

# Manufacturing technologies

The UK has, for many years, led the world in the development of manufacturing technologies



**T**oday, advances in machine tools and associated manufacturing technology is driving UK engineering innovation.

In today's new global marketplace the UK manufacturing technologies sector is at the leading edge of exciting advances in new materials, software and manufacturing methods, with the vast majority of the equipment developed and produced now exported to customers around the world. The latest processes and techniques developed by the UK machine tools industry enable gains in productivity, flexibility and quality which manufacturers must achieve to stay competitive.

## TECHNICAL EXPERTISE

The UK manufacturing technologies industry boasts particular expertise and innovation in a wide range of areas. They include CAD/CAM systems for component design and manufacture as well as manufacturing simulation programs; workholding and toolholding systems; cutting tools; turning and milling machines, which form and shape metal; metal finishing and grinding equipment and measurement systems.

The UK machine tools sector is also known for its excellent service capability and is distinguished for the role it plays in supporting motorsport engineering.

## LEADING THE WORLD

These, and many other categories of products, equipment, components and services, are used in a broad spectrum of engineering disciplines, several of which, such as autosport, aerospace and precision component manufacture, are widely acknowledged to be world-beating. UK excellence in engineering and quality of innovation in manufacturing technologies is seen by many observers as leading the world.

## SECTORS:

### SOFTWARE

The UK is home to a number of world leaders in the development of CAD/CAM software for the three-dimensional design, manufacture and inspection of complex shapes. Companies in the UK sector develop software and hardware products for use in a huge range of applications from conceptual design to pattern-making and tool-making for a variety of sectors.

Software is optimised for ease of use, control and flexibility throughout the product development cycle. Furthermore, there are systems for data translation and management tools to enhance the control and communication throughout the supply chain during product development. ➡



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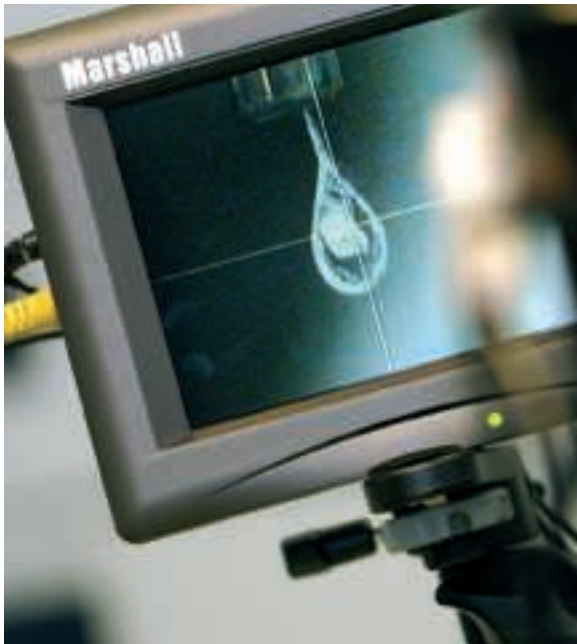
# MANUFACTURING TECHNOLOGIES

## BRIEF OVERVIEW: THE SCOPE OF THE INDUSTRY

The full range of products and services that make up the UK manufacturing technologies industry are metalcutting and metalforming machine tools, and their parts, components and accessories. The sector also specialises in manufacturing and process automation, including handling, assembly and industrial robots. Moreover, UK companies offer systems engineering and maintenance; welding

specialists; surface finishing; tooling; workholding; software, CAD/CAM and auxiliary equipment.

In addition, the UK makes industrial power tools; safety and metrology equipment; industrial lasers; cutting and press tools; mould and die; abrasives; castings; forgings; woodworking machinery and equipment; oils, lubrication and cooling products; plastic injection moulding and extrusion equipment; and enclosures and fasteners.



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Software tools are aimed at boosting productivity, improving quality and also reducing product lead times. UK companies put a lot of effort into making their products easy to adopt and learn, as well as translating them into many different languages, including Japanese and Mandarin.

Companies offer highly functional suites of programmes to cover the range of engineering processes from multi-axis machining centres to CNC-controlled lathes. Software can also be tailored to suit specific needs: either an entirely bespoke system for manufacturers that are new to CAD/CAM, or products that seek to improve the performance of an existing system by removing bottlenecks in the manufacturing or design processes.

