

A photograph of a Brother SPEEDIO S700X2 1 CNC machine. The machine is white with a blue top section. The top section has a red and white label that reads "SPEEDIO S700X2 1". The machine is a vertical machining center with a rotary table. The rotary table is black and has numbers 1 through 21 around its circumference. The machine is in a factory setting. On the left side of the machine, there are several safety warning signs. On the right side, there is a control panel with a screen and various buttons. The machine is currently machining a part.

Upgrading production capabilities

Specialists in die casting and motor-sport machining both reap the benefits of retrofitted rotary-axis units

MRT Castings, a family business that was established in 1947 and specialises in the manufacture of high-quality aluminium die castings, has progressively introduced a range of complementary ‘end-to-end’ offerings. Along with high-pressure and gravity die-casting, the Andover-based company now provides tool-making, surface-finishing and mechanical assembly services — plus CNC machining.

The mainstay of MRT Castings’ machining facility are its collection of Brother CNC vertical machining centres supplied by Kenilworth-based Whitehouse Machine Tools Ltd. MRT’s policy of standardising on machines from a single supplier ‘provides enhanced flexibility’, as both operators and products are interchangeable between machines. Additional benefits include the use of standardised fixturing, tooling and CNC rotary tables.

Having previously used two well-known brands of CNC rotary tables, following advice from Whitehouse Machine Tools, MRT’s most recently installed Brother VMCs were specified with the addition of rotary units from PL Lehmann (www.lehmann-rotary-tables.com). Phil Rawson, MRT’s managing director, said: “MRT Castings can support its customers from initial ideas, through product development and design for manufacture, to full production and

logistics. Our extensive in-house CNC machining facilities are at the very core of our operations. To help ensure short lead times and the manufacture of premium quality products we use a range of Brother machine tools, which we consider to be the fastest machining centres available.

“Such is the cost and quality of our CNC machining provision that, in addition to machining die castings produced in our own foundry, we also machine components cast by other companies; and as we usually undertake small to medium-size production runs on a diverse range of products, we need each of our machines to deliver the best possible levels of flexibility, maximise machine utilisation and minimise set-up times. Over several years, our use of rotary tables has made important contributions in these areas.

“As many of the components we manufacture

are relatively complex, without our use of rotary tables we would need to perform two or three different machining operations on them, rather than the ‘one hit’ machining that we carry out. Also, the ability to finish machine parts in a single cycle means that we don’t face issues related to ensuring the accurate relocation of workpieces for subsequent machining operations.

“Over the past 12 months we have been involved in the casting and machining of parts that were needed urgently for medical ventilators. To help us to keep pace with an extremely challenging production schedule we brought forward our planned purchase of six Brother VMCs, bringing our count of these machines up to 25. To provide efficient four-axis capabilities, each of our latest six Brother VMCs was specified with the addition of a PL Lehmann rotary table. These are extremely robust and can perform all of the tasks we require, yet compared to our previously used rotary units they are particularly compact. Their reduced footprint releases machine bed space for other workholding equipment and means that when they are not required they can usually be left inside our VMCs when other machining jobs are being carried out. Furthermore, the low height of PL Lehmann units helps to maximise the available working volumes of our machines.”



MRT Castings most recently installed Brother VMCs were specified with rotary units from PL Lehmann

Four basic sizes of PL Lehmann CNC rotary tables are available, with centre heights from 110 to 240mm; and due to the Swiss company's modular design approach it can offer more than 170 rotary table variants. Models range from basic single-spindle fourth-axis units to four-spindle tilting rotary tables with fourth- and fifth-axis capabilities. The modular design of these units also means that if a customer's manufacturing requirements change, instead of investing in a new rotary table their existing unit can be adapted accordingly.

Focus on Formula One

Although Formula One is a 'global phenomenon', seven of the 10 teams currently competing are based in the UK, with much of the work related to F1 taking place in an area of Oxfordshire and the Midlands that has become known as Motorsport Valley. Here, a large clus-

ter of companies supply cutting-edge technologies to F1, as well as to Formula Electric, F2, F3 and GT3. Motorsport Valley is home to about 4,300 companies that employ around 41,000 people. One of these companies is the specialist machining sub-contractor CNC Techniques Ltd.

After gaining extensive experience in the precision machining of F1 components at the likes of the McLaren and Williams F1 teams, Paul Eden established CNC Techniques in 2014. As many Formula One sub-contractors prefer to avoid the machining of 'exotics', such as titanium, Waspaloy, Inconel and Hastelloy, Mr Eden saw this challenging aspect of sub-contract machining as an opportunity and used his considerable expertise and contacts to employ skilled staff and to source the high-quality machine tools and associated equipment he needed.

Mr Eden's fledgling business quickly established a loyal customer base, with the mainstays

of CNC Techniques' machining capabilities being its Hurco three-axis and five-axis machining centres. To provide an additional two axes to the company's three-axis machines and to add greater machining flexibility, it recently invested in a rotary table from PL Lehmann.

Mr Eden said: "As of 2019, motor-sport in the UK had a turnover of £9 billion. More F1 cars are made in Britain than in any other country and UK teams have won more titles than any other nation. As a passionate motor-sport enthusiast I am proud to be involved in this successful sector.

"Although we are kept busy throughout the year, our workload more than doubles in the traditionally busy F1 period of December through to February. At this time of year, apart from working 'round the clock', we need to work smarter and employ equipment that provides a high level of flexibility. The need for machining flexibility and the requirement for an additional two axes on our Hurco VMX 30 three-axis machining centre were the major motivations behind our recent rotary table purchase.

"In addition to giving us the ability to achieve five-sided machining in a single set-up, I was assured that a PL Lehmann CNC rotary table would withstand the high forces involved in machining exotics — and deliver the standards of precision we need. The installation of the rotary unit was carried-out by a couple of knowledgeable technicians who made all of the connections to our Hurco VMX 30's control system and demonstrated how easy it was to operate.

"We now use the rotary table along with our Lang Technik work-holding equipment; and as well as standing up to the machining forces encountered when machining exotics, our new rotary unit is simple and fast to operate. It is making a significant contribution to our 3+2-axis machining capabilities."

Mr Eden went on to say that by locating work-holding adjacent to the compact rotary table, a 'virtual six-axis condition' can be achieved. For example, following the five-sided machining of a workpiece held on the rotary table, machining can be undertaken on the next workpiece in a batch that is held in the neighbouring work-holding facility.



To provide an additional two axes for its three-axis Hurco machines CNC Technologies recently invested in a rotary table from PL Lehmann