

Japanese choose German solution

The fork type milling head provides exceptionally versatile machining options through interchangeable gear driven spindles and motor spindles. The rotary axes within the head can be used as positioning axes or for full 5-axis operation.



Sheet metal forming tools for the automotive industry can be rough and finished machined in one set up on the FOGS from Droop+Rein at Honda in Japan.



The FOGS creates a surface that is extremely close to a programmed CAD-contour.

High speed overhead gantry machining centre impresses with "best in class" performance

The Droop+Rein business unit of DST has won a hugely significant contract. For the first time ever, a Japanese company has ordered a FOGS type high speed machining centre – the guideways for the cross rail and head unit are located above the work piece and are known as an "overhead gantry". The benefits of this design impressed the critical manufacturing experts from the Honda Engineering Co. Ltd. The FOGS D40 will enable them to carry out rough and finishing operations in one set-up – a unique feature of this machine configuration. It creates a surface that is extremely close to the programmed CAD contour. As this significantly reduces the manual finishing work, cost savings are a key factor alongside the quality benefits.

Before awarding the contract, Honda carried out an extremely thorough selection process. First of all, they were impressed with overhead gantry construction. The Japanese company then established that DST's Droop+Rein business unit was the only specialist partner for these solutions in the world. This is backed up by international references. Ultimately, the fact that the previous high proportion of manual finishing work will largely be eliminated proved crucial. It also removes the disadvantages of the long cycle times and the associated quality losses. The machining centre is primarily intended to produce sheet metal forming tools for the automotive industry.

With an X-axis of 6,800 mm, a Y-axis of 3,500 mm and a Z-axis of 1,500 mm, the working area of the FOGS 35 68 D40 C ordered is more than 35 m³. The extreme static and dynamic rigidity of the cross beam has the required stability for rough milling. Because only the cross beam has to be moved in the X-axis, the masses to be accelerated when smoothing are relatively low and constant. This allows high feed rates combined with excellent contour accuracy. The cross beam contains the cross slide that moves in the Y-axis. In this, the D40 sliding milling unit moves in the Z-axis. The fork type head can also perform movements in the B- and C-axis, with continuous control of both axes. Because of this construction, the milling tool carries out all of the movements. This allows maximum effective feed rates as the moving masses are always constant. The main drive has an output of 40 kW at speeds of up to 5,000 rpm. Interchangeable motor spindles for 20 and 40 kW and maximum speeds of 18,000 or 5,000 rpm are supplied. Honda has chosen to use a Heidenhain control unit.

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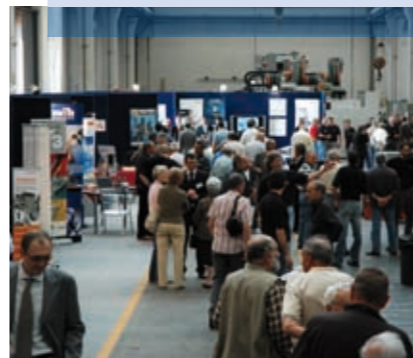
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Information and news from Dörries Scharmann Technologie GmbH

Mecof introduces new skills

Around 400 professionals from the industry attended the Open House.



Host Mecof clearly demonstrated the potential of its milling-machining centers by carrying out some demonstration machining operations.

For a period of three days at the beginning of June Mecof Srl opened its doors at Belforte Monferrato, Italy, to interested professionals. Following a restructuring within the A-TEC Industries AG parent company, the world-renowned manufacturer of vertical and horizontal high-speed milling centres has been a member of Dörries Scharmann Technologie GmbH (DST) since January 2008. To celebrate this new start, Mecof managers held an open house, together with its partners and customers. The message was that of tradition, innovation and quality awareness, and it was well received by the some 400 visitors from the automotive, aviation and mechanical engineering sectors who attended the event.

Attention was focused on Mecof's portfolio of products and services, which was exhibited impressively in a number of demonstration machining operations on the AIRONE, AGILE CS500 and MECMILL machines. For the AGILE CS500, with speeds of up to 20,000 rpm, the Mecof technical experts cited references from some well-known successful users from the aerospace industry, and from the mould-and-die production and plant engineering sectors. The versatile MECMILL machines workpieces from a wide range of general mechanical engineering

applications. For users in the automotive and aerospace industries, AIRONE is the name for finish machining of aluminium parts. This vertical high-speed milling centre with linear drives was designed for high-speed precision machining of free-form surfaces.

DST is convinced that the group will benefit from its latest member company because it is adding to the range of skills available and also because of the enlarged customer base. Mecof machining centres are smaller and lighter than those of Droop+Rein. The creative concept of Mecof horizontal machining centres makes a sound addition to the Scharmann product range. "Mecof is ideally matched with DST", summed up Dr. Norbert Hennes, CEO of DST. "It extends and completes our product portfolio, and it is putting us in touch with new customers".

In the autumn the newly structured Group will be exhibiting jointly at two internationally renowned trade fairs. From 8th to 13th September, customers will be able to see these new skills for themselves at the IMTS in Chicago, the most important machine tools trade fair in North America. And in October, the Italian BI-MU trade fair in Milan will be the showcase for DST's top-ranking expertise.

IMTS08
South Hall, Booth A-8292

bi-mu
Hall 9, Booth C34

Added to this the new **fakt!** will be highlighting some successful application examples from the Scharmann and Droop+Rein product range. Since the beginning of 2007 two Scharman DBF 630 machining centres have been successfully installed at Leser GmbH in Schleswig-Holstein in North Germany, and they are being used to machine valve bodies and their spring caps. Droop+Rein recently received its first order from Honda Engineering Co. Ltd in Japan. A FOGS D40 will be producing metal forming tools for the automotive industry.

