



**MICRON DESIGN**  
Complete Engineering Solutions

## Turnkey spindle bearing journal cleaning system

### Client:

Leading manufacturer of high precision measuring equipment.

### Brief:

To develop a bespoke turnkey cleaning facility for AMETEK Taylor Hobson's high precision bearing journals for their roundness instruments to replace an existing cleaning system. The system is being used by Taylor Hobson personnel within manufacturing facilities in the UK and China.

### Project challenges

Key challenges on this project included:

### Electronics:

- Develop a customer configurable PLC based control system.
- Use of ATEX rated components.

### Pneumatics:

- Design of pneumatics process control circuitry using ATEX rated actuators remotely linked to the PLC control panel.

### Software:

- PLC algorithms developed.

### Mechanical:

- Containment of a hazardous fluid in an enclosed environment.
- Control of the cleaning fluid through a rotational axis during the cleaning cycle.

### Environmental:

- Handling and containment of a hazardous fluid

### Solution:

This required the development of an automated cleaning cycle using a flammable liquid medium. Comprising of a sealed enclosure with a re-circulating fluid filtering system, an ATEX based control system incorporating pneumatic actuators and a remote PLC control panel. This solution provided comprehensive configurability enabling a flexible choice of internal and external cleaning jets to be sequenced in order to provide optimum cleaning conditions.

### Summary:

The project has been successfully completed and installed at Taylor Hobson's manufacturing facilities in the UK and China. It has resulted in improved cleaning results of the bearing journals, shorter cycle time than the previous equipment and improved assembly/test results.



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