



Collaboration, Testing and Better Tooling Lead NMG Aerospace to Greater Cost Savings

OVERVIEW:

Stow, Ohio-based NMG Aerospace is, like so many MSC customers, hungry for a better way of doing things.

MSC works closely with NMG Aerospace to solve core manufacturing challenges. By offering an extensive metalworking knowledge base, MSC has become an indispensable partner to the company, which provides engineering, manufacturing and creative logistics services to global aerospace and industrial leaders.

MSC helped NMG Aerospace enhance a spectrum of tough applications, and in the process saved the company more than \$200,000.

“MSC is helping us keep focused on our customers. We know and trust each other. They don’t bring us solutions on an experimental basis. They bring us solutions that are going to work for us.”

Joe Pentasuglio, GM Machined Products Division, NMG Aerospace

“We are helping NMG Aerospace manage all of their spend and tooling, and we constantly work with their engineering team to improve their process.”

Griffin Miller, MSC Metalworking Specialist

A Commitment to Cost Savings, Large and Small

MSC has delivered a number of tooling improvements and cost savings to NMG Aerospace. The level of collaboration — and ongoing process improvement across materials and applications — distinguish MSC from other vendors and cutting tool suppliers. MSC has brought solutions to NMG Aerospace in materials ranging from titanium to steel, and applications that range from milling to abrasives.

Taming The Titanium Tiger

Application: Indexable milling of parts for Boeing 787 landing gear

Much of MSC's problem-solving and consulting for NMG Aerospace focuses on the company's manufacturing of landing gear for commercial aircraft. Among other things, the company produces parts for the nose wheel of the Boeing 787, and as with an ever-growing number of parts in aerospace and aviation, it's made from titanium.

And not just any titanium. NMG Aerospace mills parts for this particular landing gear from material known as Titanium 5553.

"It's the new kryptonite," says Miller with a laugh. "Aerospace manufacturers are having to figure this out as they go." While titanium always presents some challenge in finding the most efficient cut, Titanium 5553 is especially difficult. "A lot of machine shops got into it, but they didn't know what they were getting into."

NMG Aerospace's task was to mill just six parts per month from pieces "that have a lot of material on them," said Miller. Initially, the shop used a cutting tool with two effective cutting edges. MSC collaborated with some of NMG Aerospace's other suppliers to conduct several rounds of testing. As a result, the joint team came up with a similar milling tool that features a better design, and with four effective cutting edges instead of two. The original tool was switched out, the new tool was run at higher speeds, and the result was tens of thousands of dollars in cost savings and an all-around more efficient manufacturing process.

In another application involving Titanium 5553, MSC solved a difficult drilling process by bringing in a new indexable drill that outperformed the old drill by a factor of four to one.

Added Miller, "They are looking to do more machining with this material very soon."

"Our having the right knowledge base has been a huge advantage in delivering the right solutions. They have a pretty big tool box with MSC."

Griffin Miller, MSC Metalworking Specialist

Crafting The Landing Gear Of An Aviation Workhorse

Application: Steel boring a flange for Airbus A380 landing gear

NMG Aerospace makes three highly precise, separate parts for the Airbus A380 that support and steer the nose wheel. The company struggled to get the exact dimension for a chamfer edge on four critical bores on a lower flange. The tool they were using required a right angle milling attachment that had to be mounted and centered for each part, resulting in extensive setup time and adding valuable hours to the manufacturing process for each part.

The MSC team researched and identified a new chamfer edge tool that allowed the team to machine through the cross holes and put the chamfers in the right position to meet precise tolerances. The tool worked to specification and saved NMG Aerospace several thousand dollars annually on a small batch of roughly 40 parts. It also saved time by eliminating the need to set up the milling attachment for each part.

Cutting Away An Hour Of Manufacturing Process Time

Application: Grinding the actuators of F-18s

Actuators perform various functions for the landing gear of aircraft. For the F-18, NMG Aerospace manufactures an actuator that helps to steer the nose wheel. Machining for the actuators is a very involved, intricate process during which operators machine away most of the material over a number of hours. The benching process, in which workers finish each part after they are machined, takes four hours alone. "It's just a huge machining process," said Miller. "It's generally a round part, but it's got lots of odd shapes. It almost looks like it should be a cast part." MSC introduced new tooling into the process in the form of a Norton non-woven disc that eliminated an hour from the four-hour benching process, and provided cost savings of approximately \$40,000.

Improving The Human Side Of The Manufacturing Process

Application: Tank fabrication for potable water systems on commercial aircraft

An example of a more subtle way MSC helped NMG Aerospace can be found in a one-inch wire brush.

In addition to landing gear parts, NMG Aerospace makes the tanks for potable water systems that can be found in many commercial aircraft. Fabricating the tanks requires brazing them (a process similar to soldering) and then using a wire brush on the braze while it's still hot. This resulted in wires getting loose from the brush and "flying out" and hitting the operator. MSC replaced the brush with a more durable and reliable one, significantly increasing brush life and at the same time making the manufacturing process less unpleasant.

"The incumbent provider of metal cutting tools wasn't bringing them cost savings at all."

Roger Nicholson, MSC Sales Rep to
NMG Aerospace

Getting A Handle On MRO

Application: ControlPoint Inventory Management

Making NMG Aerospace's entire manufacturing process work better, from procurement to finished product, extends beyond a focus on the shop floor to include logistics and supply chain. Enter ControlPoint. NMG Aerospace worked with MSC to implement the MRO inventory management system to get a tighter grip on tooling spend. Now, the vending platform enables more complete integration of engineering consulting with tool usage and management.

An Ongoing Collaboration

The MSC team continues to work with NMG Aerospace to identify, address and improve manufacturing processes across the company's product line. From selecting the right tool to optimizing a variety of applications, the ongoing collaboration has yielded significant improvements — with many more to come.