

# Grinding – coolant counts

**ITC's state-of-the-art grinding equipment is complemented by further investment in coolant and its management. *Machinery* reports**

**C**utting tool maker ITC has recently purchased two new Rollomatic grinding machines to manufacture its small tools (from 0.5 mm diameter) and an additional Walter grinding machine. It has supported these with a new filtration system to ensure the machines perform to their full capacity at all times. "The investment has been substantial," underlines ITC's Kevin Ford.

To support the Rollomatics ITC bought a new Transor filtration system and SintoGrind TTK grinding oil from Oel-Held UK. As Mr Ford says: "There is little point installing the best grinding machines unless they are supported by the highest quality coolant and filtration system which will ensure optimum performance. We have had a Transor system on our Walter machines for the past five years and know from experience that it is the best available, and we use the SintoGrind grinding oil in all of them. The new Walter machine has been installed using the existing Transor system."

Indeed, the new system complements an existing Transor system, installed five years ago, which is running four Walter grinding machines and a



*Okamoto's UPR-3NC combines variable hydrostatic slideway and air bearing technologies*

Schneeberger grinder.

Coolant is fundamental to the grinding process, affecting both the accuracy and the surface finish of the workpiece, as well as the speeds and feeds at which the machine can be run. Integral with this is the coolant system:

good oil is useless with poor filtration, while good filtration is wasted on inadequate oil.

The coolant maintains a constant temperature in the wheel and the workpiece, eliminating inaccuracies, and removing the grinding debris. The

## 600 Centre introduces Perfect surface and plunge grinding range

Toyota-Mitsui Seiki production grinding machines has launched the Perfect range of surface and plunge grinding machines.

Available from 600 Centre, Shepshed, they are intended for production, toolroom or workshop use.

The range has a table surface of from 400 by 800 mm up to 700 by 2,000 mm with spindle centre to table dimensions ranging between 550 and 1,000 mm. Available in four types, these machines can be specified as M for 3-axis manual operation or H which

employs hydraulic drive for the longitudinal traverse, with manual control for cross and vertical moves.

The AH version has automatic crossfeed with hydraulic longitudinal travel and a manually operated vertical axis, while the AHR provides AC

filtration system maintains a constant temperature within the oil and removes the debris.

When machining carbide this is critical because carbide dust is highly abrasive. If the filtration system is inadequate, small particles of carbide are carried through the machine, creating an abrasive paste



that damages the machine. "We have machines that are four years old and still perform as if they are brand new. There is no need to clean them because they are constantly cleaned during use," adds Mr Ford.

One of the major factors affecting the

accuracy of the grinding process is the build up of heat and this is controlled using Sintogrind combined with the Transor filtration system which maintain the oil at a constant temperature. Using Sintogrind as the cooling lubricant, friction between the wheel and the workpiece is reduced, resulting in longer wheel life and less wheel dressing.

In turn, a decrease in thermal shock leads to fewer micro-structural changes (no hairline cracks) which leads to an almost 100 per cent production reliability. The coating of hard metals will last longer and will not flake away, and cobalt will not wash out.

The surface quality of the workpiece is also improved by using SintoGrind since it minimises the burning that can be experienced when using water mixable or inadequate neat cooling lubricants.

ITC installed the new Transor system and Sintogrind cutting fluid because of its "faultless" experience with the existing and virtually identical system. During five years of use it has found no degradation in the oil and has only topped it up once.

"Although each tool we make has a slight oil coating, most oil is lost in the debris or filter fleeces in the filtration system. The Transor sucks the oil out of the debris, leaving a dry residue, so virtually none is lost," Mr Ford says. "We are able to sell the residue from the Transor whereas from a fleece system we would have to pay for its disposal." □

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servomotor control of the vertical axis with hydraulic longitudinal axis and automatic crossfeed.

Also from 600 Centre, Okamoto's UPR-3NC rotary table grinder (picture, above) with variable hydrostatic slideway and air bearing technologies is

able to grind, for instance, the faces of inner and outer bearing races as a pair, maintaining sub-micron tolerances to different width sizes in the same cycle.

X and z axes have a minimum increment of 0.01 micron; y, 0.1 micron.  
*See Okamoto at EMO: Hall 11, Stand F28*