Owens Design
Capital Equipment Design & Manufacturing

CUSTOMER CASE STUDY

HARD DISK INDUSTRY

Hard Disk Drive Media Marangoni Dryer

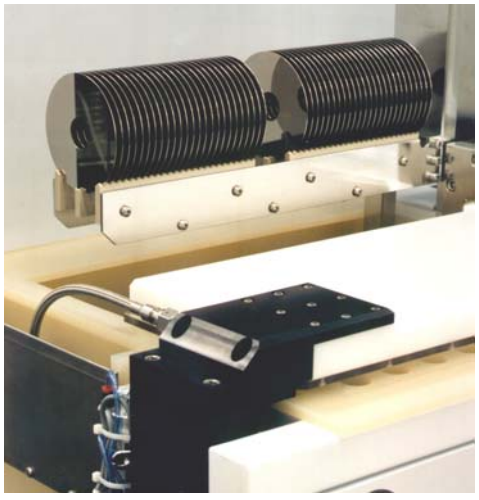
The Situation

The hard disk industry must constantly introduce new processes to improve areal density and reduce costs. The final step prior to sputtering the magnetic films on hard disk drive media is a drying process. The Marangoni drying process is a patented process of using IPA as a drying agent. This results in a particle negative drying process. Marangoni drying promised substantial process improvement if the process could be automated in a cost effective manner.

The Challenge

Automating the Marangoni process to meet the required cost/disk target required an innovative approach to batch handling. The batch of 50 disks had to be handed off from the wet tooling to the dry tooling at the precise moment the disk passed through the IPA - atmosphere transition layer.

Commercial challenges were also present as the Marangoni drying process had been subject to many legal and patent issues.



Cassetteless Disk Lifter Mechanism Shown in Load Position

The Solution

Hard Disk Marangoni Dryer

Owens Design solved the commercial issues by arranging to license the Marangoni technology from the leading IP holder. This made creating a cost effective implementation much easier.

The technical issue of passing the disks through the IPA interface was solved with an innovative handling mechanism that was patented. This mechanism used high precision dual servo leadscrews. Contamination was further reduced by processing the disks cassetteless in batches of 50.

In addition to the disk mechanisms, the dryer incorporated ultra clean process fluids and gases. Nitrogen, IPA, and DI water are all provided through ultraclean fluid components.

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