



# BUILDING A HOUSING FROM THE GROUND UP

*How our Design and Manufacturing Services Improved a Stator Housing for a Critical Electric Motor Assembly*



## **PROBLEM:**

Our customer, a leader in the electric propulsion ground vehicle market, was in need of a more efficient and effective manufacturing process for a stator housing sub-assembly designed for large hybrid electric motors.

## **SOLUTION:**

DFF developed a new process of thermal shrink-fitting to eliminate stresses on the assembly.

## **RESULTS:**

Pleased with the results, the customer approved the assembly and awarded DFF the BETA run for production, and the opportunity to produce another stator housing assembly already in production.

## **THE CHALLENGE**

A multinational company in the electric propulsion ground vehicle market, reached out to DFF for the manufacture and assembly of a stator housing for a mission-critical prototype hybrid electric motor. The motor, a more powerful version of a system already in service, is intended for large electric-powered ground and public transportation vehicles. The customer wanted us to develop an efficient manufacturing and assembly process capable of producing a top-quality stator housing sub-assembly that abided by all specifications.

We are always willing to help our customers with design improvements and possess the experience, equipment, resources and knowledge to offer sound recommendations to improve products and processes—while reducing costs. Hear how our DFM (design for manufacturing) services benefitted one of our customers.

The original production process consisted of thermal shrink-fitting a completed bearing insert into the stator housing and led to potential distortion and variability among the parts. Faced with a challenge, the company turned to DFF and entrusted us with the project due to our experience in producing large castings.



## THE SOLUTION

DFF engineers worked alongside our customer's team to refine the production of both the stator housing and bearing insert. The ultimate goal was to eliminate the introduction of stresses caused by the thermal shrink-fitting at the end of the process. The new method devised did just this, incorporating shrink-fitting of the insert into the housing and then further machining to create an assembly.

The redesign technique was only possible due to DFF's ability to design fixturing that allowed for distortion-free clamping during the machining process. Our engineering, manufacturing and quality departments worked in tandem to create and perform life-cycle analysis on the prototype assemblies.

## CONTINUED OPPORTUNITIES

Pleased with the results, which demonstrated DFF's quality standards and attention to detail, the customer proceeded with the final assembly and awarded DFF the BETA run to continue to assist with both casting and design changes in preparation for production. DFF was also awarded the opportunity to manufacture a similar stator housing already in production, improving fit, form and function.



## ABOUT DFF

Specializing in medium to high production of precision machined components and electro-mechanical assembly products, DFF works with customers to simplify designs, make products easier to produce and maximize the reliability and quality of the end product. Located on 23 acres in a regional industrial park at the crossroads of Western New England (Interstates 90 and 91), the DFF facility, which began in a 2,000 sq. ft. building, has grown to three buildings totaling 300,000 sq. ft. To learn more about DFF, visit [dffcorp.com](http://dffcorp.com).