

# Synchronizing the Supply Chain: How ERP Can Open Up Capacity



It's a good time to be an American manufacturer, although in recent years that wasn't always the case. For a long time, major brand enterprises either turned offshore to supply their need for components or looked to manufacture those goods themselves. Those manufacturers that traditionally supplied them found demand wanting, a situation exacerbated by a sluggish if not struggling economy.

But times have changed. The forces that conspired to whittle down domestic manufacturing capacity below its historical levels have shifted, and the economy has bounced back. Today, those companies that market branded products are looking to produce more products and to make them close at hand. Since their supply chains can be more efficient with this approach, American brand manufacturers are seeking relationships with domestic manufacturers to meet their increasing demand. The principal drivers: a robust economy where consumers are spending, and strong demand for onshore quality.

For those manufacturers now being sought as strategic supply chain partners, a key question looms: What are the best options to increase capacity without incurring undue capital expense?

## Finding Capacity

Manufacturers would do well to consider early American history for the answer to that question. We were all taught at an early age about how Native Americans got every ounce of good from the buffalo. Today's manufacturers can find capacity by getting every ounce of good from their current production environment. Instead of incurring costs by adding equipment or manpower, these suddenly in-demand manufacturers will be better served by finding capacity within their current assets and operations—by using their “existing capacity” more efficiently. This shift makes sense from both a financial and production management perspective.

Significantly, manufacturers often can close major gaps between utilized and potential capacity without adding more capital expense by taking a number of specific steps:

- Establish accurate bills of material (BOM) and process routings that capture every material, machine, units of labor, and steps necessary to manufacture a part. To do this, product and process definitions need to be accurate and detailed enough to drive Materials Requirement Planning (MRP) with precision.
- Run analyses daily to ensure that orders and forecasts are aligned with materials at machines at all times.
- Conduct automated finite scheduling to generate detailed plans that keep equipment running at capacity and assure that expedited orders don't result in other orders not meeting scheduled completion.

*“What are the **best options** to increase capacity **without incurring undue capital expense?**”*

- Make preventive maintenance (PM) dynamic: rework PM processes and schedules while actually conducting maintenance as prescribed, thereby avoiding unplanned downtime.
- Wirelessly connect all production equipment to product and process monitors to measure output, process parameters, and production variances in real time to provide alerts the moment a product goes out of spec or off schedule.

To accomplish these steps and more, the manufacturer needs global visibility of operations, real-time views of what is happening on the production floor to enable more efficient scheduling of production, labor, equipment, and all ancillary items that impact capacity, utilization and cost. “We provide customers with tools in both the visualization of existing capacity and setup that look at constraints (i.e., people, equipment, tools),” says Steve Monroe, regional sales manager at IQMS. “This allows production runs to be put together in the most efficient manner to use existing capacity so as not to waste working capital.”

One key way manufacturers leverage finite scheduling is to make sure they’re putting things together in an order that makes sense. An example of this method is “like product scheduling,” where products using the same materials, same setup, same tools and dies, etc. for manufacture are run together to minimize downtime, save on machine set-up time, and cut costs through reduced labor and material shrinkage. By being able to see the efficiencies currently being realized, and then leveraging software tools to do what-if scenarios using constraints, manufacturers can stack production to run more efficiently.

Steve Bieszczat, Chief Marketing Officer at IQMS, notes that the front office is also an active participant in improving production capacity and efficiency. “The front office is largely about two things: forecasting customer demand and procuring raw materials,” he says. “Both have key impacts on production. Accurate demand forecasting helps ensure that the manufacturer isn’t making parts that aren’t needed or making too many parts, while ordering raw materials efficiently is necessary to have those materials at the machines when needed; there’s no downtime if the material is in place.”

### **ERP as Driver and Foundation**

Michael Engler, vice president of operations at AMA Plastics (AMA), says that using an enterprise resource planning (ERP) system to drive production is the “first foundational thing to do” for manufacturers to find capacity without incurring additional capital cost. Riverside, California-based AMA is an injection molder that operates out of a single facility. They have 92 molding machines that range in size from 35 to 720 tons, along with 1,800 molds and 25 customers.

Not all 1,800 molds will run in all 92 machines. Some will only run in one specific machine; some could run in 19 different machines. “It’s not a one-size-fits-all industry,” notes Engler.

“With an ERP system, the tools that are available are basic and advanced,” he continues. “A lot of people that use ERP systems don’t even take advantage of the basic tools. Many people in our industry develop their bills of material and get things like that right in their use of ERP, but they don’t have the ERP drive where to run their tools optimally.”

Engler says you do that by loading in more details that most people would: mold sizes, machine sizes, ranges, etc. You build a matrix where the system will not only help you put tools in the most efficient press, but also where they “fit best.”

“If you have two machines and four molds, that can be figured manually; but with 1,800 molds, 92 machines, a staff of 500, and two schedulers, you can’t intimately understand all the combinations,” he says. This is where ERP comes in.

“You would think that is common sense, but it’s not,” comments Engler. “Companies, even very large ones, tend to rely on tribal or factory knowledge. We can’t rely on that. We have to make sure that we identify the ‘fits best’ and ‘runs best’ scenarios to understand where our tools should be used to be successful. That means leveraging our ERP as the first foundational thing to do.”

