



# CASE STUDY:

## AEROSPACE & DEFENSE CNC MACHINING





# CHALLENGE:

A major aerospace and defense company needed a CNC machining supplier to provide close tolerance complex machining of aluminum investment castings for a critical and highly visible defense program. The customer was behind schedule and needed immediate reaction by a supplier.

## CUSTOMER SITUATION:

An international Fortune 500 aerospace and defense company was looking to find an alternative source to machine a highly complex component for an ongoing critical defense program. The product was a true challenge because the component is machined from a complex aluminum investment casting and required the ability to achieve very close tolerances with specific surface finishes. The product also required painting and had stringent quality requirements for this process. The customer was having ongoing quality issues from their current supplier and was behind schedule. The customer also had issues with inconsistent supply of castings, which was causing shortages and rejections as well.

The customer chose to work with EFPG because we offered:

- A long history of multi axis ultra-precision machining of high tolerance parts for the aerospace and defense industry
- The capability to utilize the customer's 3D models and accurately transition these into CNC programs, in-house fixturing design and CMM Inspection program generation.
- Strong supplier management staff to handle the outside processing and to manage and control the quality and delivery of the suppliers
- A quality inspection lab with multiple Coordinate Measuring Machines and staff
- The required AS9100 quality certification and ITAR Registration.

# OUR SOLUTION:

After collaboration between several of our top machinists and manufacturing engineers, we developed a manufacturing process to secure the part and accurately machine the casting using the teams' exploration of best method of manufacture. This method was not in consideration of the current supplier's or our customer's recommended approach. This was an out-of-the-box creative solution facilitated by our team's consultative approach to the part, tolerances, and uniqueness of the design.

## The teams did the following:

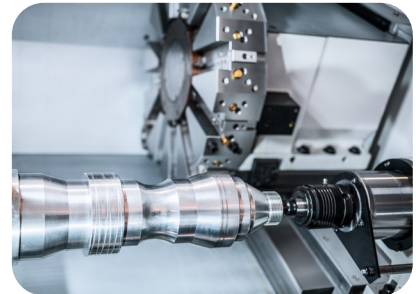
1. Designed and built tooling and multiple fixturing methods, as well as develop the CNC programs and manufacturing plans within 4 weeks.
2. Manufactured the first part including outside processing and submitted the FAI within 8 weeks.
3. Unlike the previous supplier, we did not use the same (and recommended) method of manufacture and were able to achieve better tolerances and a higher quality finish.

# OUTCOME:

When the customer conducted the FAI and source inspection at EFPG's facility, they cleared the part to ship to their facility for delivery and assembly.

## The following results occurred:

EFPG achieved a higher level of quality improving fit form and function of the part. EFPG was instrumental in finding past supplier knowledge to be problematic when it came to the mating parts and also discovered foundry discrepancies that were accumulating. Finding these errors and collaborating with the customer surpassed their expectations. EFPG worked with the foundry directly, finding numerous errors with the casting, EFPG was able to address all of these areas, improving the manufacturability and overall quality of the castings.



The customer conducted an in-depth investigation and discovered that the mating assemblies were out of specification. The previous supplier was manufacturing all three of the parts and were utilizing internal knowledge to preassemble and trial fit together the components together.

Through collaboration with the customer EFPG was engaged to also improve the painting process while also improving the paint finish, which was noticeable to the customers' assembly floor.

The customer has given us multiple variations of the product and the mating parts for manufacture, as well as a long-term agreement to manufacture these. The consultative approach offered by EFPG in all areas, including the customer supplied material issues greatly improved the customer's product quality, reliability and repeatability in their internal assembly process and also relieved a tight schedule to deliver these to the end user.



IT'S OUR GOAL TO PROVIDE CUSTOMERS WITH **EXCEPTIONAL SERVICE** FROM OUR EMPLOYEES, WHO EMBRACE OUR AXIOM, **"ATTITUDE IS EVERYTHING"**

## DO YOU HAVE OUR NEXT CHALLENGE?

We utilize a unique approach that utilizes extreme customer collaboration and our 40+ years of expertise, offering creative solutions to the most challenging problems for the sole purpose of customer satisfaction. Customers trust us because we accomplish their projects with the highest levels of quality and integrity.

**WE'D LOVE TO PROVE THAT TO YOU... LET'S TALK**

