



**SEMICONDUCTOR INDUSTRY**

## VACUUM WAFER PLATFORM FOR METROLOGY APPLICATION

### ■ The Situation

Next generation process and device technologies require new measurement tools, creating an opportunity for start-up equipment suppliers. However, transitioning the technology from a bench top R&D lab tool into a fully capable process production tool is a difficult and time-consuming task. Leading fabs will not even evaluate a new tool unless it is available in a fully automated 300 mm configuration. Supplying such a platform can be a daunting challenge for a technology based startup.



*EFEM Supports 200 mm and 300 mm Wafers*

### ■ The Challenge

Our client owned promising technology that could meet the industry's most pressing measurement problems. They needed a reliable, cost effective, high vacuum wafer automation platform designed to integrate with their measurement module. Rapid delivery was essential as the market window was tight.

### ■ The Solution

Owens Design's first task was to create the system architecture that would maximize wafer throughput given the considerations of measurement time, vacuum pump down, and system cost. Once the architecture was decided, Owens Design, in collaboration with our client, determined the vacuum robot supplier, the vacuum component suppliers, and EFEM supplier. This step was critical as all of these components affect



*Wafer Hand-off to Vacuum Chamber through Slit Valves*

system performance and have long lead times that would constrain system delivery. The frame, vacuum chamber, and power system design was then detailed. Owens Design integrated the full vacuum platform including the client's measurement technology. Vacuum pump down, throughput, and handling reliability testing was performed.



*Vacuum Wafer Handling Chamber*