Uptime is the most critical element in maximizing the productivity of your ultra-precision machine. The most significant portion of unproductive time on such machines is tool setting. The longest step in this process is using off-machine metrology to measure setup parts. Using Precitech’s Horizontal Optical Tool Setter to measure setup parts on the machine decreases unproductive time by up to 30 minutes.

- Significantly reduces time to perform a tool set
- Frees up offline metrology for their intended purpose, measuring final components
- Relative measurements, not dependent on the accuracy on the kinematic mount
- Removes potential for operator errors
- Based on proven technology

### Traditional Tool Setting Process Using Off-Machine Metrology

1. Use the Traditional Optical Tool Setter to find the tool radius and bring it into focus
2. Click on three points on the radius of the tool
3. Save the tool radius into the tool table
4. Set up and cut brass setup part
5. Remove setup part from machine and walk to an offline microscope
6. Enter X offset adjustments into tool table
7. Manually adjust the tool height
8. Repeat to verify

### Tool Setting with On-Machine Metrology

1. Use the Traditional Optical Tool Setter to find the tool radius and bring it into focus
2. Click on three points on the radius of the tool
3. Save the tool radius into the tool table
4. Set up and cut brass setup part
5. Put Horizontal Optical Tool Setter in place
6. Measure setup part pip for tool height adjustment
7. Measure setup part groove for X offset adjustment
8. X offset automatically updates in tool table
9. Manually adjust the tool height
10. Repeat for verify

*First three steps can be skipped if using the radius specification from the tool manufacturer*
On screen reports, “Zero to Cursor Distance” = ½ the required tool height adjustment

On screen reports, “X Offset” value automatically updated into tool table

Process reliably sets tool height and X offset to within 1 µm accuracy

The industry standard method for tool setting with offline metrology, demonstrates the capability to set tools using on-machine metrology to under 0.5 µm. Measurements done on a Zygo® Verifire™ interferometer.