

100 YEARS OF MANUFACTURING TECHNOLOGY INSIGHT

MACHINERY

*Wayne Mason,
application centre
manager for deep
hole machining,
Sandvik Coromant*

Additive manufacturing

A technology on
the move

Fibre laser breakthrough

Trumpf shifts
the boundaries

LATEST VIBE

SMOOTHER DEEP HOLE DRILLING PROCESS UNVEILED

MACH 2014 OVERVIEW AND FIRST PREVIEW

Marked progress

Steed Webzell discovers that the latest trends in the field of traceability and marking include automation and portability

There have been many notable trends in traceability and marking in recent decades. For example, the introduction of computer-controlled dot marking machines in the late 1970s; and advances in vision technology and software controls in the 1990s to ensure that data matrix codes could be verified at the point of marking, to name two.

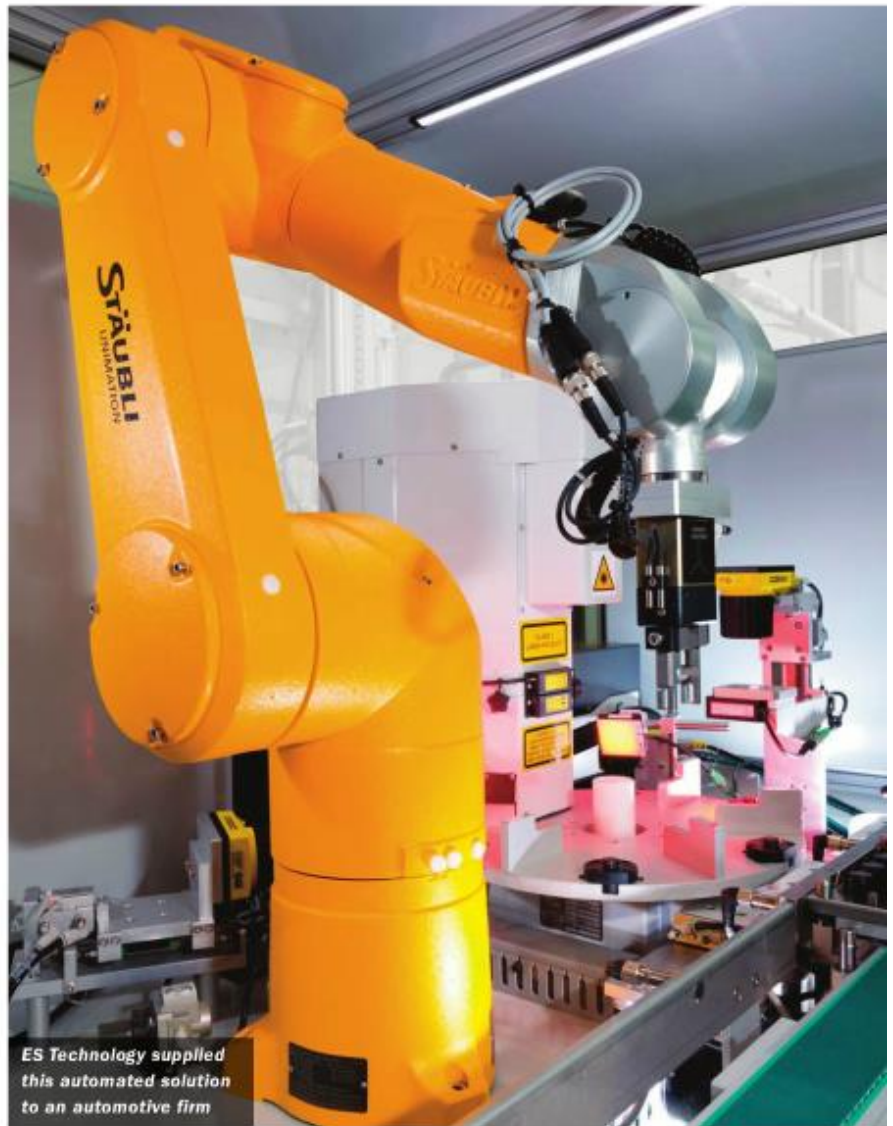
In 1997, Pryor Marking Technology (0114 276 6044) introduced a 5-axis marking station for large components. The latest generation of that robotic solution, the 6-axis Type R marking machine with enhanced vision technology, has proved a benchmark for the company.

INCREASING DEMAND

Pryor first installed a fully robotic marking solution in 2002, using a standard robot from ABB to present components to a static marking station. The company says that demand for such solutions has begun to increase considerably of late, with their improving affordability and variety of configurations, the latter now including both laser- and dot-marking heads mounted on robotic arms.

Within the aerospace industry, such robotic solutions are being used to enable a single marking station to cover the range of components encountered in a production facility – from the smallest turbine blade to the largest fan housing. Using a robotic solution means that design changes, or the introduction of additional components, no longer requires new marking machines, but a simple reprogramming of the robot.

Pryor's intrinsic software ensures that operators are given a clear, visual interface, without the need for specialist knowledge, while manufacturing engineers



ES Technology supplied this automated solution to an automotive firm

can modify layouts and grant access controls.

