



Five-axis machining

Aerospace supplier's new factory focuses on complex aero-engine components

Weston EU, a Tier One supplier to the aerospace industry, recently opened a new factory (in Earby, Lancashire) that is devoted to the five-axis machining of the root form and tip shrouds of compressor blades produced from aluminium-alloy, titanium-alloy and nickel-alloy forgings.

The new unit is close to the company's headquarters (and hitherto main production centre) in Foulridge, Lancashire, from where all 21 Hermle machining centres — some three-quarters of the company's total number of five-axis machines — were relocated to Earby between March and November last year.

In a parallel venture, Weston EU opened a blade production facility in Thailand towards the end of 2008, with the aim of further strengthening its leading position as a global supplier to the civil and military aerospace sectors. The firm also runs another Thai factory, which it opened in 2005 to manufacture aircraft interior parts.

Dave Abbott, director of manufacturing operations at Weston EU's Lancashire factories, says: "To enable manufacturing operations in the developed world to compete with low-wage countries, there is a pressing need to put in place efficient production methods based on lean-manufacturing principles. That is why we have consolidated five-axis blade machining in the UK from two buildings in Foulridge to the new Earby site. At the same time, we have introduced more-efficient cellular manufacturing, to help us meet cost-cutting targets demanded by aerospace OEMs, yet still make reasonable margins."

All but one of the Hermle machines have

been divided into five cells, each comprising four five-axis machining centres and an adjacent CMM for 100% component inspection. The 21st Hermle machine is a larger C 40 U model that runs independently, producing components for land-based gas turbines.

Production volumes vary enormously but are 'sliced up' into batches that can be completed by each cell in a single shift, of which there are three during each 24hr week-day. Mr Abbott says that they used to have batches that over-ran shifts, but this resulted in production that was difficult to control, because responsibility was shared by too many operators.

Work-benches, tool storage, shadow-boards and cleaning stations have all been standardised, and there are individual service drops to each machine. Planned maintenance is carried out meticulously, to ensure minimal unscheduled machine down-time. Furthermore, operators and team leaders are responsible for 'asset care' during each shift, whereby checking, cleaning and

top-ups are completed across a list of 10 items in a cell, with all actions logged on a chart.

In conclusion, Mr Abbott says: "Weston EU is more than just a sub-contract machinist. We develop close long-term business relationships with customers such as Rolls-Royce, BAE Systems, Smiths Aerospace and Goodrich, and these often involve life-of-programme agreements. Customers do not stipulate how we should manufacture their parts, but they are certainly impressed when they see a factory laid out like our new blade-machining facility in Earby.

"Improvements we are making to air-frame production, as well as to engine component production and to the five-axis machining of compressor blades and vanes for power generating applications, are helping us to win new business and to make a profit on it, despite relentless reductions in the prices we can charge."

Hermle machines are available in the UK from George Kingsbury Machine Tools Ltd, Gosport (Tel: 023 9258 0371).

