

New life for worn machines


Customer:

Spirax Sarco

Industry:

Precision manufacturing

Challenge:

Enhanced preventative maintenance program to reduce scrap and increase overall quality.

Solution:

Routine preventative maintenance checks with QC20-W ballbar reducing machine downtime.

Spirax Sarco UK invested in a Renishaw QC20-W wireless ballbar to check the geometry of its high-end machining centres before and after they were transferred to a new, purpose-built facility. The move was part of a £30 million initiative - called 'Project Unity', that brought together three Spirax manufacturing sites under one roof at Cheltenham, Gloucestershire.

In their new location, Spirax Sarco's Mori-Seiki MH50 and HG630 horizontal milling machines are used to produce BSA bellows valves in batch sizes determined by the company's Kanban system. Before the relocation, however, the machines had been integrated into Flexible Manufacturing Systems (FMS) where, explains Richard Morris – Spirax production engineer, "they were worked very hard indeed for 16 years."

Before dismantling the FMS set-ups and moving the machines, Spirax management wanted to be sure they were worth moving - to know for certain that the machines could still cut accurately or, if they couldn't, what parts would need to be replaced. If and when the machines were deemed worthy of relocation, the company also wanted to perform subsequent checks for geometry, ballscrew accuracy and backlash issues, once they were installed in their new home.

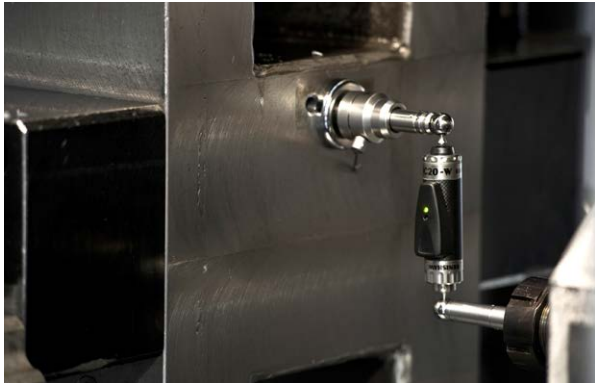
"Initially, the idea was to buy a laser-tracking device to check geometries," says Mr. Morris. "But, the Renishaw ballbar was

a far less expensive option capable of performing all the tasks we had planned."

Tight quality standards

Spirax Sarco is the global leader in manufacturing high quality products for the control and efficient use of steam and industrial fluids. The bellows-sealed design of the company's BSA valves ensures stem seal leaks are completely eliminated, meeting the most stringent worldwide emissions legislation. "We're not making parts for aerospace applications," says Mr. Morris, "so it's important not to be chasing microns of accuracy we don't need. But, we have very tight quality standards. After leaving the machine shop, parts go directly to assembly, and out-of-tolerance dimensions can delay production."

The Renishaw QC20-W ballbar system offers significant performance and operational benefits to machine tool users such as Spirax Sarco. Bluetooth wireless technology ensures no wire handling issues, closed-door operation and the reduced possibility of system damage. Also, recently introduced, updated Renishaw hardware and software allows a 'partial arc' (220°) test. This gives users greater test flexibility, including: improved Z-axis testing (no custom fixtures required); tests where axis travel is limited (typically



The QC20-W wireless ballbar on a machining centre at Spirax Sarco.



Richard Morris, Spirax production engineer.

the Z-axis on milling machines and X-axis on lathes); and the ability to test three planes from a single set-up.

Intuitive software

“The Renishaw ballbar sounds more complex to operate than it really is,” says Mr. Morris. “I attended a one-day training course at Renishaw’s New Mills headquarters, which covered everything I needed to know. The Renishaw designed software is intuitive and easy to use, so a day is sufficient. When I returned we checked all the machines that were due to be moved and discovered they were definitely worth keeping. Many of them needed new parts to bring them up to scratch, but it’s far cheaper to install a new ballscrew, for example, than replace an expensive machine tool.”

As well as using the Renishaw QC20-W ballbar in Project Unity, Spirax management also wanted its preventive maintenance to be more routine and better managed, as part of a wider plan to reduce scrap rates and increase overall quality.

“We only have one ballbar, but it’s enough for all of our machine tools,” adds Mr. Morris. “We’re developing a plan

where we check each machine at least once a month, during routine maintenance.”

Accurate parts, time after time

Monitoring machine tool accuracy is critical at Spirax’s new Cheltenham site. The facility runs three shifts a day, so there’s little leeway for problems caused by machine tool error, and maintenance has to be tightly scheduled to minimise downtime. In any machining operation, poor component accuracy can be attributed to a variety of different factors, such as worn tooling, spindle wear or incorrect clamping. However, inaccurate parts can also result from machine tool positioning errors. Regardless of whether the machine is old or not, geometric, dynamic or play errors can have significant, negative effects. Using a Renishaw QC20 wireless ballbar can identify problems early and provide all-important peace of mind for production managers: that accurate parts will be produced, time after time, day-after-day.

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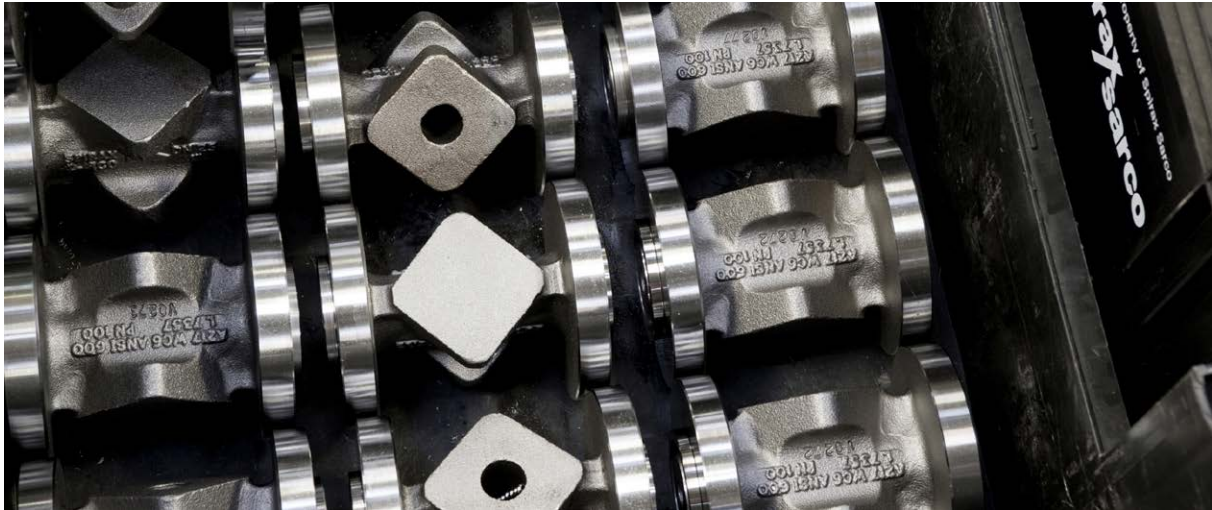
Spirax Sarco (UK)



John Curtis, Spirax maintenance manager



Valve body being loaded onto one of the company’s HMCs



Spirax valve bodies

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