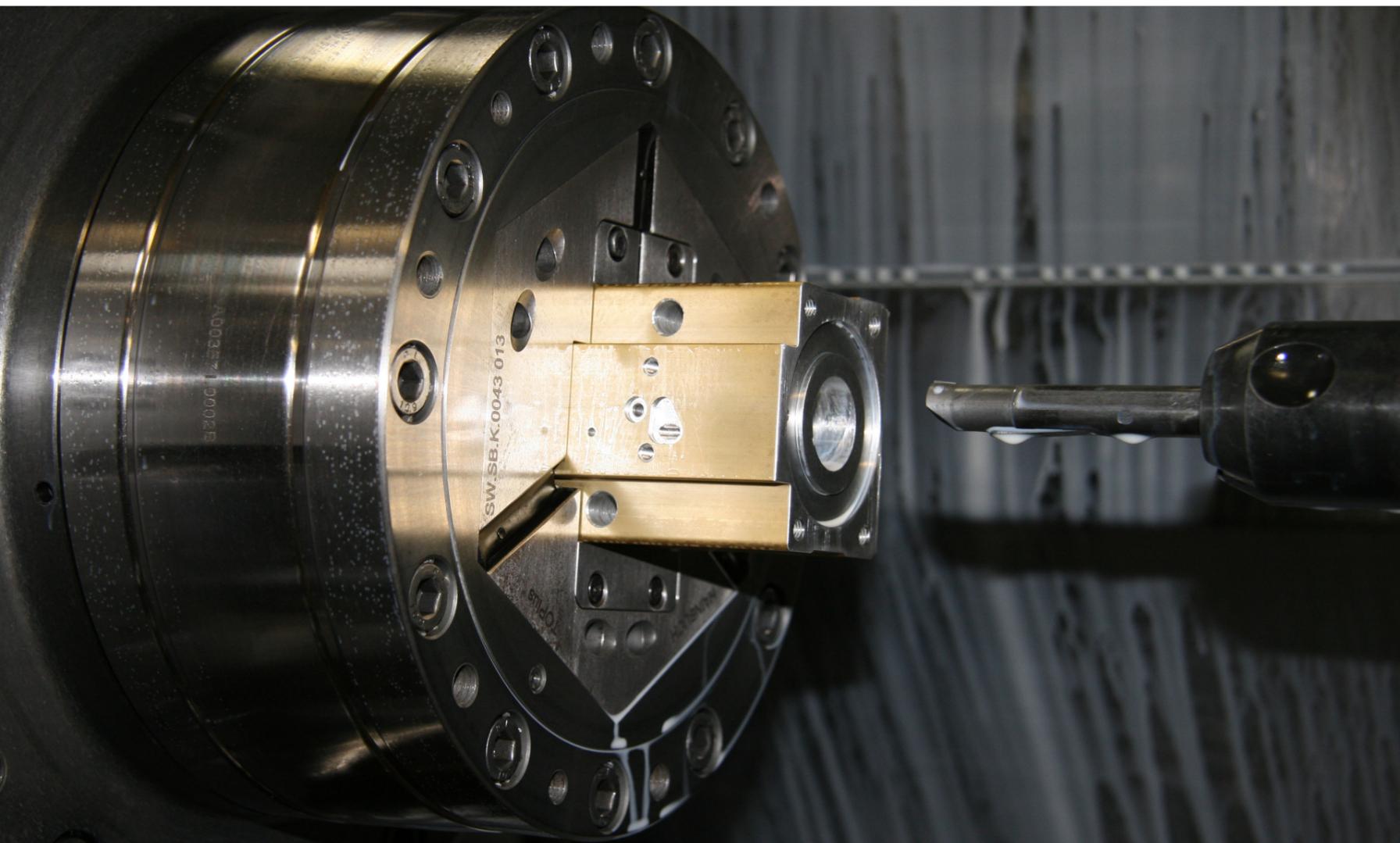


How to lower set-up time

Modern production technology has not only brought advantages to German manufacturing facilities: Smaller lot sizes, shorter throughput times and more and more variations - these are the conditions that we must live with in this country. Intelligent solutions are required to manufacture economically. For example, Ross Europa GmbH, which together with HAINBUCH has noteworthy solutions in the work piece clamping environment.



Dipl.-Ing. Andreas Schmücker, Production Director at Ross Europa GmbH, has a vision: „One work piece, one machine, one clamping, then off to assembly.“ Now he is enough a realist to accept that this will not always possible nor is it feasible everywhere, but he will not be dissuaded from his goal. He also understands that such rigorous requirements makes the assistance of specialists is indispensable.

Thus in the clamping technology environment, with HAINBUCH he sought a partner that can offer a standardized solution for virtually all challenges, and if a standard is not available, with a high degree of certainty the clamping specialists in Marbach will certainly provide a clever special solution. But one thing at a time. Ross Europa GmbH in Langen is a wholly-owned subsidiary of the globally active Ross Group. The company, founded in the USA in the 1920s, is still family owned and is primarily involved with the development and manufacturing of pneumatic valves. The Langen location has been in existence for 52 years, it was originally a pure trading company and over the years developed into a respectable production facility that is responsible for the entire European market, Russia, and all Mediterranean countries.



