



THoT Technologies, Inc.

Model 42010 Optical Process Certifier

The Model 42010 Series Optical Process Certifier consists of the equipment rack (pictured at right) and a stand-alone spin stand. The spin stand is pictured on the next page.

The equipment rack contains the pneumatics controls, the keyboard, monitor and mouse drawer, the computer system, electronics signal processor drawer, programmable filter, laser controller, laser, servo driver and stepper driver.

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 manufacturing process control. It uses laser Doppler vibrometry (LDV) to measure the topography of the surface of the disk. LDV technology is accurate down to less than 3/100ths of an Angstrom.

Data is processed in the analog electronics signal processor and digitized with multi-channel high speed analog to digital converters 1024 times per revolution. The data is velocity information containing the surface shape of the disk from roughness to flatness including waviness features. These features are important because they can affect fly height modulation which is critical in Perpendicular Magnetic Recording (PMR) applications.

A programmable analog band-pass filter is used to allow the user to select the exact band of features to examine. For example, polishing compounds may affect short wavelength features such as roughness while first process steps of grinding or polishing will have a much greater effect on waviness and flatness features.



One of the most important features of this tool is the excellent repeatability and tool-to-tool correlation coupled with the ability to calibrate to virtually any repeatable reference source.

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

Filtered Waviness Testing (FWT): This is the basic morphology feature and allows the user to examine programmable wavelengths including roughness through waviness. This is a standard feature on all Model 42010 OPC's.

Runout / Velocity / Acceleration (RVA): While most are familiar with runout specifications, it is the acceleration specification that is most important when using different head configurations with various drive spindle speeds.

Power Spectral Density (PSD): This is one of the most powerful tools to examine and control the disk manufacturing process. This function allows the user to take up to four programmed radii of the full spectrum of the surface topography and examine it in detail.

Reflectivity: This feature allows the user to examine the surface for reflectivity changes that are commonly associated with stains and contamination haze and discolorations.

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