

From the luxury industry to medical technology

The story of successful diversification

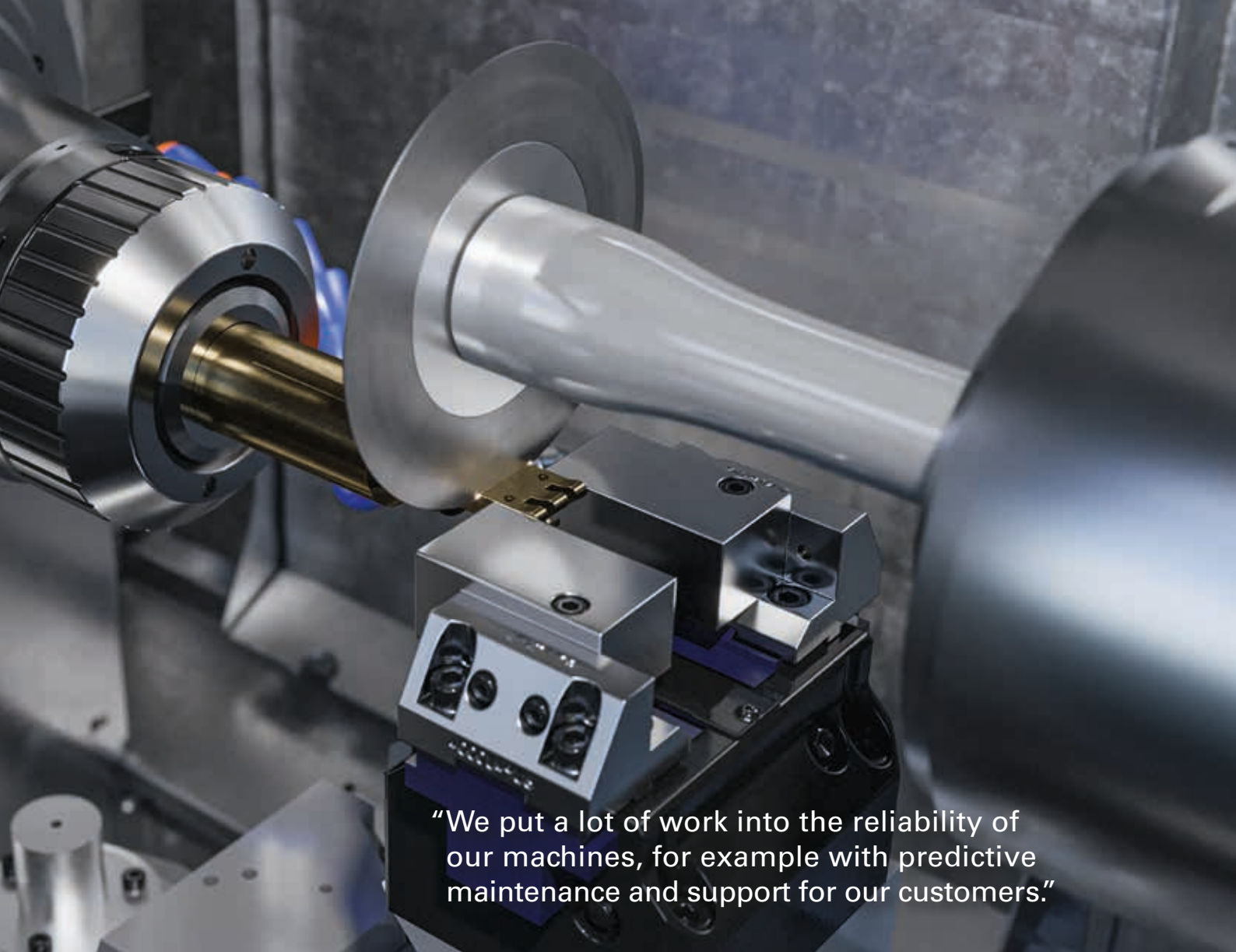
50 years of Bumotec (Part 2)

Traditionally, Bumotec has been inextricably linked to the world of watchmaking. From an outsider perspective, this universe has its own set of laws and specific needs that are far away from general mechanical engineering. This is not just due to the size of the parts that make up a watch, but also their complex geometries, which make clamping the workpieces difficult. Added to this are the requirements for accuracy, surface quality, cycle times and the precious and increasingly unusual materials that have to be machined. All these individualities require the use of highly specialised machinery in a very special area that at first glance bears little resemblance to other areas of the industry. However, some commonalities have emerged from the parts portfolio approach that has been adopted by Bumotec for several years, which in return have led to the development of more versatile machines that also meet the needs of other industrial sectors. The jewellery and leather goods industries are increasingly producing their creations by means of machining. Medical technology, aerospace, the automotive industry, joining technology and electronics are also sectors that require high-performance machining solutions.



Guy Ballif, Head of the Luxury Goods Market, and Damien Chêne, Head of the Medtech Market, talk about the developments in these very specific markets and present an outlook for the future.