Dipl.-Ing. Andreas Schmücker, Production Director at Ross Europa GmbH: This means that we are capable of introducing any number of pallets into the Fastems systems, and if required we are also capable of changing them over immediately.

average our lot sizes are between 10 and 50 pieces.“ And: „There are approximately 6,000 part numbers in our product line and many of these have different variations.“

For every production technician, initially this is a nightmare, since with the number of products (and variations) the number of setup processes is increased significantly. Naturally we want to minimize these processes in such that the impact of time is reduced.

Additionally we would like to have our set-up time in parallel with our production time



Michael Simon, Technical Consulting and Sales at HAINBUCH: We can also modify or redesign products for special requirements with this system.

At Ross Europa we approach this problem in two ways. On one hand we attempt to satisfy the measures of machining the part complete via modern machine concepts, such as turn/mill centers, which means that the parts are machine complete in one machine, and wherever possible in one clamping.

On the other hand, machining centers are automatically supplied via a Fastems pallet system. This provides the ability to have set-ups in parallel with set-up time. In theory, setup at Ross Europa is, as they say, „cut and dried“. However, two questions remain: How do I lower the set-up effort on the turn/mill centers for possible product changes?

And how do I get all my parts into the flexible manufacturing system (FMS)? With the number of special part requirements, an immense number of pallets and fixtures must always be in the system. Each of these questions has the same answer: HAINBUCH.

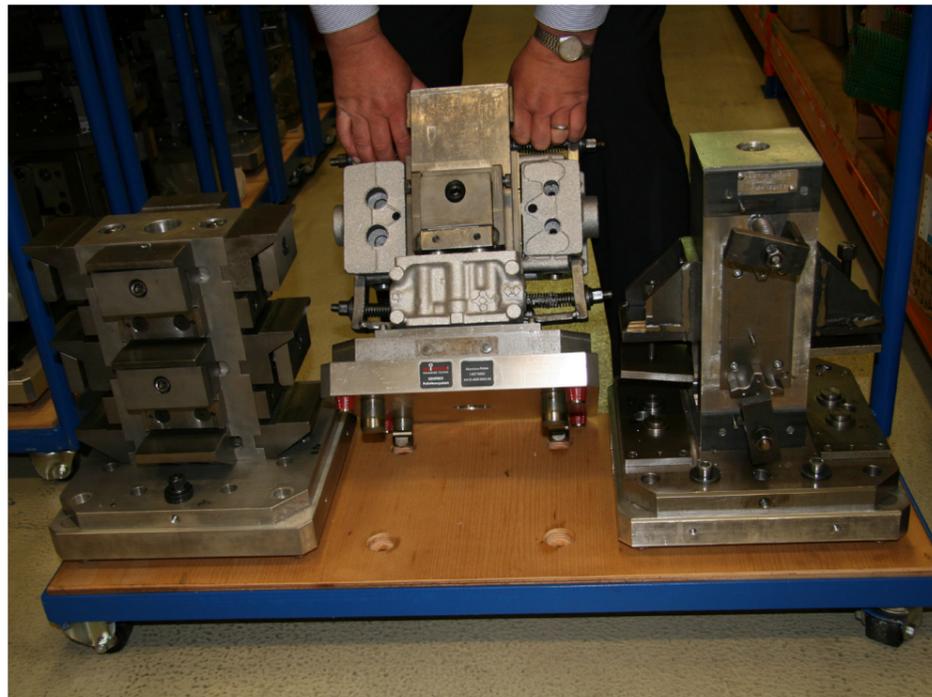
Andreas Schmücker: „We do indeed have a few standard products here, however, our main business is manufacturing special pneumatic valves for difficult production environments, such as glass production or steel mills.“ Thus one thing is documented: This facility is not high-volume production, which Andreas Schmücker, also confirms: „We only have one single high-volume production series, a pilot control valve that runs in monthly quantities of up to 5,000 pieces, and this product is manufactured complete on a special machine. Otherwise the high limit for us is approximately 100 piece lot sizes, but on



▲ The fixture always fits and can easily and quickly be equipped with respective size collets.

