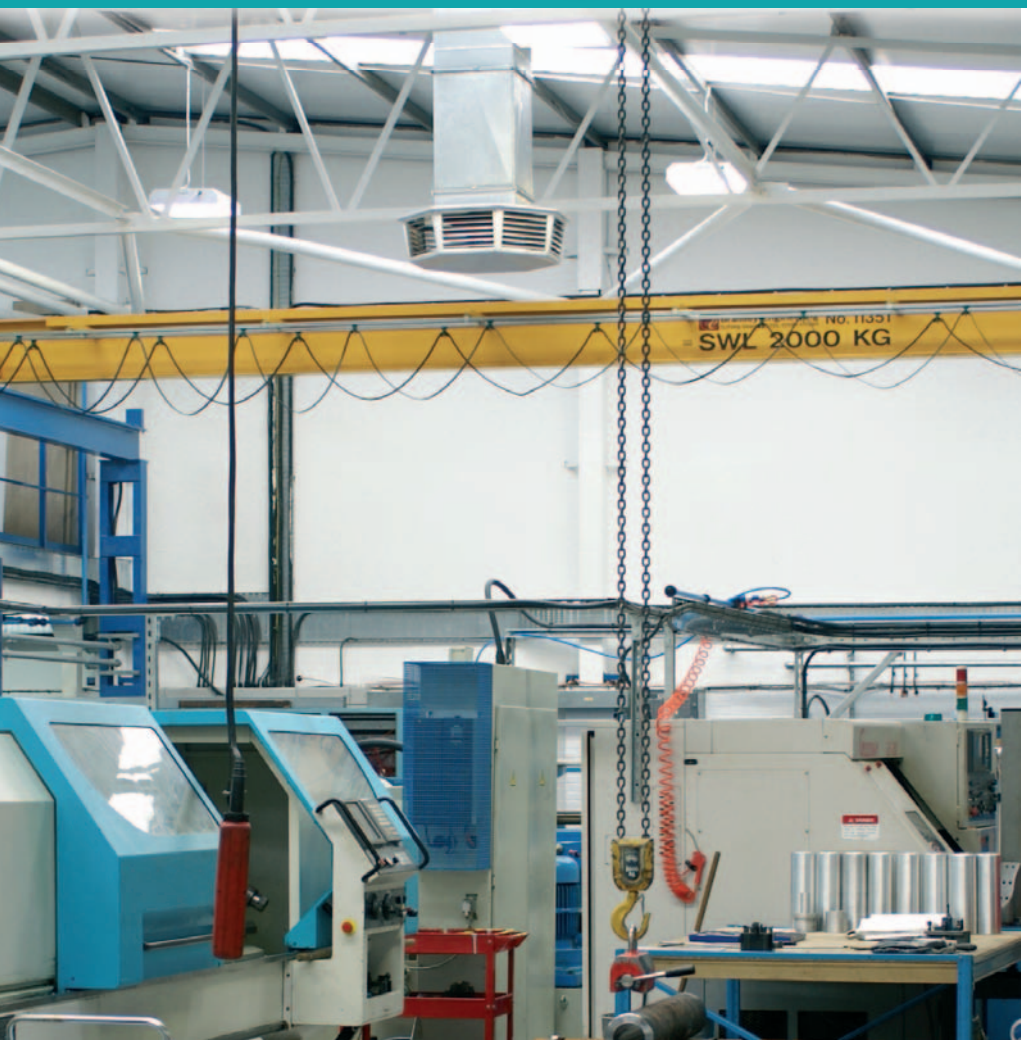
Combining ‘lean’ with ‘green’



Specialist deep-hole drilling company shows that neat cutting oils and a clean environment can co-exist

Deep-hole drilling — with its requirement for copious amounts of neat cutting oil — can be a messy process, contributing to the negative image of engineering as a dirty business that poses a potential risk to health, safety and the environment.

