

Securely Clamped for eight stations

Contact and Information:

RÖHM GmbH
Frank Heiler
Heinrich-Röhm-Str. 50
89567 Sontheim a.d. Brenz
Tel. +49 (0)7325 / 16 -364
frank.heiler@roehm.biz
www.roehm.biz

FFG Werke GmbH [FFG Works & Co. Ltd.] has managed to secure an order from the biggest automotive supplier in China at its Offenburg production site. For the rotary transfer machine that was ordered, when it came to the clamping tools that were needed the choice fell on RÖHM products.

When a machine tool manufacturer ceases production, the company rarely has a chance to survive. But the Witzig & Frank company succeeded in this well-nigh impossible task. After the takeover by MAG in 2009, machine production at the Offenburg plant – which had turned out machine tools for large-scale serial production in the past – came to an end, and the company, which was then 144 years old, was obliged to keep going for five years just by offering sales and service.

Things brightened up again for the machine tool manufacturer in 2014, when the FFG Europe Group took over the company and the FFG Works Company was founded. It combines a number of brands – VDF Boehringer, Hessapp, Hüller Hille, Honsberg, Modul, the MAG Group and Witzig & Frank as well – under a single umbrella. Shortly thereafter FFG took the decision to revive production at the Offenburg site, and resume the the development and manufacture of Witzig & Frank machines. It soon emerged that this decision was absolutely correct: already in the first year after the new start, the company had achieved incoming orders to the value of 24 million euros with new machines, while earning six million euros in the service sector.

The company had already had a business relationship with the clamping tool manufacturer RÖHM since 1977 – long before the takeover by MAG. Above all for the manufacture of complex components Witzig & Frank had always counted on the quality and reliability of RÖHM's solutions, and incorporated them in its systems. So it was not a difficult decision for the company, on the resumption of production operations in Offenburg, to have recourse to RÖHM products for its machines once more.

Over the past 150 years Witzig & Frank has developed into a successful designer and manufacturer of highly productive systems for the creation of small to medium-sized components in great quantity. These machines are supplied above all to customers in the automotive engineering industry and in mechanical engineering generally, as well as in the sanitary and armature industries. Pascal Schnebelt, Sales Director at Witzig & Frank, explains

why these sectors in particular are so capable of benefiting from the systems the Offenburg plant supplies: 'Our customers produce in great quantity, and would like to have as little logistics as possible between the different processing steps. Witzig & Frank can offer them an all-round solution where several technologies are incorporated in a single machine.

This offers our customers the advantage that large numbers of components can be completely processed on one machine, wherever possible in just one clamping position. Witzig & Frank's machines run with very short cycle times, between 3 and 30 seconds – and can produce item quantities in a range from 500,000 to a million parts.

Production on the next level

Strengthened by the support of the FFG Group, the international activities of Witzig & Frank are also developing apace. Thus Nils Huber, Sales Manager of FFG Works at the Offenburg site, succeeded in securing an order from a Chinese firm in 2015. Wanxiang is the name of the company, and it is one of the biggest automotive suppliers in China.

For Witzig & Frank, who resumed their production of machines just two years ago, this is a notable success. Nils Huber comments: 'We tried systematically to meet the needs of customers in China, as well as in Asia generally, where we knew that they produce these exceptionally high quantities. Such companies are the most likely to be willing to invest in new technology in order to raise their production to the next level.' In concrete terms this means saving space and cutting personnel costs, while at the same time improving product quality and system availability.

The component of which Wanxiang produces 60 million items per year is the cardan joint of a cardan shaft drive, in three different sizes. When visiting the manufacturing premises of the Chinese automotive supplier, Nils Huber had observed that processing the workpieces called for the use of several different milling, turning and drilling machines, which all had to be loaded by hand. This was a situation where a rotary transfer machine offered many advantages, with a view to making manufacturing operations more effective and productive, and turning out high quantities of joints without any loss of quality.

So Witzig & Frank developed a type LSA eight-station rotary transfer machine, on which the workpiece can be completely processed on all four sides. As with all machines supplied by the Offenburg company, this system too is a customer solution which comes with workpiece-specific technology.