Andreas Schmücker

»This single, flexible HAINBUCH interface replaces the entire foreseen extension of the system.«

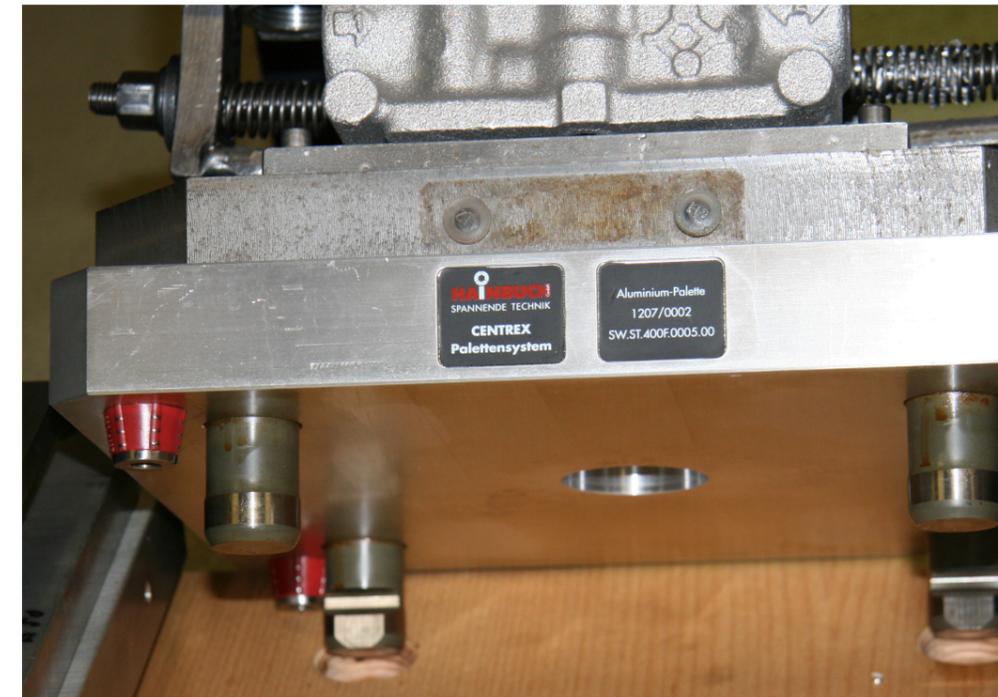


▲ With CENTREX kwik, thanks to the absolute positive fit connection, repeatability of less than 0.003 mm is realized.

Again Andreas Schmücker: „I was previously aware of the advantages of the HAINBUCH products from my past experiences. When I came to Ross, prismatic parts were primarily running via machining centers. When we changed to a turn/mill center system, I approached HAINBUCH with the desire to have the ability to adapt all chucks to the main spindle and to the sub spindle as well. At the same time I asked about solutions that cover the range of O.D. clamping as well as I.D. clamping.“

For the Marbach specialists, this was a problem that was easy to solve; with the centroteX quick change-over system HAINBUCH has developed a product that is suitable as an interface between machine spindle and clamping device for precisely these types of requirements. The flexibility of this system is particularly advantageous as you can easily change between a clamping device, such as a jaw chuck, mandrel or a collet chuck quickly. Andreas Schmücker in this regard: „We can change the complete chuck, and in this process all we have to do is loosen a few fasteners. No adjustments or measuring are required, the chuck always repeats and can easily and quickly be equipped with respective clamping heads. And if the work piece cannot be manufactured efficiently with clamping head technology, then we can adapt a three-jaw chuck to this interface.“ A somewhat more unusual solution was sought and found with the Mori Seiki/Fastems flexible manufacturing system. Given the diversity of variations the 24-pallet system was simply not enough. An extension to this system, although technically possible - was quite expensive. Thus together with HAINBUCH, a solution was sought that makes it possible to get a wide variety of parts into the machine system with minimum number of pallet space requirements.

With the centroteX interface all requirements, for example, I.D. clamping and O.D. clamping, are covered.



▲ The 80 kN draw-in force provided with this system, is significantly higher than that offered by other off-the-shelf zero-point clamping systems.

Here the name of the solution is CENTREX kwik. This system consists of a HAINBUCH pallet (on which the work piece is clamped) and a base plate. For one of these base plates (at Ross three of them are in circulation) one pallet space is reserved in the Fastems accumulator. As with a zero point clamping system, HAINBUCH standard pallets (with the respective clamping devices) can also be brought into the system in a manner that does not affect production time.

Adapter plates replace expensive machine pallets

Andreas Schmücker in this regard: „This one station gives me a real increase in flexibility because with this station we are able to introduce any number of fixtures into the Fastems systems and if necessary, we are also able to immediately produce parts off of them. This systems allows us to have this advantage without adding additional expensive pallets or extending our magazine.“ He continues: „This single, flexible HAINBUCH interface replaces the entire system extension that was originally planned.“ Therefore, we are currently in the process of equipping all of our pallets with HAINBUCH adaptor plates. This system allows us to introduce special solutions without affecting production times. Michael Simon, Technical Consultant at HAINBUCH: „With CENTREX kwik, thanks to the absolute positive fit connection, repeatability of less than 0.003 mm is realized; the draw-in force of 80 kN allows us a more rigid system than other off-the-shelf zero-point clamping systems, and thus allows us to fully utilize the capabilities of the tooling and the machine tool.“ First and foremost: „We have a very large standard area that we can exploit and with which we can modify or redesign products from this area for special requirements. However, in all cases the important thing is that our products are compatible and that we can meet our customer requirements.“ These are all advantages that Ross Europa wanted to achieve.

Andreas Schmücker

»...then we can adapt a three-jaw chuck to this interface.«

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