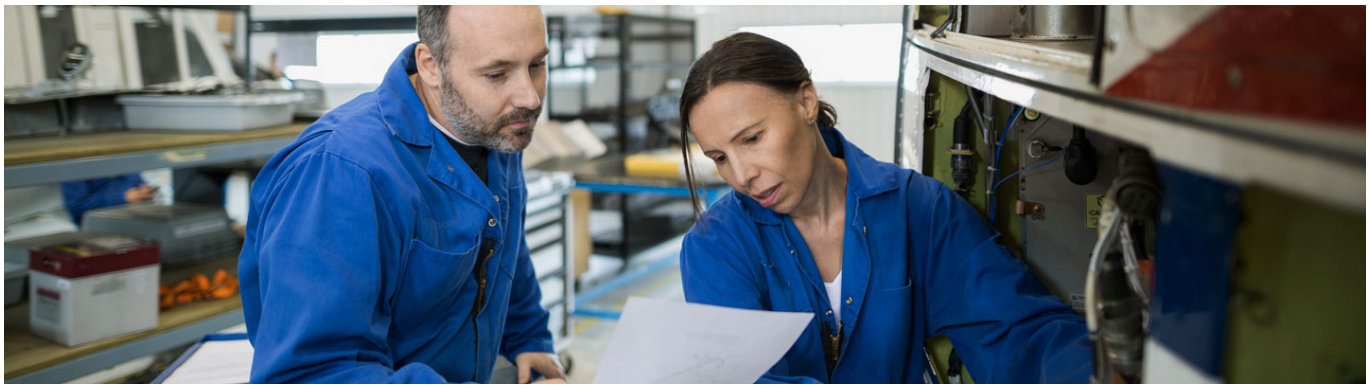

Lean Manufacturing

The Pressure for On-Time Delivery Is On in Aerospace

Don Sears | Mar 20, 2018

What You Need to Know

The financial outlook for aerospace manufacturing is very strong, but to meet demand, on-time delivery is a major issue that is putting pressure on all parties: manufacturers, suppliers and subcontractors.
Some aerospace manufacturers are publicly threatening to cut off business if and when they see any signs of delivery holdup from suppliers and subs.
Being on time all the time is incredibly difficult with upwards of 6 million parts in a single aircraft, and managing the parts and overall supply inventory is part of that complexity.
Technology can help give visibility, especially on the shop floor-and in tool cribs.

Aerospace manufacturers are bringing the supply-chain heat to their supplier and subcontractor partners for on-time delivery. A renewed focus on better MRO inventory management and visibility—with the help of on-site supply management processes and systems can help.

The financial outlook for the aerospace industry looks great on paper, but will supplier delays and part defects cause the kind of production issues that can thwart delivery of new aircraft? The major players–Boeing and Airbus—are paying super close attention to any and all potential parts or product delays and are even going so far as looking for signs of problems in suppliers' shareholder reports, according to the Financial Times.

The root of the problem for aerospace manufacturers is on-time delivery—and the financial implications are real. In 2016, the global revenues for aerospace and defense were $674.4 billion, as per an ***analysis from Deloitte***. "The outlook for the world aircraft market is the best it's been in six years," writes Richard Aboulafia, vice president of analysis for Teal Group, in a 2018 forecast article for Aerospace Manufacturing and Design. "Teal Group is expecting deliveries to rise by 9 percent in 2018, the strongest increase since 2012. Demand is strong, and execution is improving for key programs."

"Given the rapid transition to new-generation aircraft over the next decade, it is clear that MRO providers must be prepared for the type of work associated with the newer fleet types or focus their strategy to capture end-of-life markets," finds management consultancy Oliver Wyman in its "Global Fleet & MRO Forecast Market Summary 2017 - 2027" ***report***. "From an airframe MRO perspective, providers must be able to handle the new composite and metal-matrix materials dominant in the newest-generation aircraft, such as the 787 and A350."

Want to know more about the materials being used in today's aerospace manufacturing? Check out: "4 Aerospace Materials That Are Taking Off."

The Value of Having Supplies On-Site to Help Reach On-Time Delivery

It's no secret that one of the main elements of on-time delivery is managing production time itself. The other half of that equation is delivery. The two may be in conflict with each other. It may be because purchasing controls the procurement purse strings for supply replenishment or there may be a convoluted bureaucratic requisition process. Department conflicts are a real issue in need of a solution, says George Krauter, an MRO expert at George Krauter Consulting, and author of *Outsourcing MRO: Finding a Better Way.*

The way out is to change the process entirely so that procurement and purchasing departments have a different role than their traditional focus on cost and the price of individual parts. What's the cost of not having that cutting tool or drill bit, Krauter wonders. What's the cost of idle workers? The goal of on-time delivery merits supplies being much more closely aligned with events on the shop floor—and the variables of machining and engineering.

"If the supplier or supply inventory is there, on-site and can control it, it's very clear when, say, a cutting tool or drill bit has been put in to use," says Krauter. "The supply function needs to be right there—whether in a storeroom or in vending or a vendor-managed approach."

Being on-site helps eliminate full steps in distribution—and will help reduce duplications. In order to help reach production's goals for on-time delivery, why not put the supplier in charge of that portion of the storeroom that relates to the products they would supply, asks Krauter.

A more parts and tools supply-centric approach on-site can be especially helpful to aerospace manufacturers who tend to have special runs of parts with long lead times between orders, engineering and the actual manufacturing. In some cases, agreements between a customer and the manufacturer to store certain dimensions and quantities of tool blanks on-site can proactively help reduce that lead time.

