Intelligent Machining

Critical components require precise machining and difficult workpiece mounting, which becomes a time constraint. Through the addition of machine tool probes and intelligent software that can calculate offsets and apply corrections to the CNC program in real-time, parts come out correctly the first time. Additionally, intelligence can be applied to measure the wear on machine tools and create offsets to accommodate that wear ensuring that parts come out correctly every time.
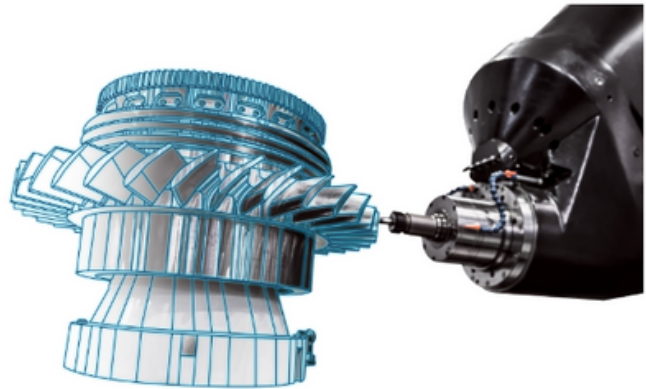
Why Intelligent Machining?
- Prevent alignment errors
- Flexibility on shop floor
- Complex part geometries
- Raw material inconsistencies

How is it accomplished?
- On-machine probing
- Apply correction factors
- Adjust for tool wear
- Driven from 3D models

Application Principles
- Adaptive machining
- Discover process inefficiency
- On-machine inspection
- Closed-loop control

Shop Floor Impacts
- Improve product quality
- Process optimization
- Reduce cycle time
- Improve first pass yield

Thanks to **NC Software Solutions** for their support in highlighting their NC Transform intelligent machining solution.

Additional Suppliers for Intelligent Machining

Renishaw probing systems provide solutions to improve efficiency and accuracy of machine tools. The probing systems for CNC machining centers and lathes assist in identifying and setting up parts, measuring features in-situ for adaptive machining, monitoring the condition of part surfaces, and verifying final part dimensions. This improves product quality, reduces costs associated with scrapped parts, and increases overall efficiency.

Esprit CAM Systems provides a software solution that integrates probes with CNC machines
to provide on-machine probing for workpiece location and offsets, misload detection, dynamic tool offsets, and in-situ inspection. This software is universally available for any CNC machines, control systems, and touch probes on the market.

Hexagon provides high-quality, high-precision, and reliable probe systems for machine tool measurement and correction. Infrared, laser, temperature, and ultrasonic probes are used to measure tool wear or breakage, part surface data, or part wall thickness to provide real-time feedback to the machine controllers to make dynamic adjustments and increase accuracy.

Open Mind offers the hyperMILL probing solution that aids in programming, measuring, and probing functions directly on the machine tool. This mitigates issues like clamping errors, stock inconsistencies, and operator error - resulting in reduced downtime, reduced scrap rates, and increased throughput.