



# A FOCUS ON QUALITY AND CRITICAL DIMENSIONS

## *How our Design for Manufacturing Services Benefitted a Customer in the Semiconductor Industry*



### **PROBLEM:**

A global leader in the semiconductor industry was dissatisfied with the quality of high vacuum chambers being produced by a manufacturing partner.

### **SOLUTION:**

DFF was solicited to remedy the issue, ultimately developing chambers that stood up to strict helium leak detection tests and passed real-world testing with flying colors.

### **RESULTS:**

Pleased with the success of the initial partnership, the company turned to DFF to produce a second set of specialized parts, which likewise passed strict testing requirements.

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.

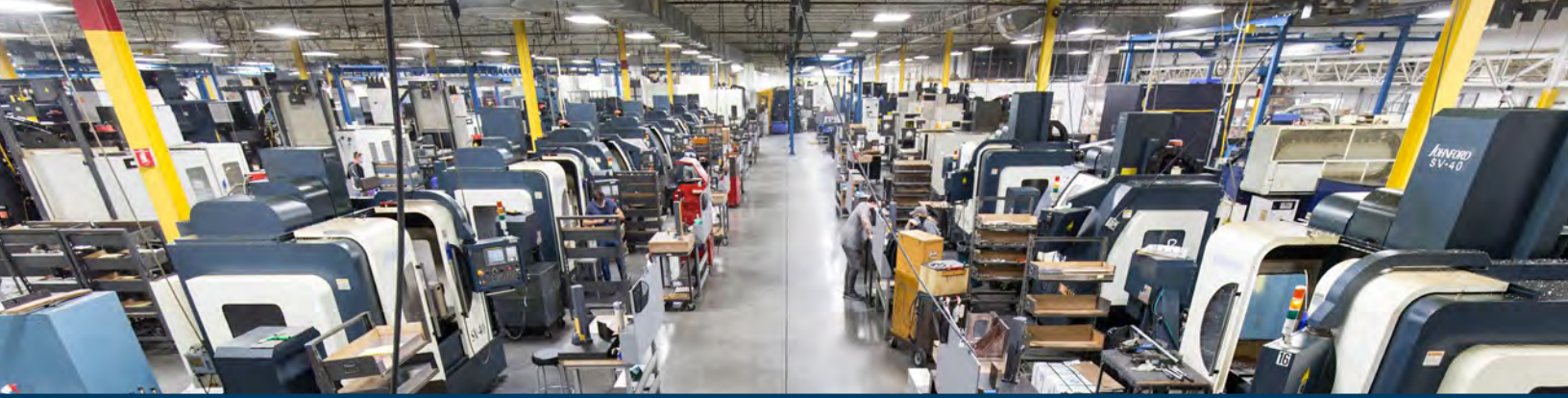
Our customer provides materials engineering solutions for virtually every new chip and advanced display in the

world. Their expertise in modifying materials at atomic levels enables their own customers to transform possibilities into reality.

But what is this industry leader's secret to creating innovations that can shape the future? A contract manufacturer they can trust. DFF has worked alongside this customer to provide applied solutions for multiple defect-free products that guide their industry forward.

### **DETECTING A LEAK**

The company first reached out to DFF several years ago after they experienced disappointing performance from a manufacturer producing large machine castings needed to create high vacuum chambers. These chambers are extremely critical components used to process silicon wafers into microchips through state-of-the-art ion implantation, vapor deposition and plasma-doping technology. Manufacturers of this equipment also require helium leak testing devices to ensure that the chambers are properly vacuum sealed.



The customer supplied DFF with drawings and models of the chambers which were reviewed and refined by our team of engineers. Impressed with the proposed improvements, a production order was placed for several different chamber parts. Helium leak detection equipment was also purchased, and the parts produced by DFF not only stood up to the very strict testing criteria but also passed real-world testing with flying colors.

### A SECOND SUCCESS

DFF's first success with our valued customer led to another opportunity, as they searched for a partner to manufacture another group of specialized parts. These seven separate components make up a system that secures and positions silicon wafers within vacuum chambers while they are processed into microchips using ion implant technology.

To process these parts, DFF required high temperature thermal spray coating technology to effectively and completely coat each part exposed during the ion implantation process. Due to the close tolerances required by the job, DFF had concerns as to how the thermal spray would affect the parts after they were already fully machined and thermal pressure tested. After adding our own stress relief operation to the process, we reached out to the



coating supplier to understand their process and to ensure the parts were completely compliant with all stress standards. DFF has now integrated the supplier's stress relief techniques into their internal manufacturing process so parts can be coated prior to assembly without distortion.

Due to the success of this project, DFF has been entrusted with the design, development and manufacture of the system's next generation. If you're looking for a contract manufacturer with this level of commitment and attention to detail, we hope you'll think to [contact us](#).

### 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).