Getting the measure of quality

Companies in West Yorkshire now have access to free metrology advice and consultancy from the recently established Manufacturing Metrology Centre. Steed Webzell investigates further

While business is beginning to flow in the right direction again for many UK manufacturing companies, the fact remains that the marketplace has shrunk in recent years. For companies trying to address this situation there is little doubt that an awareness of new measuring practices can provide a demonstrable competitive edge.

The Manufacturing Metrology Centre (www.metrologycentre.co.uk) is a two-year project funded jointly by the European Regional Development Fund and local regional development agency, Yorkshire Forward. “It originally came from a pilot instigated three years ago by the Department of Trade and Industry to meet a lack of awareness of advanced metrology in the area,” explains centre co-ordinator John Wray. The project began in January 2003 and will close later this year in December.

Due to the geographical size of West Yorkshire, the Centre is co-located on two sites, at Kirkdale Industrial Training Services (KITS) training centre in Brighouse and at Leeds College of Technology. Mr Wray says that both sites are equipped with the same facilities, pulled from the total funding package of approximately £1 million.

The way the Centre operates is simple: “A qualified adviser will go into a company and review its existing processes and equipment, before providing a summary report highlighting key issues and areas that could be improved by metrology adoption, benchmark scoring and recommendations. Some of this advice can be quite diverse – anything from reverse engineering, component scanning or an introduction to probing. The company then decides whether or not to take up the advice – if so, we then proceed to give typically four or five days’ implementation assistance, up to a value of £2000.”

Whether it is reducing unit cost price through more efficient manufacturing processes or increasing production accuracy to enable new opportunities – the Manufacturing Metrology Centre can identify measurement problems and offer solutions. The service is open to firms with fewer than 250 employees and with a turnover of under £24 million.

So how much does all of this cost? “It’s all free – the initial consultation and the follow-up assistance – the whole service
Ballbar reduces scrap
For manufacturers looking to reduce scrap and unexpected machine downtime, checking machine performance before component manufacture makes sense. Renishaw’s QC10 ballbar system can be used to plan predictive maintenance programmes, improve machine performance through targeted maintenance and increase machine shop productivity. Circularity testing is recognised internationally as a test of contouring accuracy on CNC machine tools. A quick, 10-minute test using the QC10 can diagnose the performance and capabilities of a machine tool. The test can be performed at 50, 100, 150 or 300 mm calibrated radii and larger uncalibrated radii. The ballbar is accurate to 0.5 micron and has a sample rate of 250 values/sec.

is free,” states Mr Wray. “Believe it or not, it is still the thing we struggle most with – people are so sceptical about it costing nothing – it must be a Yorkshire thing,” he quips. “Cost is only incurred if a company decides to continue with our services in the long term – this is an option that many have taken and it is done on a commercial basis.”

At the implementation assistance stage, the adviser will introduce equipment that is felt will benefit the company either by loaning machinery or equipment (‘try before you buy’ – typically for a two-week period) or arranging sessions to be conducted at the Centre. Sufficient training is provided for the company to assess whether the equipment is providing an actual benefit – and few will complain about the list of equipment available.

“When it was time to purchase the capital equipment for the Centre, our remit was to keep it as generic as possible in order to encompass the needs of as many manufacturers as we could,” says Mr Wray. “On the measurement side there is a DEA Brown & Sharpe Global Status CNC coordinate measuring machine, a Renishaw ballbar system for CNC machine checking (very popular according to Mr Wray), a Faro Gold articulated arm type CMM, a Renishaw CMM checking gauge and an extensive range of digital hand tools from Bowers Metrology. There is also surface measurement (Surtronic 3+ from Taylor Hobson) and hardness testing equipment, as well as SPC and gauge calibration software.

In terms of machinery, the Centre also houses a Bridgeport 3-axis VMC 500 XP CNC machining centre fitted with a Renishaw tool probing facility and spindle probe to enable in-process measurement including tool wear, breakage detection, part location and geometry measurement. There is also a Colchester Tornado A50 CNC lathe with full ‘lights out’ machining package.

“The equipment we use obviously has certain benefits for the vendor companies, but I must stress that we are totally unbiased in this respect,” clarifies Mr Wray. “Proximity to West Yorkshire was one of our criteria for selection – we were keen to establish partnerships – while another key factor was equipment portability.”

As with most government initiatives, there are targets to be met. The performance and capabilities of machine tools. The test can be performed at 50, 100, 150 or 300 mm calibrated radii and larger uncalibrated radii. The ballbar is accurate to 0.5 micron and has a sample rate of 250 values/sec.

Smooth operator
Portable and flexible, Surtronic 3+ combines advanced technology with accuracy and value to give effective measurement of surface finish in the workshop, inspection room or laboratory. Offering fast, simple measurements of up to six parameters, the Surtronic 3+ from Taylor Hobson features interchangeable pickups and mechanical stylus lift for easy measurement of steps, bores and recesses. Gauge range is ±150 micron and traverse length is 1.25 – 25 mm.