

Technology in profile

SteedWebzell identifies the patterns and trends that are shaping the profiling technology market for sheet metal and plate applications. And its use in the UK is growing, he finds

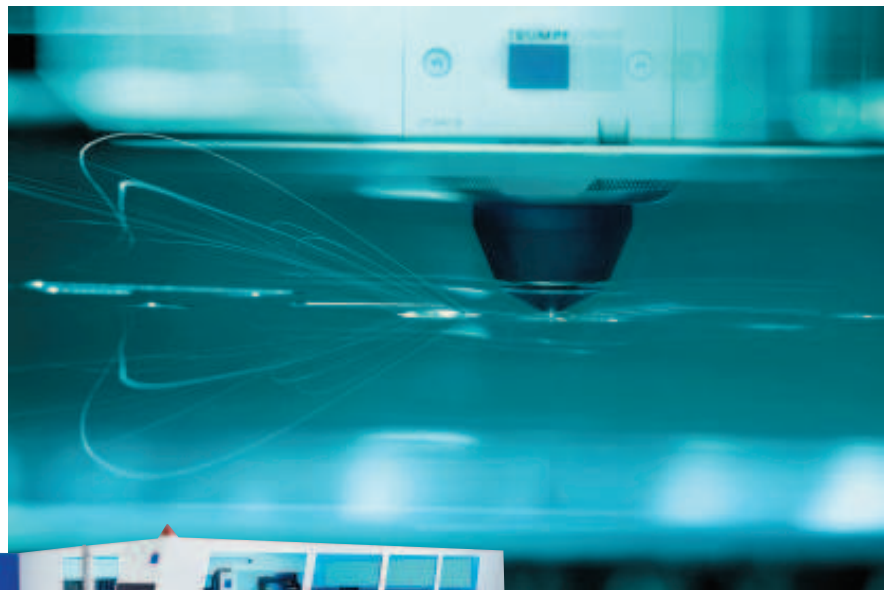
Whether the process medium is laser, waterjet or plasma, the use of profiling technology is growing within UK manufacturing.

One notable trend among profiling technologies is their ability to process ever-thicker raw material. For instance, the new Trumpf L4050 6 kW laser is able to cut carbon, mild and stainless steel up to 25 mm thick and aluminium up to 15 mm thick, while thinner materials can be processed at rates up to 40 m/min. The first UK machine has already been sold to Sheffield-based Mayflower Technology, a sub-contract fabricator of laser-cut, formed, machined and fabricated components.

"When we looked at Trumpf's new 6 kW laser," says sales director Karl Stewart, "we saw it would be a great opportunity to bring some leading edge technology into the business that would put us ahead of the market. It allows us to do things other companies cannot."

Mayflower has always been strong in the heavier end of plate-working, with key end applications including quarry crushing equipment, refuse vehicles, railway rolling stock and construction plant. "The ability to cut thicker materials is very important to us," says Mr Stewart. Another Trumpf L4050 has been recently installed at the Bradford facility of NG Bailey Manufacturing, a laser cutting service provider, where it has also expanded the range and thickness of materials cut.

Current market demands are heading



towards the processing of larger, 2000 mm wide, sheet material. Fast to spot this trend is Amada which has recently extended its FO series of flying optic lasers with the introduction of a new large format flat bed machine. With a working range of 4070 by 2050 mm and capacity for cutting up to 20 mm thickness, the new FO 4020 NT meets requirements for 2000 mm wide sheets. As well as a new cutting head design, the machine has a cartridge system for rapid lens and nozzle changes, while a new lens monitoring system enhances process reliability. Another innovative feature is

the water-assisted cutting head which sprays a fine mist of water around the nozzle to cool the material, permitting the process to yield faster cutting speeds, reduced pierce times and increased material utilisation. It also essential for processing thicker materials.

