UPx

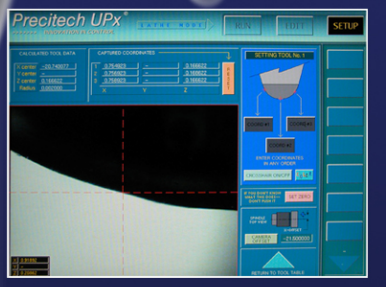
Machine Control
CNC Control System

Overview

The UPx™ CNC control system is engineered around the QNx real time operating system, recognized as the state of the art in industrial software development. Today, Precitech has adopted the same approach in offering a control platform dedicated to Single Point Diamond Turning, while offering additional conventional RS274 CNC programming capability to the operator with the fastest block execution rate in the industry.

Benefits of integrating the QNx RTOS for improved operation include:

- The UPx™ control system is built around the QNx real time operating system – widely recognized as the premiere, true real time operating system.
- QNx is a microkernel based, hard real time OS used where safety and robustness is needed. Spacecraft, nuclear power plants and medical instruments rely on its stability, speed and fault tolerance.
- Precitech has exploited QNx in its UPx™ controller. The servo loop is actually closed in software, running full 64 bit, double precision calculations. This allows us precision orders of magnitude greater than DSP based controllers without any proprietary hardware.
- Because Precitech develops its own software, the UPx™ is capable of much more, for example, adaptive control algorithms impossible to implement on board-based DSP controllers. Precitech can react to special requests in a timely manner, tailoring the system to specific needs while providing the fastest block execution rate in the industry.



In addition, this control system can be retrofitted to many existing Nanoform® and Freeform® machines in the field. By utilizing non-proprietary hardware, this system reduces the burden of obsolete parts.

Control Benefits (operator Interface)

- **Integrated Spindle balancing:** Improved graphical interface allows for faster, more accurate vectoring of spindle imbalance.
- **Ultracomp™ on-machine metrology:** This is a form measurement and correction package. Also, useful for data analysis offline since the data can be saved in many formats.
- **FFT Display:** This helps identify machine or environmental vibrations that might compromise surface form and finish.
- **Optical tool setting:** On-screen integration eliminates the need for a CRT monitor and allows for advanced options like color display and optional crosshair color for improved contrast at the tool edge location, resulting in improved tool setting accuracy.
- **Tool path display:** Allows operator to dry cycle program prior to machining to identify faults before machining
- **Integrated gage amplifier:** On-screen operation creates additional workspace for operator and eliminates additional electronic indicator amplifier.

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