*“A lot of people that use ERP systems don’t even take advantage of the basic tools.”*

According to Engler, the next question is one of planning: how far out to look and how far out to plan. Some companies are in a day-to-day planning mode, which AMA sees as tactical. “On the tactical perspective, we’re looking out 48 hours,” he says. “We need to know if a tool is going to run or break, so we’re always working scenarios. There is normal noise that happens in a manufacturing operation: molds are going to break, resins may show up late; we react to this noise on a daily basis.”

Engler looks beyond the tactical to visualize strategic capacity. “We’re looking out 30 to 45 days, and I’m willing to take some acceptable risk as well. This is the biggest thing I’ve done that does more than maximize capacity; it significantly reduces the number of setups.”

A setup could take an hour or a significant number of hours. If AMA can eliminate 10 to 20 setups a month, that could save anywhere from 10 to 150 hours, depending on the complexity of the setups.

Looking out strategically also helps AMA leverage “like product scheduling” to its advantage. “So I look out 45 days,” explains Engler. “Say we’re going to run a particular mold in black material next week, but that same customer needs another shipment two weeks later in the same material off the same mold and it’s the same part number. Now I combine those orders.

“I know nobody wants inventory—it’s an evil thing. But at some point you need to learn how to balance it. I understand that in a Lean environment, you want to turn on the switch and make so many parts in 15 minutes. But I’m a custom molder with 92 machines, 1,800 molds, and more than 1,000 different materials. If I don’t have to set up another material or another mold in two weeks, if I can run good parts doing a five-day run instead of a three-day run, then the cost of setup gets spread out over a longer time and my setup impact is lower. I’ve eliminated the hard costs of doing a second setup, and if I don’t have to change the material over, I’ve reduced shrinkage.”

### **Auditing Performance: The Next Path**

When Engler started at AMA, he recognized that the company’s ERP (IQMS) was robust; but, he says, “ERP is a lot like Excel—people only use the part of the application they have learned. We had areas of our system that were totally underutilized, so I hired IQMS to boost our knowledge in a very strategic way.”

IQMS conducted an Evaluation Assessment Audit (EAA), where they went through each ERP module at AMA to get a full scorecard of utilization. “It was eye-opening,” notes Engler. “It wasn’t a reflection of personnel, who get caught up in day-to-day tasks and use the familiar pathways that work. They aren’t going to look for the next path unless they have a teacher or guide. Many don’t know there’s a better way; they only know ‘the way.’”

With the initial EAA, AMA scored fairly low: 69 percent on a scale of 100. But they found out which areas were weakest, which could have greatest impact first, and then developed a plan to improve those areas. They brought in a consultant from IQMS to work with the company on a monthly basis. A year later the audit was repeated, and AMA moved up to 85 percent.

“With that, we can do more,” says Engler. “Every time we improve in the modular areas of ERP, whether it’s in support or production, the efficiency and capacity of the operation is getting better.”

### **Synchronizing the Supply Chain**

“Excellence in manufacturing begins with the bill of materials,” says Bieszczat, “then you correctly forecast what is going to be consumed in the manufacturing process, how long it’s going to take for the process to run, and what labor and equipment is necessary to complete the work.”

If a manufacturer builds a good bill of materials, then lets the scheduling and planning tools of ERP do their work, the process gaps will be eliminated and capacity increased accordingly. The ability of ERP software to plan is beyond what can be done manually, eliminating downtime and unwarranted inventory.

Importantly, a manufacturer's customers can support and accelerate the process by providing the manufacturer real-time data. "In our case, we have a rich, broad system, and one of the families in the system is the eCommerce/EDI set; so if our customers are communicating with their customers, real-time data is flowing upstream and the supply chain is always up-to-date," says Monroe.

Consider automotive as an example. If Ford sends an IQMS customer real-time data, the ERP system incorporates it to synchronize the production plan, purchasing plan, maintenance plan, and so on. The manufacturer gets a real-time view of needs that incorporates his customer's demand, and that enables him to function more effectively as a partner in the supply chain while being more efficient and profitable.

"It's all about synchronization of the supply chain," concludes Monroe. "The IT functions provide views that save time and cost, updating both the supply and demand sides of the business."

When that happens, capacity is increased without adding equipment, headcount, or plant facilities. That's the key to enterprise IT.

## About IQMS

IQMS uniquely combines ERP and manufacturing execution system (MES) functionality to give manufacturers a comprehensive end-to-end suite for running the business, backed by the real-time performance and scalability companies demand. Developed specifically for mid-market repetitive, discrete and batch process manufacturers, IQMS provides robust capabilities for addressing strict customer and regulatory certification and compliance. IQMS achieves this by delivering traditional ERP functionality for accounting, sales orders, material requirements, inventory and purchasing, plus extended native features for CRM, human resources, production scheduling, shop floor control, warehouse and quality modules. With offices across North America, Europe and Asia, IQMS serves manufacturers around the world.

For more information, please visit [www.iqms.com](http://www.iqms.com).

*"Every time we improve in the modular areas of ERP..the efficiency and capacity of the operation is getting better."*