A SENSE OF DISTANCE

Another new high-speed laser cutting machine with flying optics has been recently introduced by Finn Power for processing material up to 20 mm thick. Available in the UK through Press & Shear Machinery, the L6 features digitally controlled linear drives, acceleration of over 2g and cutting speeds up to 60 m/min. Constant distance is maintained between the material surface and the nozzle using non-contact, capacitive,

Plasma: the big picture

Plasma cutting is often overlooked when considering new developments but the versatility and cost-effective nature of this process has ensured its longevity. For example, Blackburn-based Metalcraft Architectural Engineering uses Esab Automation Eagle 2000 plasma profiling technology to help it produce shopfitting equipment for many of the UK's leading retailers. A Columbus system has also been provided as part of the solution, giving Metalcraft the flexibility of off-line CNC programming. Its features include automatic nesting and databases for different parts and materials that help restrict changeover times to a minimum.

Elsewhere, sub-contract fabrication company H & JW Howells has invested in an Esab Hanscoportal gas and plasma machine. The machine's flexibility has enabled the company's various cutting requirements to be met, including the profiling of steel and aluminium in thicknesses ranging from 10 to 200 mm. "We are now able to get through more work with the same staffing levels, saving time and money," says managing director Karl Howells. Again the machine features Columbus cutting software to allow off-line programming.

integrated sensing. It is not necessary to change the cutting head when a focal lens change is required, just a new lens cartridge has to be inserted.

Speed clearly shares specification importance with thickness of cut where profiling machine selection is concerned. As David Smith, southern regional sales manager for laser cutting machine supplier Prima Industrie (UK), says: "Laser cutting is a fast and efficient way to cut material without distortion and without needing rigid or expensive fixtures."

Speed is also the key for the new Bystronic Byspeed 4020 which is able to cut 10 mm square holes in 1 mm thick sheet at a rate of 300 per minute in scanning mode. With axis acceleration up to 3 g, the Byspeed, available in the UK from Pullmax, automatically positions in arcs rather than straight lines, therefore the system is not only able to maintain its positioning speed at a consistently high level, but also avoids the abrupt changes in direction that can be damaging to any drive system.

Bystronic also serves the waterjet market where one of the growing trends is automation. Responding accordingly, the Byjet 4022 can now be supplied with an innovative shuttle table, rendering it ready for the step to partial automation through swivel loading. It seems what has

long since been the norm in laser profiling, is now preparing to march into the world of waterjet cutting. The Bystronic shuttle table can handle 4 by 2.25 m plate up to 50 mm thick.

TAPER PROBLEM SOLVED

Flow is a significant innovator and provider of turnkey waterjet systems. The company unveiled its WMC2 waterjet processing system at the recent METAV and EuroBLECH exhibitions, where it attracted much interest. Flow is hoping the WMC2 will follow the notable success of the company's Dynamic Waterjet cutting process, which has arguably become one of the most successful products in the industry thanks to its ability to generate workpieces free of taper problems. Dynamic Waterjet uses a cutting head that follows the contour pattern and thereby changes the angle of inclination in accordance with customer requirements. Even when processing thick materials, tolerances of ± 0.05 mm are achievable.

One company quick to seize on the technology advantages offered by Flow is fabrication specialist Lee Warren, based near Heathrow. The customer's

requirements were for quality edge finish in 20 mm mild steel and 15 mm stainless steel. Using a Dual Head Dynamic Waterjet WMC2, Lee Warren is now able to cut parts to the required finish and tolerance without any costly after-finishing.

Also using innovation to attract customers is Omax which has just introduced the latest technology in its line of JetMachining Centres, the 2626lpx. Developed specifically for the tool and die, and medical device markets, the 2626lpx can cut shapes in a range of materials that includes metals, ceramics and composites, and achieve positioning accuracy in the order of 0.025 mm. This is largely thanks to the addition of a chiller to control thermal expansion of both material and machine.

Of course, the need to reduce sub-contract operations often drives the requirement for in-house profiling technology, as was the case at Newcastle-based Metal Spinners Group which recently purchased an Aliko Automation Oy waterjet machine from UK agent, Messer Griesheim. The Oy is powered by a KMT 50HP Streamline high pressure intensifier manufactured by KMT Waterjet Systems. The intensifier produces a working pressure of 3800 bar to give the high quality of cut required by blue chip customers for their high value products that include end plates for hospital body scanners. Metal Spinners Group decided to purchase its own waterjet when the cost of sub-contract cutting on its exotic materials became increasingly expensive. □

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