Guy Ballif: "The luxury goods industry is an important sector for Bumotec. Between 1985 and 1990, the focus was mainly on watches. Both our history and our success received a powerful boost with the arrival of the steel bracelet produced from bars. We had developed the S94 for this purpose in the nineties, which later gave rise to other models that have since become flagships, such as the Bumotec S1000 and the transfer machines. This further development of our machines was influenced by the



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development of the luxury market and took place over 20 years - and is still continuing. Then came the complex watch mechanisms that required even more precise machines. Since 2005, the use of hard materials such as carbide, ceramics or even more unusual materials such as carbon has meant that our machines have had to evolve to meet the new demands of our customers. Jewellery making was added to the company's specialisms around ten years ago. This market was more artisan than industrial at the time. More and more large corporations wanted to offer machined jewellery with sophisticated geometric shapes. We were able to meet these requirements with our machines. Three to four years ago, with the onset of the

Corona pandemic, demand exploded. And for the last ten years or so, we have also been active in the leather goods sector, with parts such as buckles, clasps and other accessories that are becoming more and more technically sophisticated. Watch manufacturers have always been pioneers, but their standards are often later adopted by other manufacturers in the luxury goods industry. Our customers' requirements are becoming increasingly focussed on higher quality surface finishes, and they want to be able to produce finished parts on the machine without any post-processing, around the clock. This requires reliable machines for continuous production, although these are more complex and prone to malfunctions. We put a lot of work

into the reliability of our machines, for example with predictive maintenance and support for our customers. The machine is important, but efficient customer service is the key to success. The future has many exciting things in store for us, for example additive manufacturing, which still has a huge potential for development and which will one day have the precision required for the luxury goods industry. The question of sustainability is also of significant importance to our customers, and here too, we develop effective strategies. The exciting thing about the luxury industry is that you can work with clients who have very innovative ideas and who have the means to implement them concretely.”

Damien Chêne: "Our involvement in the medtech sector has evolved with the materials. From the moment watchmakers switched to stainless steel and then to medical stainless steel, we were able to acquire extensive knowledge about the specifics of working with these materials. To further expand this knowledge, we also turned our focus to new markets such as medtech, aerospace or micro-mechanics. By further developing the machines, especially in terms of the main and back-working spindle, we were able to offer machines that are suitable for the medical sector.

In this complex field, partnership with our customers is crucial, as developments are made together. Significant success is only possible with true collaboration."

Innovative technical solutions in the service of productivity

Today, Bumotec machines are used by a large number of industrial companies from a wide range of sectors. The Bumotec product range offers a comprehensive selection. From 3-axis machining centres to transfer machines,



Damien Chêne, Head of the Medtech Market

We later established branches in the USA, our biggest market, but also in Asia, France and Germany. We have even supplied transfer machines, in particular for orthodontics. But medicine is a very specific field with many administrative and traceability requirements. It is a very demanding market that is not profitable without a volume effect. The acquisition of Bumotec by the Starrag Group gave us the opportunity to further expand this area through the Group's subsidiaries abroad. Our major strength is that we can offer our customers a turnkey solution.

and machines for diamond cutting and faceting to combined milling and turning machines, Starrag's range covers a very broad spectrum. A Bumotec is first and foremost a customised machine that meets very specific expectations. Hand-scraped surfaces give the machine maximum precision, and the linear motors, a technology that has been used for almost 20 years, provide the necessary dynamics. But a Bumotec is above all a machine that can fully machine components without having to rework them at another station. Machining from bar

stock, back-working spindle, high-level automation - everything is in place to enable these machines to produce around the clock with Swiss reliability. Jérôme Zbinden, Head of Research and Development at Starrag Vuadens, explains the most important trends that have been decisive factors in these new developments.

"Several points were particularly important in the development of the Bumotec machines. The first is inextricably linked to the increasing complexity of the parts



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Guy Ballif, Head of the Luxury Goods Market



that our customers are machining. Modern machine tools and their ability to control multiple axes simultaneously have swept away the last constraints on creativity and complex geometries. The extreme complexity of the parts produced by our customers meant that the operation of our machines also became increasingly complex. This brings us to the second point: the development of the most user-friendly HMI (human-machine interface) possible to make the user's work as easy as possible. By switching to a PC-based control system, which

still comes from Fanuc, we were able to realise this. The third point concerns the type of materials that are processed by our customers. The use of difficult-to-machine, hard or even unusual materials has driven us to implement solutions that can process these materials. The fourth point concerns the required footprint of our machines, which is becoming smaller and smaller. This is an important criterion, especially for our customers from the watch industry. And the last point concerns environment and energy, i.e. more economical machines. Based on these five points, we have implemented various technological solutions in order to offer increasingly efficient machines. The constant development of design and simulation software has been a great help to us, and CAM has enabled us to use our machines to their limits. The transition to high-speed cutting (HSC) in the nineties required much greater dynamics in the machines. This puts much more strain on their basic functions, i.e. their ability to cope with high frequencies. We have been using linear motors in our machines for a long time. Their use brings

many advantages, starting with very high dynamics, but also increased rigidity due to the magnetic pull of the motor. By eliminating the recirculating ball screw, there are no more problems caused by wear and thermal regulation is easier, as only the motor needs to be cooled. This makes our machines even more reliable, as the most important thing for us is and will always remain their availability. The increasing number of sensors and the processing of their data in real time already enable us to proactively prevent any risk of machine downtime in the event of tool breakage or excessive wear, a full chip container, empty bar feeder or low oil level. Today, we are striving to further minimise the risks associated with the wear of certain machine components, such as the spindle. AI, machine learning and other tools will enable us to develop predictive maintenance with increasing reliability in the short or medium term. At the moment, these new technologies are still in their infancy, but they harbour huge potential. Today, our priorities are the simplest possible HMI, cross-series concepts and customisation." ▀