"Get the supplier on-site, or at least where they can control it on-site with the inventory part numbers and SKUs that they're assigned," says Krauter. "That inventory needs to be there when needed, and I don't mean shipped in … It needs to exist on site. That will optimize on-time delivery. There's just no question about it."

With that demand has come a major production push that is having a trickle-down effect for suppliers of all sizes and specializations—but not without its share of challenges in pricing and execution. Aboulafia was hired by the state of Washington to assess the chances of Boeing building its next-new jet in the Northwest region, according to the ***Herald Business Journal*** in Everett, Washington. The demand for single-aisle jets, for example, is astonishing.

“It’s an unprecedented break with the history of the jetliner market,” Aboulafia told the Herald Business Journal. “There’s a miracle taking place in single-aisles. They literally cannot build them fast enough.”

Never has on-time delivery become more important to everyone’s bottom line. But not every supplier is or will be holding on to their relationships.

> **"One of the biggest problems in on-time delivery is that the engineers who need the proper tools in the proper quantity on hand will order more than they need or they will draw out more than they need from the storeroom. One of the worst examples I've seen was a heavy manufacturer that had uncontrolled sub stocks out in the plant that amounted to about $950,000 of inventory."**
> George Krauter
> Principal and MRO Expert, George Krauter Consulting

Supplier Accountability, ‘Vertical Integration’ and New Ventures

To help mitigate delivery from becoming a problem and force the hand of being “on time,” some aerospace manufacturers are publicly threatening to cut off business if and when they see any signs of delivery holdup—even if the issue is in another aerospace division.

“A supplier who is delinquent in Airbus Helicopters, for example, has no reason to think they can work in Airbus Commercial,” Fabrice Brégier, chief operating officer of the Airbus group, told reporters in June 2017, as reported by the ***Financial Times***. In 2018, Boeing shifted its strategy a bit toward more “vertical integration” in areas where it was having supplier delivery problems. In one case, it happened with its aircraft seating supplier.

“Fed up with delays that have plagued production of luxurious jetliner cabins, Boeing is forming its own company with a major seat supplier to the auto industry,” writes ***Bloomberg*** about Boeing’s venture with Adient Plc.

For the aerospace companies, they want to increase shareholder and stock price value. To accomplish that, it means doubling or tripling production efforts to roll out state-of-the-art and strong yet lighter aircraft with ceramics and composite-based materials that have drastically changed aerospace manufacturing. These newer aircraft help airlines reach their fuel efficiency objectives—which simultaneously reduces operation costs and helps them meet increased ***customer demand for air travel at lower airfare rates*** that keep planes fully booked with passengers.

For suppliers, competition has also become cutthroat as those that deliver on time can gain an advantage. In essence, those that deliver can win more business.

For On-Time Delivery, Improve Inventory Visibility with Technology

There are some real-world challenges for suppliers, subcontractors and the big manufacturers in aerospace themselves. With ***4 to 6 million parts*** in a single aircraft, the complexity is off the charts. Commercial aerospace companies tend to carry a lot of inventory. What isn’t tracked probably isn’t being managed, goes the logic—and so visibility is a crucial need for manufacturers. Whether manufacturing production or ongoing maintenance and repair, being on time all the time is incredibly difficult. Managing the tooling, the parts and overall supply inventory is major part of that complexity.

“An oft-repeated sentiment from supply chain leaders: ‘I get fired if the product is delivered late, but no one gets fired for too much inventory,’” reveals McKinsey ***in a 2017 analysis of inventory management***. In some cases, having more inventory for parts, commonly known as “safety stock,” is essential given

its frequency of use and history—and for inevitable unplanned needs.

“One of the biggest problems in on-time delivery is that the engineers who need the proper tools in the proper quantity on hand will order more than they need or they will draw out more than they need from the storeroom,” says George Krauter, principal of George Krauter Consulting, an MRO expert with 50 years of manufacturing industry experience. “One of the worst examples I’ve seen was a heavy manufacturer that had uncontrolled sub stocks out in the plant that amounted to about $950,000 of inventory.”

In this example, the storeroom was not reliable. But it’s hard to blame the resources that need their cutting tools and other manufacturing supplies. It’s a damned-if-you-do and damned-if-you-don’t situation: Timing is everything. But as Krauter points out, there’s reasonable inventory and then there’s gluttony.

The complexity of manufacturing aircraft includes composite materials. Learn all about it in our technical metalworking article “Cutting Challenges: Mixed-Matrix Composites and Fiber-Reinforced Composites.”

“When we conduct part-level statistical analysis, we typically find some parts should actually have more inventory (offset by reductions in other parts, for a net overall savings),” explains McKinsey. “Companies that don’t proactively plan for variability can create a vicious cycle, where late parts drive a culture of more (indiscriminate) inventory.”

Technology can help give visibility, especially on the shop floor, store rooms—and in tool cribs. Why not track supply usage right from the locale of the tools and parts where they are being stored and removed?

“Bar code technology, which is supported by most of the software applications available today, has been around for decades yet only a few storerooms have fully implemented this technology to track and manage their MRO inventory effectively,” writes Wally Wilson, a senior reliability consultant at Life Cycle Engineering, in the article, “How Can I Make My MRO Maintenance Storeroom More Efficient?” “To maintain visibility of the storeroom inventory, the receipt, management, usage and re-stocking of the inventory has to be streamlined and updated in real time.”

A lack of visibility for repairs and for inventory should not be an excuse toward inaction, suggests McKinsey. Process changes—and technology—can start helping now. “A successful program will push forward with data workarounds to capture value quickly, while also investing in new digital and analytics tools to unlock the full, longer-term potential,” suggests McKinsey.