Rolling with the punches

Steed Webzell examines the increasingly high-tech arena of punch press machinery and tooling, discovering that the latest offerings pull no punches

Many thought the market for punch press machinery would contract once the first industrial laser cutting machines entered mainstream manufacturing. However, technical improvements in efficiency, speed and innovative tooling, coupled with strategically pitched prices, have ensured the longevity of the punch press within fabricating shops everywhere.

No-one who observes a laser machine cutting sheet metal in action can fail to be impressed by the frightening speeds witnessed. For one-off, low-volume or prototype components, or where there is a likelihood of many irregular or awkwardly shaped apertures to be cut, the advantages of lasers are difficult to match. However, a punch press scores when the shapes/apertures follow a repeating pattern. For instance, a cluster of shapes can be pattern-matched on a tool and removed in a single action. If a punch press is also capable of extremely high strokes per minute, then no other technology comes close.

As well as claiming to be one of the world’s fastest punching machines, Trumpf’s Trumatic 5000 R CNC punch press system features ‘twin-cart’ load/unload systems giving a compact automated set-up. It offers up to 1200 strokes per minute during punching operations and 2800 strokes per minute when inscribing.

The machine has recently been upgraded to include many functions that will make the automated operation and production considerably easier. For example, when it comes to stamping and forming, fluctuations in sheet thickness have a huge impact. Now, Trumpf has a simple solution: adaptive stroke calibration. With this newly patented function, the actual thickness of the clamped sheet metal can be recorded with an accuracy of 0.03 mm and the slide stroke calibrated to the current sheet thickness. Fluctuations in sheet thickness are therefore automatically compensated.

Claiming to be the world’s fastest is the recently introduced Amada EM2510NT electric punch press, which can perform 1800 strokes per minute, generating a ‘laser-like’ finish when processing contours. This energy-efficient machine also claims to reduce power consumption by approximately 60 per cent. Among its innovative features are patented power vacuum dies that eliminate slug pulling for whole and partial slugs during high speed nibbling operations.

FIRST TIME FOR PULLMAX

Pullmax has also recently launched a new entrant to the market; the Pullmatic 720 punching machine for punching sheet up to 8 mm thick. It features, for the first time on a Pullmax machine, a hydraulic head, which generally offers a much faster performance on thin gauge material. Its punching force is 220 kN and the hit rate is up to 1200 strokes per minute (marking). Acceleration is just as important as top speed for production times and the Pullmatic 720 accelerates at up to a maximum of 22 m/s².

Ambi-Rad’s Finn-Power installation runs unattended for the third shift
For many fabricators, selecting a punch press with the most flexible capability is critical to meeting the demands of a wide range of customers and components. The new Global 1225 from LVD features a large sheet processing capability and 30-station turret with auto-index capacity, and can be fitted with a cost-effective pick and sort work handling system. This high-speed hydraulic system delivers up to 400 hits per minute on 25 mm centres and is capable of producing at 1000 strokes per minute in continuous nibbling mode. The innovative Smart Stroke feature automatically optimises the punch cycle by determining the hover height based on material thickness and distance between holes.

The robotic system handles cut part dimensions up to 1000 by 2000 mm with an unload time of 12 seconds per part. The system features four independent sheet holders that are lowered to securely hold or retract the sheet according to the shape of the cut part and its position on the sheet. A sensing device detects whether the part is separated from the sheet.

PACKING A PUNCH
One fabricator that has exchanged an old, standalone turret punch press for a pressworking cell with an automatic load/unload system, reducing labour costs in the process, is radiator heater manufacturer Ambi-Rad, based at Brierley Hill in the West Midlands.

The selected Finn-Power system from Press & Shear Machinery, has worked around the clock since its installation 18 months ago, unattended for the third shift, allowing the rest of the factory to operate on two shifts instead of three, resulting in reduced labour costs. Additionally, the manufacture of all fabricated components has been brought in-house, whereas previously the production of a significant amount of sheet metalwork was outsourced during times of peak demand from August through to winter.

Established 25 years ago, Ambi-Rad employs 210 staff and has an annual turnover of £20 million. Against a background of stagnating sales in the heating and ventilating industry, the company has been bucking the trend recently by increasing production year on year, both domestically and in export markets.