Robot-mounted marking is also proving beneficial on modern automotive production lines, where multiple engine and gearbox combinations, and even vehicle chassis, need marking on the same line with seamless transition. A programmed robot

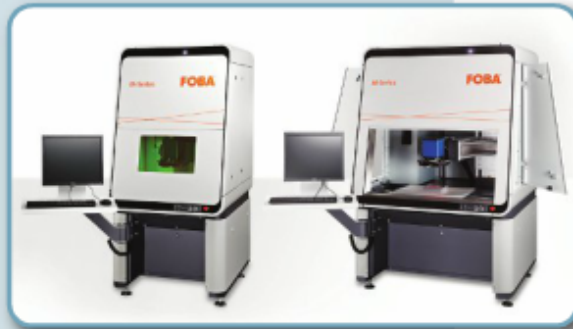
can modify its location and strategy on the basis of a simple vehicle ID, giving varying mark location and content instantly.

Able to confirm the automotive trend, ES Technology (01865 821818) says it has recently combined laser, vision and robot technologies in a flexible solution for a UK manufacturer of automotive fuel systems.

New generation markers

With the M2000-B/P and M3000-B/P units, FOBA says it is offering a new generation of flexible laser marking machines for the precise, quick and economic processing of geometrically complex workpieces of varying sizes, taking in small, as well as large, large batches of components.

Represented in the UK by TLM Laser (0845 260 2220), FOBA says the M2000 and M3000 are available in two housing sizes and three model options: as basic models; with a work table on the M2000-B and M3000-B machines; and with three programmable axes as standard on the M2000-P and M3000-P models. The R model, a two-station turntable machine, rounds off the series. Thanks to various laser systems, as well as flexible and easily retrofitted options and accessories, hardware and software can be tailored to customer requirements.



meet the requirements of manufacturers whose products are too large or unwieldy to move to a laser marking area in the factory.

"Sometimes our customers need to mark large items, such as steel rails, car bodies or even aluminium beer kegs," explains Peter Ramsden, sales director at ElectroX. "In such cases, it is easier to take the laser to the component, so we've used advances in fibre optic laser technology to create a mobile version of the Scorpion Rapide."

The Scorpion Rapide M features a range of five different power levels and

laser beam profiles to address a range of laser-marking applications. It is fitted with a small, portable marking head, weighing only 10 kg. The head is connected to a docking station that can be wheeled to the item requiring marking. The head is removed manually from the station, placed against the item for marking and then returned to the docking station.

For safety, ElectroX has developed a cylindrical shroud that fits around the marking head. This contains a number of sensors that prevent the laser from firing until it is pushed hard against the surface to be coded.

Trumpf UK (0844 482 0188) can also now offer a solution in this area. The company's recently launched Mobile Marker allows manufacturers to ensure full traceability of their products, even if the parts involved are too large or heavy to move. It will be of greatest benefit to those in the automotive, aerospace and shipbuilding industry, as well as subcontractors manufacturing large, heavy workpieces.

Mobile Marker provides the same speed and flexibility of a standard Trumpf TruMark system, and is available as an option with the TruMark Series 5000. TruTops Mark software means static and variable text can be applied, as can bar codes, data matrix codes, graphics and logos.

Process safety is assured, thanks to intelligent sensors; no additional measures are needed. No consumables or wearing tools are involved and there is no requirement for pre- and post processing. ■

Components are presented to the system in trays (delivered on a conveyor system), before a 6-axis robot is used to pick the items individually from the tray and present them to a loading station on a six-position rotary indexing table.

As the table indexes, the part that has just been loaded by the robot is checked by a vision system to determine the component profile and radial orientation. A further index presents the part to the laser marking station. Here, the component is lifted from the table nest and rotated, using motorised grippers to present it correctly for marking. With many components requiring marking in multiple positions, the motorised gripper systems are used to reposition the part between marking cycles.

The ES Technology system is designed to handle a range of component types and at the heart of system is a PowerLine 10E air laser source from Rofin Baasel UK (01327 701100), coupled with a fast-focusing module. The laser is used to produce 2D data matrix codes and, following the marking process, a separate vision system is used to read and grade the codes. All good parts are returned to the original tray by the robot and any that are deemed to have failed the inspection process are segregated.

Another interesting trend in this technology area is the shift towards fibre laser marking solutions, as can be verified

by Hershaw, Surrey-based contract marking specialist Fimark (01932 245226). Serving sectors such as automotive (interior backlit buttons and fascias), medical, aerospace and general manufacturing, Fimark has just taken delivery of a high-end fibre laser with rotary and linear stages, supplied by SPI Lasers (01489 779696).

BEAM WIDTH REDUCTION

The new laser has controllable pulse width and frequency up to 1 MHz, and boasts half the beam width of the company's existing flash lamp pumped Nd:YAG lasers. Running on single phase electricity, and with air rather than water cooling, the operating costs are also substantially lower than Fimark's existing machines.

By selecting the correct parameters, the company can achieve smooth black marks on anodised aluminium by marking the surface of the metal below the oxide layer. This is not something that could be achieved with the existing machines and it allows Fimark to create high contrast barcodes on labels and readable scales on aluminium extrusion.

Yet another notable trend in marking is the growing demand for greater portability. ElectroX (01462 472400), for example, has recently unveiled a mobile version of its best-selling Scorpion Rapide laser. The new Scorpion Rapide 'M' has been designed to