THôT Technologies, Inc.

Model 42040 Defect Analysis Station

The Model 42040 Defect Analysis Station consists of the spin stand (pictured at left) equipped with a high powered microscope mounted on an air slide.

The equipment rack, pictured on the next page, contains the pneumatics controls, the keyboard, monitor and mouse drawer, the computer system, electronics signal processor drawer, laser controller, laser, servo driver and stepper drivers.

The spin stand is coupled to the equipment rack via pneumatic lines for the air bearing spindle and slide, an electrical umbilical cord for the motion control signals and an armored fiberoptic cable for the laser.

This tool is designed for disk defect analysis. It uses laser Doppler vibrometry (LDV) to locate and measure defects on the surface of the disk. Unlike scatter technology, LDV systems are capable of detecting, separating and measuring pits and asperities.

Data is processed in the analog electronics signal processor and digitized with multi-channel high speed analog to digital converters 4096 times per revolution. The data is peak velocity information containing the surface defect location and severity. These features are important because asperities can interfere with the ability of the head to fly over the surface and pits can affect the data integrity. With the low fly heights in Perpendicular Magnetic Recording (PMR) applications, these can be critical to performance.

Two sets of information are provided independently, one for the positive velocity that captures height information and one for the nagative velocity that captures depth information.

Data is processed in the analog signal processor and peak height and depth information is transferred at the end of each sector. This allows for very fast full surface coverage with relatively small data files.

The defect location information is stored and the microscope can be automatically positioned over the defect for marking, viewing or photographing.

The tool can be configured with several options to provide the user with flexibility to meet the needs of their exact requirements for defect analysis or incoming quality control. These options include:

Optical Glide™ / Optical Certification™ (OG/OC): This defect capture feature detects and measures the severity of defects above (asperity), and separately, below (pit) the normal surface. OG/OC is a standard feature for Model 42040 DAS.

Nano-Scan™ Option (NSO): The Nano-Scan option uses beam deconvolution techniques to determine defect size and classification as well as height and depth.

Also available are such features as microscope cameras and laser marking devices to help locate the defect for transfer to other tools, i.e. AFM or SEM. The laser marker is not recommended for glass substrates, contact factory for microscope information, microscope models may vary.

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