**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**

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>PV</td>
<td>16.985 nm</td>
</tr>
<tr>
<td>Site X</td>
<td>0.14 µm</td>
</tr>
<tr>
<td>RMS</td>
<td>1.699 nm</td>
</tr>
<tr>
<td>Site Y</td>
<td>0.10 µm</td>
</tr>
<tr>
<td>Ra</td>
<td>0.879 nm</td>
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</tbody>
</table>