As higher standards of living spread around the globe, so does the demand for consumer goods to satisfy growing middle classes. This offers dramatic new sales opportunities for industrial equipment and machine (IM&E) manufacturers:

• The global heavy construction equipment market will grow to $180.7 billion by 2021 — a 7% CAGR since 2015 — driven by emerging economies focused on infrastructure projects as well as increased spending on construction.¹

• The global food processing and packaging equipment market will reach $52.9 billion by 2022, a 14% CAGR since 2014.²

• The global material handling equipment market will expand to $134 billion by 2020, driven by demand for automated systems, adoption of cloud computing, increased use of business analytics, and Internet of Things (IoT) technologies.³

Even in well-established regions of operation, IM&E manufacturers are finding new opportunities by expanding product lines, adapting existing machines and technologies to new niches, customizing products for individual customers (markets of one), and exploring new business models to engage customers in long-term relationships.

Yet even though global opportunities await every IM&E manufacturer, only those with agile operations, innovative offerings, and courageous leadership will be able to profitably — and safely — expand.

Creating an Agile IM&E Manufacturer

Many IM&E manufacturers satisfy customers in multiple industries and countries around the globe. Plants must be located strategically based on a variety of factors, including:

• Size of the opportunity (e.g., construction demand for new cities in China)

Developing an agile global plant portfolio is never easy; deciding where and how to make and ship machinery requires complex calculations that vary by product, customer, and region.

Developing an agile global plant portfolio is never easy; deciding where and how to make and ship machinery requires complex calculations that vary by product, customer, and region. Savvy IM&E executives use analytics to identify all costs and requirements in delivering to customers — customs, shipping, reporting requirements, intellectual property risks, etc. They then use this data to create detailed cost models that minimize risks and costs for each phase of value creation — design, sourcing, production, assembly, and logistics — while maximizing profit opportunities today and tomorrow.

At the plant level, agility is usually created by streamlining operations and reducing costs. More than two-thirds of U.S. machinery plants follow lean manufacturing methods to improve operations, and plants have about half of their workforces engaged in the methodology.\textsuperscript{4} Lean techniques to improve agility include:

- \textit{Quick changeovers} of equipment and lines — instead of batching large groups of similar products — to minimize inventories and speed production.

- \textit{Pull systems} in which each step in a process calls for materials and components only as needed — instead of systems that push work-in-process downstream, whether required or not — to minimize inventories, delays, and overproduction.

- \textit{Elimination of wastes} — waiting, excess motion, rework, etc. — that add no value to products or for customers, to free up resources and capacity.

- \textit{Empowered frontline associates} who rapidly identify and solve problems with fixes that prevent recurrence and establish higher benchmarks for performance.

Machine makers rely on their supply chains for hundreds if not thousands of components and parts for each piece of equipment. Suppliers must work closely with their IM&E customers to sync and improve operations. An agile \textit{supply chain} starts with recruitment of highly responsive vendors with similar improvement mindsets, along with a willingness to share ideas (and cost savings). This may include vendor-owned or -managed inventories, or even co-location of facilities in new markets to minimize IM&E plant inventories.

\textsuperscript{4} MPI Manufacturing Study, The MPI Group, 2015.
It’s important to note that all of these agility strategies are only possible when information is easily accessible and collaboration is enabled across the company and among suppliers and customers. Many machine makers are leveraging cloud-based applications and technologies to supplement or replace on-premise business systems to improve:

- Demand planning and forecasting
- Production and supply-chain scheduling
- Enterprise asset management
- Customer relationship management
- IoT networks and infrastructure
- Mobile applications in plants and offices

**Innovating New IM&E Models**

The IM&E industry has seen startling changes in the ways machine makers interact with customers, in terms of products, channels of distribution, and new service offerings.

IM&E customers constantly seek lower-priced, longer-lasting, and more versatile equipment. Machine makers able to react quickly to unique customer demands with make-to-order or configure-to-order processes are already prospering from a worldwide trend toward customization.

