



# How to Work with CGH

## *How To?*

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## What is a CGH and what do I do with it?

A CGH is a **Computer-Generated Hologram**.

For those who use an interferometer to measure optics, you already know that it is a great tool for Plano and Spherical optics. What do you do if you want to measure an asphere, cylinder, freeform or a system?

The generally accepted method is to use a Coordinate Measuring Machine (CMM) to scan the surface with a contact probe or a laser. While these systems are accurate tools for measuring prototypes or small volumes of AQL (Acceptance Quality Limit), if you must do 100% inspection for production or you do not have the capital budget for a high quality CMM, a CGH may be the answer.

The computer designed CGH is typically manufactured using e-beam and laser techniques and the resulting hologram uses diffraction to generate almost any wavefront. This accurate tool can be used for measuring and aligning non-spherical surfaces, aspheric lenses, or complete systems.

A CGH null is essentially a negative of the part under test so that when the light returns to the interferometer it, ideally, is a perfect null. There are errors and tolerances which need to be accounted for, depending on your overall accuracy requirement, but typically the initial data is adequate for most applications. The CGH is placed between the Zygo and the surface under test, in a double pass configuration. With appropriate fixturing, this process can be done quickly and is well suited for production environments.