The higher level of throughput made it essential for the company to address the shortfall in its capacity to produce flat stock for feeding to the three manual CNC press brakes in the factory. So manufacturing director Chris Yates and his production team spent five months evaluating which automated punch press to buy. A detailed, points-weighted chart was prepared comparing price, technical specification and service. From a shortlist of four machines, one was rejected as being too small while another used a programming system that was considered
too inflexible. Of the two remaining contenders, the Finn-Power F5 Express was deemed better value as it had a larger capacity turret, was faster and had a more powerful PC with better software for interfacing with Ambi-Rad’s programming system.

Another company to recently replace its existing CNC punching machine with a new one, this time a Pullmax 4000, is Henry Williams, which produces enclosures for a wide range of industries including the railways and highways. “As our existing machine became older we were aware that we had no contingency plan for machine downtime,” says Simon Dawes, production engineer. “We looked at a number of machines on the market and while they were all of a similar standard the Pullmax 4000 offered the best value for money.

“Since being commissioned, we have been able to take advantage of an up-to-date machine including indexable tools, improved accuracy and nesting times. In addition we have enjoyed substantial productivity and efficiency improvements. In the past there have been profiles our equipment with a portfolio of over 450 different products.

“The overall benefits of the first Pullmax 5000 FC and parts picker provided us with the best package and, since its installation, has allowed us to maximise our labour efficiency as well as significantly increase productivity,” comments Steve Mitchell, managing director. “The machine is run unmanned during lights-out. The second replica machine is replacing a standalone punching machine and will provide Lincat with additional flexibility.”

Another company to recently order a Pullmax 5000 FC is Carbolite Furnaces, which manufacture furnaces and ovens for both laboratory and industrial applications. Carbolite looked at six machines, both turret and single head, spent time visiting users and carried out benchmark testing to obtain time in motion figures.

Smart fabricators are constantly thinking about ways and means of improving productivity and reducing piece-part cost, and new punch press technology is facilitating that demand. Fabricators that don’t invest soon won’t be able to punch their way out of a paper bag, while those that do will be able to deliver a knockout blow.

Max height, min damage
A new guide system has been introduced to enable production of maximum height forms in sheet metal when using thick-turret punch presses, without risk of damage to the tool, the machine or the formed features. The new system, from US manufacturer Mate Precision Tooling, is available in the UK through sole agent, Burrhart Machinery, Luton.

In addition to improving safety, the forming tool guides, called GapMax, increase productivity and reduce set-up time by eliminating the potential for collision between the tool and ram during tool changes. Guides are available for 1⁄8 in B, 2 in C, 3⁄8 in D and 4⁄8 in E stations for Amada, Finn-Power, Murata Wiedemann, Euromac, Nisshinbo and Strippit thick turret punch presses, among others.

The guide system protects the machine turret while using the entire turret gap for upforming. The length adjustment system ensures that the shoulder of the guide cannot apply force to the top of the turret during the downward cycle of the ram stroke.

GapMax allows precise adjustment of tool length in 0.002 in (0.005 mm) increments between the shoulder of the guide and the point of the form, ensuring accurate, crisp features.

Compatible with all current and earlier Mate UltraForm inserts, the open compatibility of the new guide system allows the fabricator to use his current tool inventory, avoiding the expense of buying additional tooling.

Single-station LVD Alpha
LVD has introduced the Alpha 1212 CNC punch press to its line of high-performance CNC punch press equipment. It is a single-station punching machine with productivity enhancing features such as LVD’s exclusive CADMAN CNC control and CNC controlled programmable indexing mechanism, which enables the use of an indexable Multi-Tool to expand tooling capacity. The Alpha 1212 is capable of punching mild steel up to 8 mm at speeds of up to 400 hits per minute. The punch press handles materials 1270 by 1270 mm and delivers 230 hits per minute on 25 mm centres. The machine’s open-throat design facilitates handling of large or oversized workpieces, which can be rotated 180 degrees. The Alpha 1212 provides high axis travel speeds for a machine of its class, with an x-axis speed of 45 m/min and a y-axis speed of 30 m/min. The machine offers efficiency and productivity for prototype applications or low volume production.

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