



# Owens Design

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## Owens Design Collaborates with Candela Instruments

Candela Instruments, the leading supplier of Optical Surface Analyzers (OSA's) to the global data storage industry, needed to quickly move their disk surface scanning technology from the laboratory to full production.

In the customer's lab, their product was detecting never before seen defects in magnetic media. Candela had successfully proven the technology with a manually loaded machine, and now wanted to quickly expand the sensing capability within the thin film magnetic disk industry. This meant that a fully-automated in-line configuration had to be developed. The potential to improve yields with full-scale production in this market was enormous.

### The Challenge

In order to address the emerging market for fast, highly-sensitive reliability testing and failure analysis of magnetic disks, Candela decided to partner with an equipment manufacturer experienced in the HDD market and capable of rapid development.

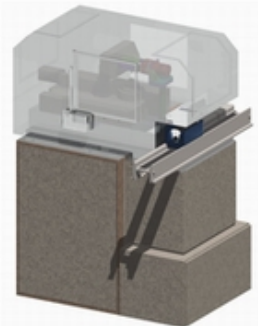
Automation parameters such as cassette feeding and integration to factory systems needed to be addressed. Disks had to be loaded with precision, scanned on both sides, and handled at high speed. There were definite space constraint issues and, adding in the factor of keeping costs low, the challenges were compounded.

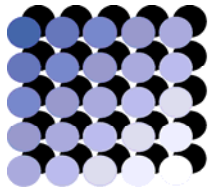
After several joint meetings involving Candela's end-user, the decision was made to go with Owens Design Inc., an OEM capital equipment manufacturer with a reputation of fast product development lead times and close collaboration efforts with their customers.

### The Solution

Once the specifications were finalized, Owens began development of the automation.

They designed a custom robotic manipulator agile enough to allow precise loading of the disk to the vacuum chuck, a mechanism that accepts and secures the disk for high speed rotation. A robotic arm incorporating a direct-drive rotational axis which enables high speed disk flipping and allows for dual sided measurement was designed to navigate within the machine's confines while making fast and efficient process characterization and control.





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The first system was ready for high-volume production in 12 weeks and market acceptance of the product configuration has grown ever since.

Randy Curtis, Vice President of Sales at Owens Design, said "The key to transferring the technology smoothly from the lab and into high-volume production as fast as possible was the close collaboration with our client, Candela, and their end-user. When dealing with instruments this precise, the automation integration as desired by the end-user must be defined very early in the manufacturing process."

### **About the Machine**

The machine, known as OSA 5120 performs optical analysis on thin film magnetic disks with exceptional speed and sensitivity under full automation or in standalone configuration.

To cover a comprehensive spectrum of metrology and defect applications, the analysis incorporates five measurement methods, both topographical and non-topographical: ellipsometry, reflectometry, scatterometry, Kerr-effect microscopy, and optical profilometry.

At the heart of the system is a proprietary Q-polarized light source which combines P and S linear polarizations to optimize phase-shift detection. The light is focused on the disk where it is absorbed, reflected, and scattered by the surface. The presence of a film or magnetic defect will also introduce a phase-shift.

*"We chose Owens Design as our partner to help reduce product development times and introduce an outstanding product to our customers. They have provided a complete outsourcing solution and helped make our automated OSA product a tremendous success." said Rusmin Kudinar, President of Candela Instruments.*

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