**Goal:**
Demonstrate part cutting time, surface finish, and form accuracy achievable by 3 axis ruling on a Freeform® L equipped with PEPS II-VX, an active on machine vibration cancellation and precision leveling system.

**Process:**
XYZ ruling on a Freeform® L. The part was fixtured on a 45° slope between X and Z and 45° from horizontal, requiring the ruling process to utilize 3 linear axes simultaneously.

**Part Details:**
- **Material:** Nickel phosphorus plated steel
- **Part dimensions:** 50 mm x 50 mm
- **Machined area:** 10 mm x 50 mm

**Process Details:**
- **Tool:** 1.5 mm radius
- **Feed rate:** 500 mm/min
- **Finish pass depth of cut:** 5 µm
- **Step over:** 5 µm
- **Coolant:** Odorless mineral spirits (OMS)

**Results:**
- **Cutting time with PEPS II-VX:** 8 hours*
- **Cutting time to achieve similar surface finish results without PEPS II-VX:** 16 hours
- **Surface finish:** 2.64 nm Sa
- **Form accuracy:**
  - PV: 0.113 µm
  - rms: 0.024 µm

* faster settling reduces cutting time
** reduced cutting time minimizes thermal effects, improving form

ISO 25178

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>SA</td>
<td>2.64022 nm</td>
</tr>
<tr>
<td>Arithmetic mean height</td>
<td>49.87 µm</td>
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</tbody>
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**PV**

**rms**

**Size X**