However, it does not have to be like this, as Leighton Buzzard-based Hone-All Precision Ltd (Tel: 084 5555 5111 — www.hone-all.co.uk) has shown, following the company’s decision to relocate its sub-contract machining operations to larger refurbished premises. The move was prompted by the need for increased production capacity and a more-efficient process flow from raw material through to finished component, along with easier access to and from the factory.

Relocation has also allowed several environmental and related initiatives to be implemented as part of the refurbishment project, all of which have had a favourable impact on the company as a whole, as co-director Andrea Rodney highlights: “While the cost of these initiatives does have a direct effect on ‘the bottom line’, it is balanced — over time — by a reduction in our direct costs and by less-easily quantified benefits such as a better working environment.

“Our machining capability continues to be components up to 250mm in diameter × 3m long, but doubling our floor space to 20,000ft^2 has allowed additional investment in machine tools. This additional capacity is a vital part of our lean-manufacturing strategy, which has shortened delivery times and minimised the movement of heavy material and components through the factory. We have also reduced energy usage by installing a new roof with clear panels to let in natural light, and by opting for Carbon Trust-approved, highly energy-efficient daylight quality lighting throughout the factory.”

Focused expertise

The expertise to produce holes with a high length-to-diameter ratio, often in difficult-to-machine materials such as Inconel and Hastelloy, while guaranteeing excellent surface finish and straightness characteristics, is key to Hone-All Precision’s steady progress over the past decade. In terms of deep-hole drilling, this equates to a surface finish of 0.8µm/32 CLA and a total run-out (TIR) of 0.025mm/25.4 mm.

Typical components requiring deep-hole drilling up to 30mm in diameter include con-rods, drive shafts, steering columns, electronic housings, injection mould tools, prosthesis, rotors, actuators and landing gear. For holes with a diameter greater than 30mm, the alternative is deep-hole boring, which is the machining process used on the replica 16th-century cannon featured in the *Master and Commander* film, starring Russell Crowe.

Hone-All Precision’s commitment to maintaining its specialist skills in deep-hole drilling, boring and honing — as well as its ‘one-stop shop’ machining capability — is backed by an emphasis on good housekeeping, safe working practices and a comprehensive environmental policy.

Every machine tool was inspected before the move, re-engineered, re-wired and, when installed in the new factory, subjected to a comprehensive safety check. Moreover, the increased floor space has allowed a shopfloor layout that ensures a smooth and logical workflow, thereby minimising work-in-progress and eliminating potential production bottlenecks.

With regard to environmental considerations, Hone-All Precision’s publicly stated aim is ‘to educate and encourage our employees to realise and understand their responsibilities with regard to conservation; to exceed the requirements of all relevant Government regulations at our site; to minimise our energy consumption; and to recycle waste material from production into new production or transfer it to a recycling company to be disposed of in a controlled manner’.

Cleaning the environment

In practice, a factory-wide clean-air blower and filtration system with ceiling-mounted extraction units positioned strategically throughout the machining area prevents the build-up of oil mist, while machine tools are located in drip trays, with billets drained on mesh-covered drip trays, to avoid oil spills and minimise wastage. Furthermore, machine tanks are no longer filled by hand, as oil tanks equipped with retractable hoses are situated at one end of the mezzanine floor that runs the entire length of the building.

On some machines, swarf is removed via swarf conveyors with integral drip trays; on other machines, it is removed to hoppers with drainage facilities. The swarf is subsequently spun to recover the neat oil before being sent off-site for segregation and recycling.

“Our recent accreditation to the AS9100 aerospace quality standard, while not directly influenced by health, safety and environmental issues, could not have been achieved if we had remained within the restrictions of our previous premises,” says Andrea Rodney, who was recently presented with the Bedfordshire Businesswoman of the Year 2009 award. “Winning business in advanced-technology industries such as aerospace, motor-sport, and oil and gas is a major challenge, and our success depends to a large extent on the customer’s perception of the quality of the products and service on offer.”