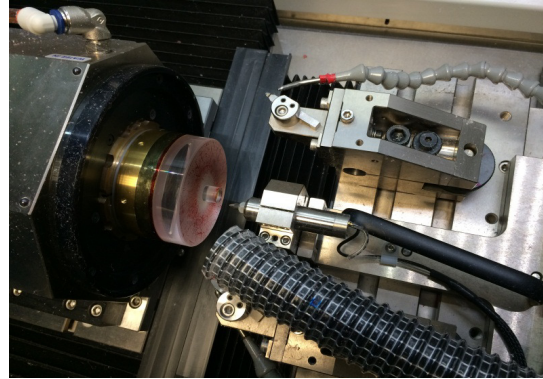




Nanoform® X



Setup Photo

### Goal:

Demonstrate automated form error correction of a parabolic component by means of on-machine measurement and analysis. Corrections were made by measuring the part using Precitech's air bearing LVDT. The results were analyzed by Taylor Hobson's Aspheric Analysis Utility (AAU) software and the X-offset and tool radius corrections were automatically updated in the tool table. This method will correct much of the form error.

### Process Steps:

- **Roughing cut:** Nanoform X
- **Measurement:** Precitech air-bearing LVDT
- **Analysis:** Taylor Hobson Aspheric Analysis Utility
- **Update Tool Table:** UPx Control
- **Finish cut:** Nanoform X

### Part Details:

- **Material:** PMMA
- **Part diameter:** 20 mm
- **Parabolic base radius:** 12 mm

### Process Details:

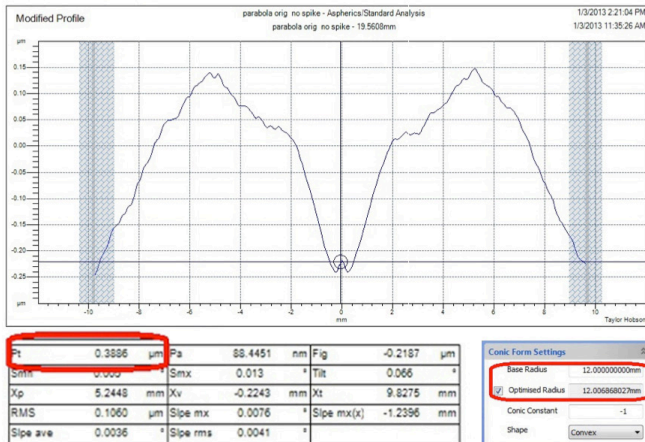
- **Tool:** Single point diamond tool with 10° clearance
- **Radius:** 0.05 mm
- **Spindle speed:** 3,000 RPM
- **Coolant:** Air

### Results:

- **Uncorrected form error:** 0.3886  $\mu\text{m}$  P-V
- **Total process time:** < 5 minutes
- **X-offset correction:** 1.87  $\mu\text{m}$
- **Radius error correction:** 2.23  $\mu\text{m}$
- **Corrected form error:** 0.1531  $\mu\text{m}$  P-V



### Measured form error prior to correction



### Measured form error after X-Offset and tool radius correction

