

Driving up efficiency

OEMs will, now more than ever, be looking for value from supply chain partners. Steed Webzell reports

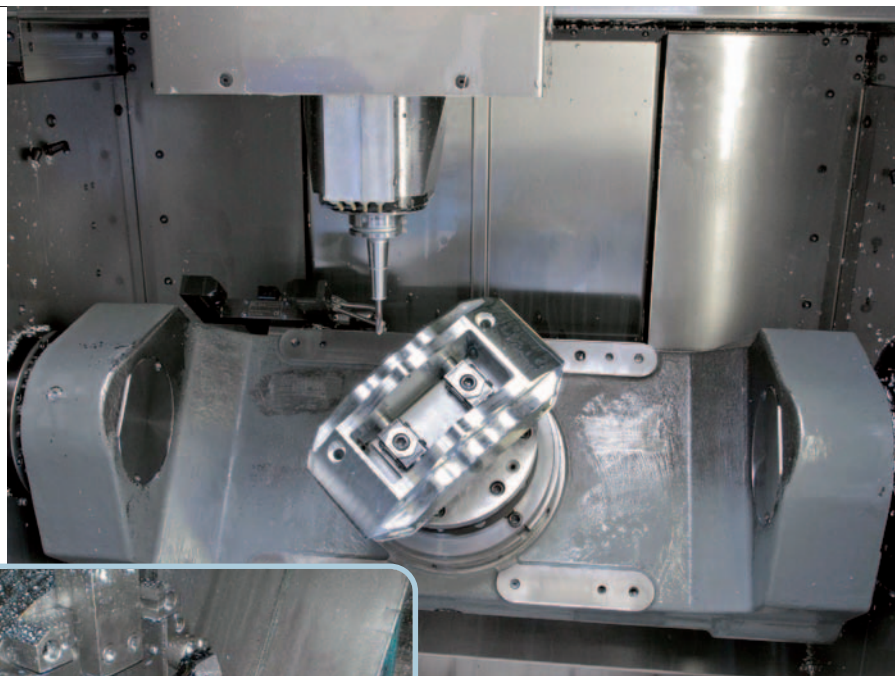
There's no hiding from the current car market woes – UK sales slumped 21 per cent in September to record the fifth consecutive monthly fall in sales of new cars in Britain. Car registrations were 330,295 in the same month, down from 419,290 in September 2007, while new registrations fell an annual 18.6 per cent in August to record their weakest showing since 1966.

However, as Paul Everitt, chief executive of the Society of Manufacturers and Traders, points out: "UK produced vehicles are exported to over 100 markets around the world," which suggests some cause for optimism as underlying strengths of certain economies become apparent.

Nevertheless OEMs' increased bargaining power is unlikely diminish the drive for productivity. The most efficient automotive sub-contractors and those exploiting niche markets are best placed to come out in better shape.

Alcon Components, Tamworth, holds both cards. The company, which produces monobloc brake calipers from aluminium alloy billets for high performance road cars, is benefiting from the installation of a Hermle 5-axis, vertical spindle machining cell which features a 12-position pallet pool.

Compared with the manufacture of the same components in four, five or six operations on 4-axis, horizontal spindle, twin-pallet machining centres, overall cycle times are on average 52 per cent faster across the company's product



Above, the Hermle installation at Alcon; left, TaeguTec has saved Albion time and money

range. Moreover, most components are now completed in just two set-ups, reducing floor-to-floor times.

The turnkey cell is based on a Hermle C20U high speed machining centre equipped with Heidenhain CNC, Blum laser tool breakage monitoring and length setting, Renishaw part probing, 117-position tool magazine, 80 bar through-tool coolant, solid carbide cutters (predominantly from Iscar), and Bilz heat-shrink toolholders. Components are fed from an Erowa 12-station pallet magazine into the working area via a gantry handling system that runs at an unusual angle of 45°.

Specially engineered at the request of Alcon by Hermle's UK agent, Geo Kingsbury, the offset load/unload

configuration allows the pallet store to be positioned to the left side of the machine rather than directly in front, facilitating access by the operator for setting and prove-out of new prototypes. Good accessibility to the machining area is essential as eight hours of the day shift are spent on technical work, with the remainder of the 24 hours devoted to running production batches.