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DST
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Implementing the success factors of production

How complex components can be produced economically in large quantities, with many variations and order-specific configurations



Focussing on an extremely demanding field of technology provides the opportunity to gain very high levels of expertise. LESER of Hohenwestedt, Schleswig-Holstein, is the living proof of this as they develop and produce their industrial quality safety valves, and market them throughout the entire world. At Hohenwestedt it is primarily the company's first-class performance in product development and optimisation of the production process that is safeguarding Germany as a production location. In the light of this they have invested in a comprehensive production system for valve bodies and their spring caps, manufactured in sizes ranging from DN15 to 200. Two Scharman DBF 630s machining centres met the qualifications set by the company in a systematic and differentiated selection procedure. The main criterion was the capacity of the new machine to carry out the entire machining process in a single clamping. This contributes greatly to the level of productivity and the performance of the entire machining system.



"We have several factors to thank for our leading position and our current consistently above-average growth as a manufacturer of quality safety valves," explained Managing Director Joachim Klaus. "The foundations of this are in the fact that our company is a family business, now in its fifth generation. Add to that the fact that we have specialised since the 1970s, building up our position as pioneers in the field of safety valves. Thanks to our highly motivated and committed staff we are able to manufacture competitively at our headquarters in Germany. Some of the external growth

drivers are the massively expanding oil and natural gas production and processing industries.

LESER set about future-proofing the company by starting a comprehensive initiative which included investment in a project to update its production machinery and machine tools. The head of production planning, Karl-Uwe Weiß was responsible for this project, and he also drew up the principal requirements for the machinery they were seeking. It had to be possible to carry out the entire production process on a single machine. At the same time it was necessary to ensure that there would be a consistently first-class service, a secure supply of spare parts, that high precision and productivity levels would be assured, along with a high availability rate, and thus a low Life Cycle Cost. Among other things the process required a burr-free back turning process,



and above all a maximum of two workpiece clampings to produce the finished component. The new machining centre had to be equipped with a horizontal working spindle and be able to machine the fixed workpiece in full in a maximum of two clampings. The DBF 630 from the Scharman DST product range met all the requirements.

Where in the past the individual components were machined on different machines, the production engineers at Leser now prefer a comprehensive production flow on the DST machining centre for each of the three ranges of valve. Operators at two load/unload stations place the valve body castings and the spring caps onto separate pallets. It is always crucial that as little non-productive time as possible should be lost during the machining process to come. The fixtures and jigs are arranged in the correct order. For example on one pallet, the support fixtures can accept up to sixteen workpieces on four sides. Clamping is hydraulic, and is effected either by jaws or chains. It takes approximately 10 minutes to set up the first part for a series; thereafter it takes only another minute to clamp and unclamp each part. The turning-drilling-milling head (DBF) is the what enables the Scharmann machining centre to fully machine most of the parts in a single clamping.

The time thus saved is impressive. Whereas the conventional machining on lathes involved seven clampings,

and depending on the size, took between 200 and 300 minutes to complete, the throughput time on the DBF 630 is only 40 – 45 minutes. This means a time saving of 75 – 84%. The people at LESER are convinced: "If you calculate the machine's productivity, every investment becomes relative".

The time-saving and profitable solution provided by DST is 'turning, drilling and milling on a single machine in a single clamping'. It guarantees complete machining with concentric and axial accuracies calculated in μm . This accuracy is crucial in the case of sealing surfaces in pumps and valve casings. With regard to the different workpiece and machining operations, flexibility is high, and therefore also economical for batch size 1. A high rate of productivity and rapid Return on Investment (ROI) are further strengths of the multi-talented DBF 630.

The basic construction of the machining centre is a horizontal table assembly and a horizontally orientated machining head located in a cross-traversing column. A 630 x 630 mm pallet is transferred on to the table assembly in parallel to the machining process. The table group incorporates the rotary B-axis and the Z-axis. The traversable column moves in X-direction and the headstock containing the DBF head moves on the Y-axis. The one-stop turning, drilling and milling head is the special feature that sets this machine apart from others. The unique head technology provides a large axis path in the radial facing slide of $\pm 35 \text{ mm}$. For the turning process the spindle head is aligned to the axis of the bore or cylinder surface to be produced. The radially positioned turning tool (U-axis) adjusts the turning diameter and the cutting depth. Special off-set tooling can be used to achieve larger turning radii. During the cutting process the turning tool rotates round the axis of the cylinder surface being produced. Compensation counterbalance weights integrated into the head automatically compensate for the imbalance which would otherwise occur during the turning process. This means that turning speeds of up to 1,200 rpm can be achieved, along with cutting speeds of up to 250 m/min, depending on the U-axis offset. Because the U-axis is a full NC-axis, contours can also be achieved by means of the radial facing slide. For drilling and milling processes, a 35 kW spindle operates at up to 3,500 rpm. The maximum torque of 1,700 Nm means that solid holes up to 100 mm in diameter can be drilled. Concentricity accuracies of $\text{Pr} \leq 10 \mu\text{m}$ can be achieved in the turning process. The internal coolant lubrication feed also simultaneously supplies the turning tools. For drilling and milling, the radial facing slide is positioned centrally, providing a standard machining center spindle. The compact machining centre accepts workpieces weighing up to 600 kg. The WERO magazine has up to available 320 tool pockets.

