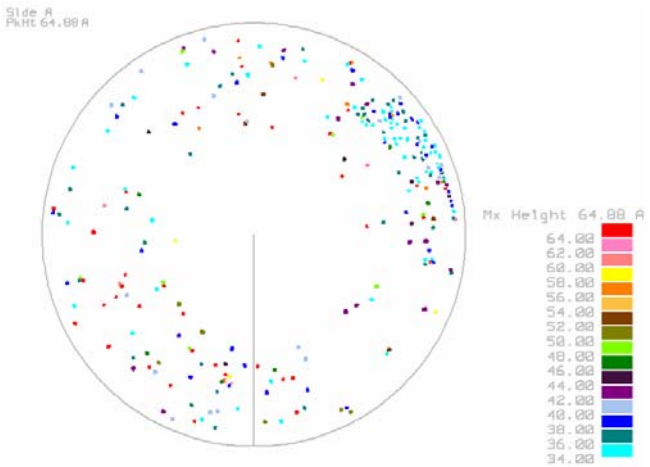
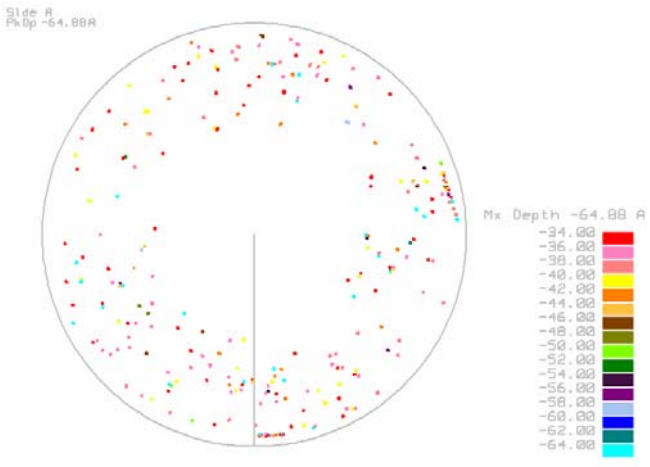
Optical Glide™ / Optical Certification™ Test Option

The Optical Glide / Optical Certification (OG/OC) Test Option uses the Doppler shift of the laser system to detect if the defect is rising above the normal surface or a depression into the surface. Asperities, rising above the surface, result in an up-Doppler, a compression of the reflected laser signal. The amount of compression is directly proportional to the defect height. Pits and scratches result in a down-Doppler that stretches the phase of the reflected laser signal.



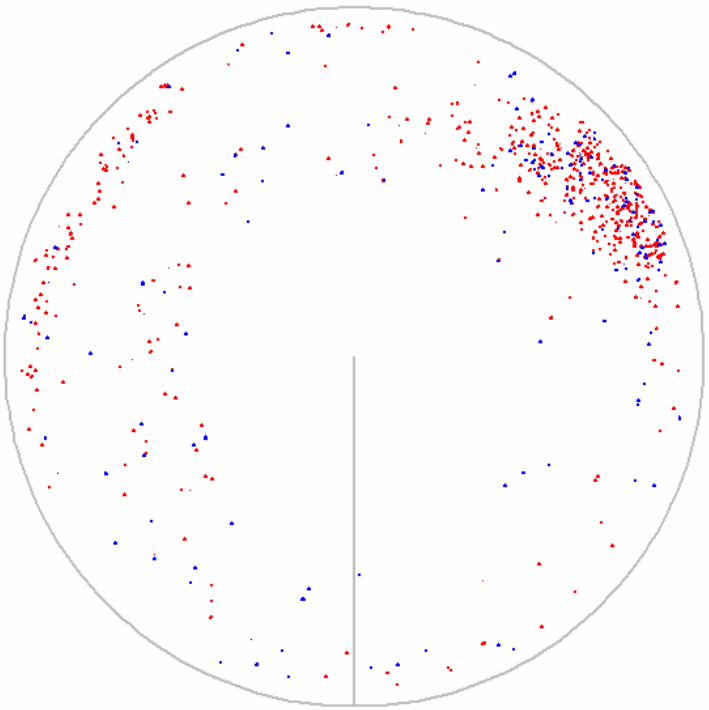
Optical Glide Defect Map



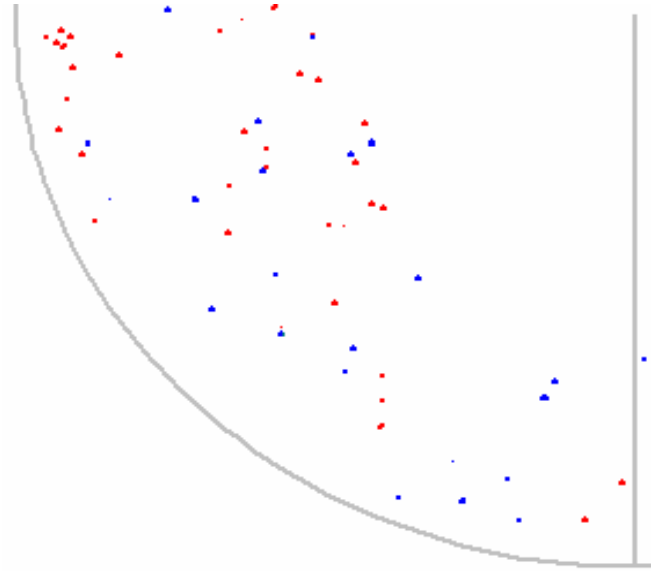
Optical Certification Defect Map

Defects are sorted by severity of height and depth. Some defects may contain both height and depth such as a scratch with debris or an embedded particle. Optical Glide and Optical Certification use separate channels to capture their respective defects. This means that the tool is capable of identifying defects with height or depth or both.