BIG SAVINGS REALISED

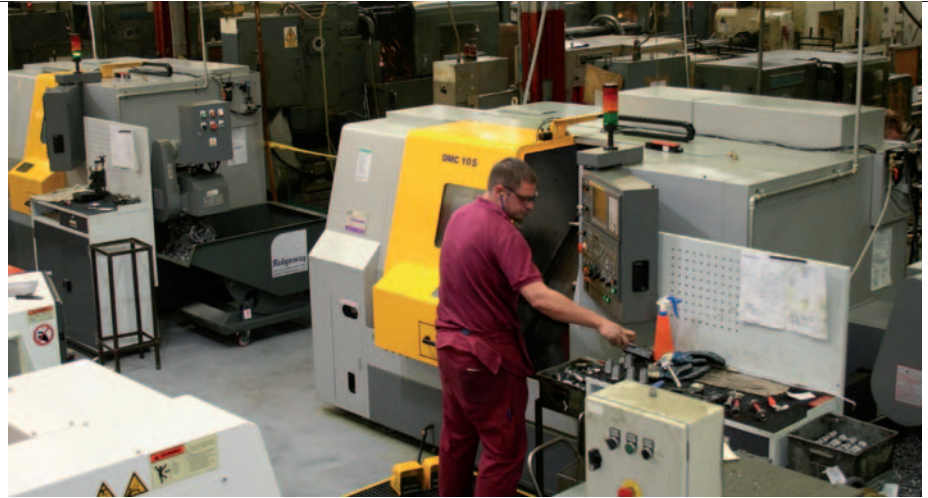
Bob Luck, production engineer at Alcon, adds: "This is our first 5-axis machine and our first pallet pool cell. At the time of installation, we were also learning how to use SolidCAM software for programming simultaneous 5-axis cycles, and experimenting with more rigid, accurately balanced tooling for machining at up to 16,000 rpm and 6 m/min feedrate – more than double what we use on the horizontals. It took the best part of six months before we

were fully conversant with the system but now we are making big savings."

Another company counting the benefit of shrewd technology investment is Glasgow-based Albion Automotive, a manufacturer of commercial vehicle driveline systems such as axles, crankshafts and transmission components. TaeguTec, in a review of certain manufacturing processes, offered some improved solutions for machining steel and cast iron.

One particular example was noted recently on an Endomatic twin spindle mill that machines half shaft axles from forged EN19T steel with up to 10 mm depth of cut. The previous insert was running at a feedrate of 0.4 mm/rev and a speed of 200 rpm. Using a 200 mm diameter face mill with 14 inserts, each with eight sides, the previous insert was machining 20 parts per edge. Operating within identical parameters, the TaeguTec TT7030 grade now machines 650 parts before needing an insert index, thus reducing the insert edge cost per part from £0.57 to £0.04 – a cost saving of 93 per cent to Albion.

Investment in turning technology can



The DMC CNC lathes supplied by Leader CNC to LIC have demonstrated significant savings. Reduced changeover time plus higher speeds and feeds are put as the reasons for this performance

have an equally impressive impact, as Coventry-based LIC Components can testify having recently installed four new DMC turning centres from Leader CNC. The company produces automotive parts primarily from bar, but also from castings, forgings and billets in bright drawn steels, brass and aluminium.

SECONDS DO COUNT

LIC reviewed the market before purchasing DMC 8S and 10S turning centres with an 8 and 10-inch hollow chuck and maximum diameter range of 240 and 350 mm respectively. The other two acquisitions, a DMC 6TL and an 8TL, are built upon a single body casting

complete with high speed turret. All four machines have 12-station turrets, swarf conveyors and part catchers.

In the competitive automotive sector where seconds literally do count, ISO: 9001:2000-registered LIC Components monitors machine efficiency, and by calculating every second of production, LIC has found the new 8S to have improved efficiency from 60 per cent to over 80 per cent by reducing non-cutting time to an absolute minimum. This is credit to the improved changeover times and significantly higher speeds and feeds.

Ilkeston-based Labone Precision has found that replacing an ageing spark eroder with a new Sodick AQ35L die sink EDM has revitalised the manufacture of precision injection mouldings, insert mouldings and metal pressings for automotive customers. Cycle times are "now typically two-to-four times faster".

The company's new Sodick AQ35L has been set to work producing components for injection mould tools, as well as providing essential rework capability on tools undergoing refurbishment or repair. In one example, a recent repair on an injection tool insert was completed by the new machine in 30 minutes – according to the operator this would have taken two hours with the old machine.

"The head is much faster on the AQ35L," confirms Mr Jackson. "However, the machine is not only very quick, the technology aids flushing out and electrodes last longer. It also offers far better surface finish, eliminating the need for polishing. Taking all the advantages into account I would estimate we can process jobs two-to-four times faster using the new machine." □

Forging ahead at Corus

Four new Kasto WAC 7/9 circular sawing machines employing tungsten carbide-tipped blades from Kanefusa have replaced three HSS bandsaws and one carbide circular saw at the Midland Service Centre of Corus Engineering Steels, Wolverhampton.

"With induction hardening of automotive components more prevalent these days, we need to supply forges with clean, dry, swarf-free steel," says operations manager Chris Yardy. "This was difficult using our bandsaws as coolant had to be directed to the point of cutting to reduce heat and prolong blade life.

"In contrast, the Kasto carbide circular saws cut dry, avoiding slurry and swarf sticking to the blanks and billets, so that we can deliver a better quality product to our customers. Absence of coolant also improves the shopfloor environment."

Mr Yardy also says that circular saws cut faster than bandsaws and to better accuracy and repeatability. Kasto circular saws in particular he describes as extremely repeatable, with excellent squareness of cut, which is particularly important when producing upset forgings. Accuracy of cut length, which ranges from 10 to 1,000 mm, is also crucial as forges stipulate tight tolerances of typically -0, +1 mm, or the weight equivalent.

Output from Wolverhampton is around 50,000 tonnes of steel per year, of which 85 per cent is cut to customer specification. Most jobs are for very large volumes, with some orders, such as conrod forging blanks, running virtually continuously.