In order to ensure that all-round processing can be carried out accurately and reliably, Witzig & Frank puts its trust in proven suppliers from whom it orders different components for its machines. When it is a question of the clamping systems that are required, the company has been counting on solutions from RÖHM for almost 40 years. The two companies are linked by a positive partnership which now spans more than one generation.

The Offenburg company has already installed more than 1000 clamping solutions in its machines, and has always done its best to respond to the customer's requirements. Pascal Schnebelt explains: 'The clamping equipment is one of the most important units of the machine. Here it is particularly relevant to work with a reliable partner, who can actually deliver the quality that is needed.' Witzig & Frank has found in RÖHM the partner it sought.

Witzig & Frank's mechanical strategy presented challenges for the design of the clamping device. As clamping from four sides was mandatory, RÖHM worked with the company to develop an interesting clamping approach. For the clamping of the yoke, not only was an 'open and close' function necessary – there also had to be a kind of virtual W-axis included, which would be able to turn through an angle of exactly 90 degrees. The clamping device was mounted on a swivel unit from RÖHM which met the requirements in the best possible way. The clamping pressure of 45 bar was passed on through the swivel unit. The advantage of having this smart clamping equipment incorporated in the mechanical processing was evident in the 'part to part' cycle times and in the compact structure of the machine.

Manufacture of the cardan joints is fully automated. Nils Huber explains how the process works: 'The entire processing system is located within a protective fence. From the outside, the operator is able to send a wire mesh box with the unprocessed parts, weighing something like a ton, into the processing unit. From this point on the system takes over.

A handling device tips the box onto a conveyor belt, the components are separated from one another, and a camera system detects the position of the parts on the belt. This makes it possible for the robot to target and pick up an unprocessed part. As the robot has a double gripper, it can first extract the finished part from the machine and then set a new workpiece in place for processing.' The entire process of loading and unloading the machine takes place in a cycle time of nine seconds.

A reliable partner

RÖHM's clamping devices and rotary tables are incorporated in Witzig & Frank's rotary transfer machine in a total of eight different designs, as processing is carried on by the system at eight different stations. Along with milling, chuck turning, drilling, piloting, deep drilling, thread cutting and turning at the first seven, an eighth station actually incorporates a unit for taking measurements. If deviations are found here, feedback can be sent to the previous turning station and the deviant dimensions corrected. A big advantage of the eight-station rotary transfer machine is that the workpiece which is being processed remains firmly clamped at all times, preventing inaccuracy and saving time for reclamping.

Witzig & Frank had crucial support from RÖHM for the clamping technology involved in this important international project. Their decades of positive experience with the clamping equipment specialist were an important factor for the decision to work together on this occasion. Pascal Schnebelt can still recall how the choice came to fall on RÖHM: 'What we needed at the time was a complete

package consisting of a rotary table in combination with the chuck for the rotary transfer machine. The simplest approach, from our point of view, was to get this package from a single supplier. With projects of this kind we are naturally always subject to time pressure, but RÖHM's solution met all our requirements, and based on our many years of working together we know that they will give us the quality we need – and in short order.'

Michael Schmitz, Technical Sales Manager for Baden-Württemberg at RÖHM, adds: 'I was passionately committed to our getting this project. In the last resort it is an interplay of many factors, all of which have to be right, when you want to realise a system of this kind. But it is also important that you should have had a close working relationship in the initial tender phase.' The rotary transfer machine will be delivered to China at the start of this year. But this system is unlikely to be the last. In view of the fact that Wanxiang makes around 60 million cardan joints per year, and the Witzig & Frank machine has an output of 2.8 to 2.9 million parts, there could be follow-on projects in the pipeline for the company, and so for RÖHM as well.



A total of eight units consisting of clamping tools and rotary machine table are incorporated in Witzig & Frank's rotary transfer machine, making it possible for the workpiece to be processed at eight stations with different manufacturing technologies.



Wanxiang makes as many as 60 million of these cardan joints a year for the automotive industry.



The robot responsible for loading and unloading the machine has a double gripper, so that a finished part can be removed after processing and a new unmachined workpiece clamped in place.



A total of eight units consisting of clamping unit and rotary table are incorporated in Witzig & Frank's rotary transfer machine. This makes it possible for the workpiece to be processed at eight stations with different manufacturing technologies.