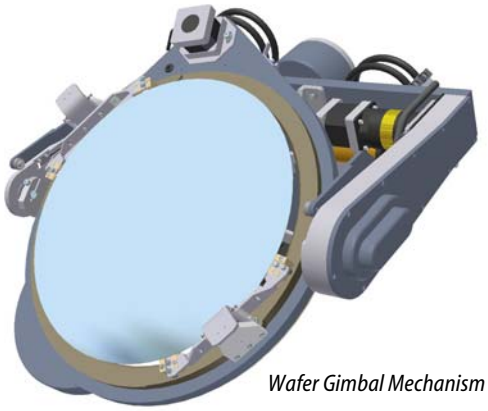
Owens Design
Capital Equipment Design & Manufacturing

CUSTOMER CASE STUDY

SEMICONDUCTOR INDUSTRY

Wafer Macro Defect Inspection Module



Wafer Gimbal Mechanism

The Situation

One of the largest manufacturers of factory automation systems needed to respond quickly to a sales opportunity. Their customer was willing to place a large system order for wafer sorters if they could develop a macro defect inspection module to integrate with the sorter. The macro defect module would be used by a fab technician to visually examine wafers under a bright, uniform light for particle and coating defects. Both back and frontsides were to be viewable.

The Challenge

Owens Design confronted technical and schedule challenges to meet the expectations of our OEM customer and their customer, the semiconductor fab engineer. The macro defect module would need to meet stringent cleanliness requirements, integrate seamlessly with the wafer sorter, and be developed on a compressed schedule. A BOLTS compatible interface was needed to allow flexibility in future product versions.

Defect Station Integrated to Wafer Sorter

The Solution

Owens Design delivered the first unit within 12 weeks to our OEM customer who then installed it at the end customer fab two weeks later. Owens Design conducted joint design reviews for both the OEM and end customer to be sure all parties expectations were met. The technical solution included an innovative wafer gimbal mechanism that could rotate the wafer in four axes. The wafer was held by a failsafe edge grip. The illumination was provided by a halogen light source located in the base of the unit to minimize heat load. The light was passed via fiber optics and post optics to provide uniform illumination at the wafer plane. Better than Class 1 cleanliness was achieved through careful CFD modeling and the use of mini-ULPA FFU.

ULPA Provides ISO Class 1 Environment

47427 Fremont Blvd., Fremont, CA 94538 Phone 510 659-1800 Fax 510 659-1896 www.owensdesign.com