### MANUFACTURING SIMULATION

Full machine simulation capability is also available. The latest software in this field allows complete machine tools to be accurately visualised and modelled, and their movements predicted throughout the manufacturing process. These products are essential for milling and turning applications where there is a higher risk of collisions due to the often close proximity of machines and their various moving parts.

### WORKHOLDING AND TOOLHOLDING

The UK offers a wide range of innovative workholding solutions to satisfy all manufacturing needs, with specialists supplying everything from hydraulic clamping through to double clamping. Companies boast many years of experience and are well placed to help customers in the manufacturing industry reduce set-up times, improve productivity and increase quality control.

The sector is expert in the design and manufacture of both standard and special toolholding solutions and is generally focused on giving the best in customer service.

Coventry Toolholders, for example, is one of many that are breaking into new markets with innovative designs and solutions. It manufactures the Centerline range of standard and bespoke Angle head and Speeder products, and is now supplying companies in Russia.



The company, along with others in the sector, is renowned for an innovative product range. It was the first to offer the world ultra low-cost CNC lathes and a full-size laser profiling machine for under £200,000

## CUTTING TOOL MANUFACTURERS

This is another field where there is constant development aimed at enhancing machining performance. Innovations include the introduction of new insert grades for steel turning and milling, and advances to improve strength, reliability and durability of cutting tools as well as broadening their application range to adapt to the variations in workpiece materials. Cutting tool manufacturers are constantly working to optimise their products for large-volume production, where a high metal removal rate is required, as well as varying one-off component production. The latest coatings also offer improved wear resistance. Furthermore, tools are uncompromisingly designed for modern machining where predictability and security are essential.

## TURNING, MILLING AND METAL FORMING

Machine tool builders in the UK produce a wide range of equipment from bespoke mechanical and hydraulic presses to advanced combination/CNC lathes and laser-profiling machines. One of the largest manufacturers of machine tools in the UK is 600 Group, which boasts the largest volume lathe manufacturing plant in Europe and is the largest manufacturer of manual/CNC lathes in the world. The company, like others in the sector, is renowned for an innovative product range. It was the first to offer

the world ultra low-cost CNC lathes, and the first to offer a full-size laser profiling machine for under £200,000.

Other UK companies lead the world in the manufacture of CNC metalforming machinery and specialise in the bespoke design of mechanical and hydraulic presses, which are exported to many countries across the world.

The UK also has an international reputation for systems integration, successfully interfacing CNC power presses with micro processor or PLC-controlled handling and feeding equipment. This expertise allows companies such as Joseph Rhodes to offer state-of-the-art manufacturing cells incorporating presses from 10 to 5,000 tonnes.

In addition, the UK boasts specialist machine tool manufacturers such as AddisonMcKee, which has gained world recognition in the tube forming industry. The company makes machines for applications such as tube forming, end forming, tube bending and tube cutting. From exhaust, frame, structural and fluid components in automotive to furniture, sporting goods, aerospace and aircraft, AddisonMcKee is one of the most technically innovative and advanced solutions providers in the industry.

## METAL FINISHERS

Specialist manufacturers of grinding and metal finishing technologies can also be found in the UK, supplying ➔



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customers across the globe with full CNC surface, cylindrical and creepfeed grinding machines. Machines, as with other equipment produced by the sector, can be supplied in a stand-alone mode or as a turnkey multi-purpose, multi-process system.

#### INNOVATION COMBINED WITH EXPERIENCE

There is strong global competition between machine tool manufacturers, but with its focus on innovation and the development and application of new technologies, the UK machine tool sector can offer customers the best solutions for improving productivity and remaining competitive.

UK machine tool manufacturers have long and successful experience of supplying the world's leading companies, including Ford, BMW and Honda. The UK's vibrant manufacturing technologies industry is also central to a range of other important industries in the

domestic market, including the medical equipment sector, aerospace and defence, domestic appliances and the petrochemical and offshore industries.

#### IMPORTS

The UK sector also has a track record in enhancing imported products. In many cases, importers of machine tools use the equipment as a basis on which to build a turnkey package, often incorporating innovative programming, workholding, tooling and automation equipment that has been developed by UK engineers. ■

#### **i FOR MORE INFORMATION**

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