their implementation and ongoing utilization. SYSPRO's mission is to deliver world-class software that gives customers the control, insight and agility they need for a competitive advantage in a global economy. As such, SYSPRO provides a unique combination of robust, scalable technologies that ensure minimal risk and a high return on investment.

About Vital Analysis



Vital Analysis is a very different kind of technology research organization. We are where exceptional technology market knowledge meets the executive suite. Where other 'analysts' replay vendor press releases, we give you the:

- impact new technologies will or won't have on your business
- reasons why you should or shouldn't care about specific emerging solutions
- business justifications why you may or may not want specific solutions

Vital Analysis was carved out of TechVentive, Inc. in 2007 as a new, but complementary business. As designed, Vital Analysis is the publishing, research and analytical arm of that company.

Our reach, like our blog readership, is truly global. We've consulted with top technology executives in Australia, Brazil, Canada, United Kingdom and the United States. We've been briefed by technology providers from virtually every corner of the planet.

About the Author

Brian Sommer is the CEO of TechVentive, Inc. - a market-strategy and content firm. Brian closely follows what C-level executives think, feel and need. Brian is a ZDNet columnist and renowned accounting software expert. He is a frequent keynote speaker numerous software conferences and professional society events. Brian has been an expert witness in major ERP software litigation and is one of the top research analysts in the ERP space. Brian was recently listed as one of Software Advice's Authority Award winners in the ERP area. Brian has published over 600 articles in the technology space including pieces for prestigious publications like Optimize and Wall Street Journal Europe.

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