In the defect plot at the right, the pits are shown in red while the asperities are shown in blue. The separation is seen even in the area at about the two o'clock position (250 degrees clockwise from the index mark).



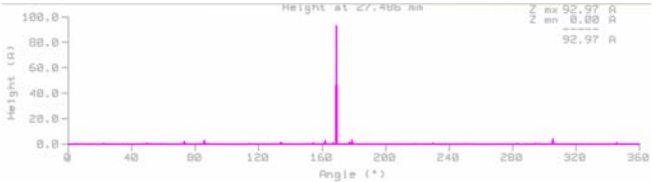
The expanded view on the next page clearly shows this separation between pits and asperities. This is a major advantage over scatterometer type tools that commonly "see" asperities as pits and pits as asperities. Scatterometers simply measure the number of angularly reflected photons without regard for the shape of the reflecting surface. Another major advantage of the LDV system is the fact that it actually measures the height and depth.



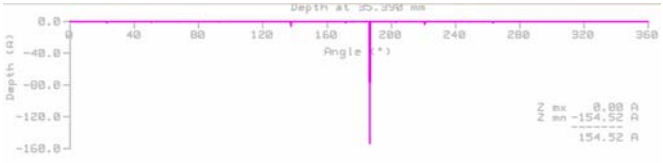
At the left is the expanded view showing the separation between pits and asperities.

Below are two linear plots showing an asperity on the left and a pit on the right. These are single track linear traces. The asperity has a measured height of 92.97 Angstroms high while the pit measures 154.52 Angstroms deep.

Obviously, the asperity is of sufficient height to interfere with the head flying over the surface while the pit is deep enough to penetrate the carbon layer and potentially cause a problem with surface integrity.

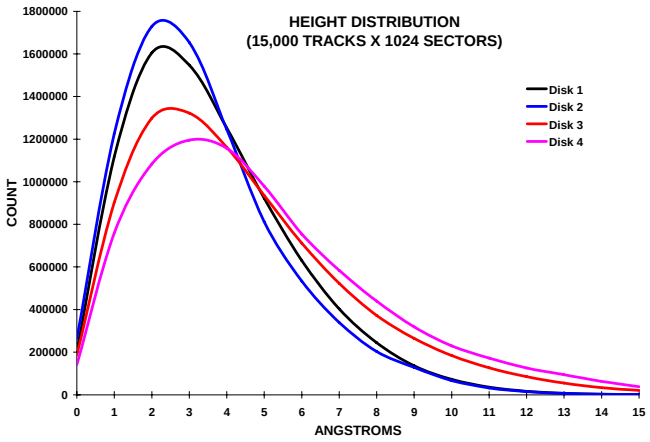


Single track linear graph with asperity

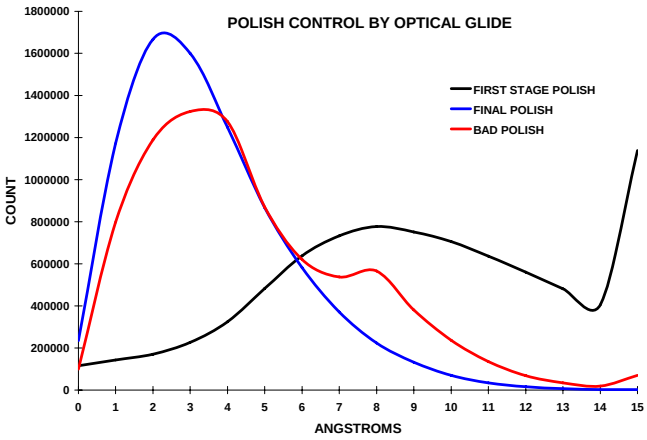


Single track linear graph with pit

The Optical Glide and Optical Certification can also be used for process control and incoming inspection at the drive factory. Since the tool takes a maximum height and maximum depth recording in every sector, approximately 30,000,000 measurements on a 95mm disk, the data can be displayed in an avalanche graph showing the variations in the surface finish.



Avalanche graph of four different disk finishes



Avalanche graph of improperly polished disk

Optical Glide and Optical Certification are standard features on Model 42010 and 42030 Optical Defect Scanners and Model 42040 Defect Analysis Station. This feature is optional on other tools.

THôT Technologies, Inc

271 East Hacienda Avenue, Campbell, California 95008
Tel: +1-408-370-4600 / Fax: +1-408-370-4609 / www.thot-tech.com