Global Manufacturer of Innovative Ultra Precision Machining Solutions

Aspheric Toric using
Adaptive Control Technology (ACT)

INNOVATIVE APPNOTE

Freeform® L

Part Photo

Goal:

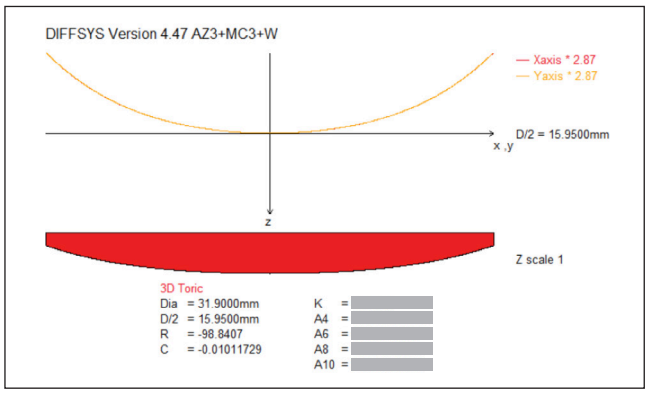
Demonstrate freeform surface finish and form accuracy by diamond turning an aspheric toric on the Freeform® L Ultra Precision Machine platform using Adaptive Control Technology (ACT).

Process:

XZC diamond turning with Y axis active conducted at customer facility.

Part Details:

- **Material:** Nickel Phosphorus plated steel



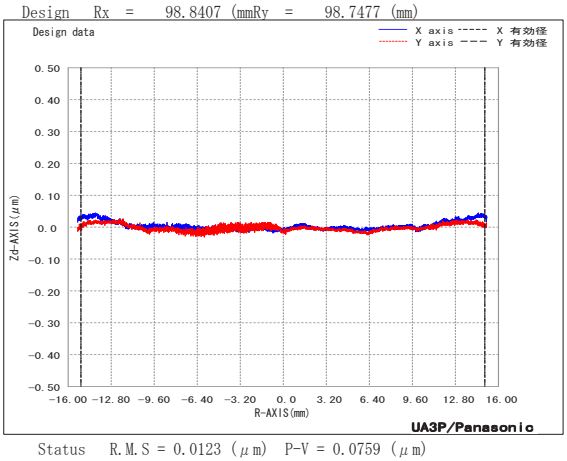
Process Details:

- **Tool**: Single point diamond tool
- **Tool radius:** 0.3 mm
- **Work speed:** 1200 RPM
- **Feed rate:** 1.2 mm/min
- **Finish pass:** 16 min
- **Coolant:** Odorless mineral spirits (OMS)

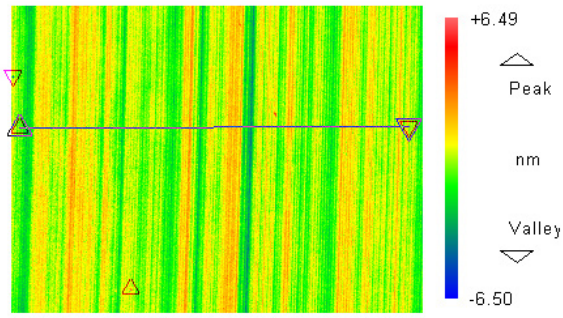
Results:

- **Form accuracy**: 76 nm PV (12 nm RMS)
- **Surface finish**: 0.88 nm Ra

Profile measurements along 2 primary meridians



White light interferometer measurement



PV	12.985	nm	Size X	0.14	mm
rms	1.099	nm	Size Y	0.10	mm
Ra	0.879	nm	Spikes Removed:	On	

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