IM&E manufacturers are also on the leading edge in embedding IoT technologies within their products. These smart devices enable customers to communicate and share critical operations data inside their facilities and across their enterprises. Remote sensing also allows machine makers to monitor equipment during use by customers, improving response times for maintenance, warranty repairs, and equipment upgrades. Customer data collected from these sensors can also be used for product designs, or shared with users to help them to improve their own operations. Some IM&E manufacturers will be able to leverage insights derived from customer data to create new revenue streams (i.e., they may find customers using products in ways that define new product niches).

Additive manufacturing and 3D printing offer yet more opportunities. IM&E manufacturers can use them to build and test prototype components; manufacture some parts more cost-effectively; and reduce replacement-parts inventories (i.e., parts are “printed” as customers order them). Yet these same technologies can also threaten replacement-part sales — if customers begin printing their own parts. Executives need to carefully weigh the strategic implications of keeping tight control over specifications and part drawings (if replacement-part margins are attractive) or offering them to customers at low or no cost (if margins are thin).
Most IM&E manufacturers are keenly focused on developing value-added services that extend well beyond initial production and installation.

IM&E sales channels are also evolving rapidly by region and industry. Some machine makers, for example, are pursuing higher margins via direct-channel sales. Selling directly to customers can remove costs, but IM&E manufacturers also must assume more risk and responsibility for service, maintenance, etc. Yet every channel adjustment triggers other changes, too. What impact, for instance, will direct sales by an IM&E manufacturer have on the responsiveness and service quality provided by existing agents, brokers, and distributors?

Regardless of channel, most IM&E manufacturers are keenly focused on developing value-added services that extend well beyond initial production and installation:

• **Equipment integration:** Machine makers are designing and installing complete production lines, which may — or may not — include their own equipment.

• **Uptime assistance:** As customers seek to reduce costs, many look to machine makers for MRO (maintenance, repair, and operations) services.

• **Universal maintenance:** By expanding replacement-part capabilities (via additive manufacturing) machine makers can develop aftermarket parts for their own machines and those of competitors.

• **Reuse:** Some IM&E manufacturers are also developing re-manufacturing and recycling capabilities, bringing back their own machines and competitor products. This promises to be a lucrative market, as legacy equipment begins to fail in mature global markets. For example, the average age of all fixed assets in the United States stood at 22.8 years in 2015 — a new record for longevity (or obsolescence).\(^5\)

• **Leasing:** Customers looking for flexibility and lower costs prefer to lease equipment. This creates a wide range of value-added service opportunities for IM&E manufacturers — maintenance, remote-sensing, remanufacturing/recycling, etc.

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Capturing IM&E Opportunities

There’s no shortage of new and emerging profit opportunities for IM&E manufacturers. But capturing those new profits will require IM&E manufacturers to strategically reinvent their operations around the globe by:

1. **Identifying new opportunities and requirements:** Think big — and then think even bigger. Even opportunities that seem far beyond current capabilities may be too lucrative to ignore.

2. **Establishing clear objectives:** For each IM&E opportunity, thoroughly research local demand, operational and financial benchmarks, and regulatory and logistical hurdles. For example, what percentage of revenue and profit from a new or expanded MRO service line would constitute success in a given market?

3. **Assessing capability and capacity:** With objectives established, focus next on building capabilities and capacity. Some opportunities will require substantial investments for assets (additive manufacturing, remanufacturing); facilities or field locations (MRO services for global clients); or human resources (line integration). Develop detailed cost structures that quantify not only returns on the investment, but risks as well.

4. **Investing wisely:** IM&E manufacturers can leverage some opportunities immediately, at little or no expense. For example, a machine maker with established make-to-order capabilities can aggressively market that expertise today. But most opportunities will require investment, which means that executives will have to develop long-range plans for acquiring and deploying capital into the technologies, talent, assets, and plants that make new profits possible.

Where is your greatest global opportunity? More importantly, why aren’t you pursuing it?

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