

# Integrated Spindle Measurement

## Machine tool metrology

**Spindle performance critically defines the quality standards achieved by machine tools. As manufacturing enters the Industry 4.0 era, faster and more intelligent metrology is required. The Integrated Spindle Measurement Solution offered by IBS is designed to determine critical spindle performance parameters. It provides an instant feedback to the machine, essential to guarantee product quality as demanded by the latest trends in the automotive and aviation industry.**

### At a glance

- Real time spindle motion quantified
- Sensors integrated into the spindle or housing
- Sub-micron to nanometer accuracy
- Swarf, vibration and bearing effects detected

### Machine spindle accuracy

Spindles must turn true in the x,y and z directions to make good parts. Rotational errors in any of these directions could cause bad parts or expensive tool wear and breakage. Errors can be caused by, amongst others, tool misalignment e.g. by swarf, or bearing failure. IBS has over 25 years experience in spindle performance measurement for advanced applications. Accuracy, speed and simple but intelligent solutions are our focus.

### Integrated Solutions

With an integrated solution, sensors are built into the spindle itself and simultaneously measures machine spindle runout in the x,y, and z directions. The custom probes are designed to have a minimum footprint to save space and have a 90° cable exit to fit in the available area. These eddy-current sensors are unaffected by contaminants like oil and machine coolant. Sub-micron precision level means that even the smallest errors can be reliably detected. Like the probes, the custom three channel driver is designed to be as small as possible. Each channel has a digital EtherCat output, but can be configured with an analogue output as well.

