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VERICUT provides an engineering solution for the medical sector at Hexagon Ortho

Award-winning medical manufacturer, Hexagon Ortho's philosophy is to invest in the best technological solution at every opportunity. This is why the company uses CGTech's advanced CNC machine tool simulation and optimisation software, VERICUT, to protect its extensive machine tool investments and ensure security of supply to its customers.

Based in Istanbul, Turkey, Hexagon Ortho is a young company that openly invites other businesses to visit its facility, to see how quality should be the focus of any business. Originally established in 2004, the company was a distributor for an international medical company producing implants and external fixation systems for deformity correction.

The products represented by the company highlighted a number of technical challenges. As an engineer, company CEO, Sehmuz Isin, identified solutions for these and recommended the changes and suggested possible developments to the supplier. However, the advice was not welcomed and the changes were not adopted.

Sehmuz Isin recalls: "In 2006, we decided to manufacture our own products. Within three years we had developed a solution for a complex problem with the creation of a hexapod computer assisted external fixator system for bone deformity correction. It was our first project and was well received by the medical sector. With so much positive support we decided to commercialise the project, which required certification and a manufacturing capability. This was a new experience for us and in 2010 we established a small workshop to manufacture some of the parts."

It took a year to complete the medical product certification required for both the hardware and the software that assists the medical staff with the application of the Smart Correction system. With the support of the surgeons the company has seen more and more successful applications of its system and decided to expand its manufacturing and development capability. The physical constraints of the original building would not allow growth, so it purchased a plot of land and began construction of the current facility in 2011.

“We built our facility to reflect our goal of being a global provider of medical solutions. Originally we looked for 1,500 m² and thought 10 CNC machines would provide the support for production. However, the land allowed us to create the 3,000 m² space we have. This has proven to be a great decision as the building is over 60 per cent occupied with 48 staff, and the pace of investment will see it full in 2014,” Sehmuz Isin explains.

Today, 21 of the very latest technology CNC machine tools are installed; including the first Mori Seiki NTX mill-turning centre installed in Turkey and several DMG 5-axis machining centres, providing the best manufacturing capability. As Sehmuz Isin points out a global provider has to operate at a world-class level and invest in new machine tools to achieve this.

He says: “We have invested heavily, and we take no risks with this investment or with the future of the business. If there is a solution to a potential problem that the company might face we will invest immediately.”

For this reason the company purchased VERICUT CNC manufacturing simulation software to validate the post-processed NC code of the cutting tool path. It minimises the risk of the machine tools crashing, and the consequential damage to the cutting tool and machined components.

Supplied by CGTech’s Turkish reseller, Ucgen Yazilim, a company that has an extremely good reputation in all manufacturing industry sectors according to Sehmuz Isin. Technical Manager, Cem Alpay, provides product support and ongoing training for the CAD/CAM programmers at Hexagon Ortho. Here, VERICUT operates directly within the company’s Siemens NX CAD/CAM software via the CGTech interface. “The CGTech software

interface exports all of the selected models into VERICUT so there is no need to reset datum points prior to the simulation of the machining process,” Cem Alpay says.

Another expensive element protected by VERICUT is the raw material, which must comply to ISO standards, be certified and fully traceable. “We select globally recognised material suppliers for the best material as our reputation is ultimately linked to the quality and performance of our finished medical solutions. The raw material is not just expensive, but in some cases very difficult to obtain with long lead times,” Sehmuz Isin states.

He continues: “Damaged raw material might cause us to fail on the delivery of the finished parts at the quantity the customer is expecting. We do not want to lose time replacing the cutting tool, getting new material or repairing the machine tool. We need to verify everything with VERICUT to eliminate these concerns.”

As a relatively new company staff at Hexagon Ortho change things all the time. Fixtures are modified and upgraded to meet the increased volumes being machining and new products are being added as they reach the commercial stage. The company currently has 14 new projects, at various stages of development, and the nine dedicated research and development engineers working on these all require support from the machine shop.

Batch sizes vary from 15 parts up to 500 components, so the component mix and variety is high requiring a significant number of machine set-ups. Sehmuz Isin says: “VERICUT helps us keep everything safe during these changes, when we are developing new fixtures, or changing the set-up of products on the machine tools. It validates and verifies every step of the development and manufacturing process.”

While all the complex components are verified Sehmuz Isin wants the CAD/CAM programmers to use the VERICUT software for everything. He says: “They think a 3-axis machine does not need to be verified, but it is still open to human error and mistakes can be made, especially when there is a mixed variety of parts and time pressures to complete the operations. Preventing a mistake requires VERICUT and it makes us feel much safer.”

Happy with the solution provided by VERICUT, Hexagon Ortho is now considering a second seat. “As we have three CAD/CAM seats, with all the programmers using the floating VERICUT licence, it is getting busy and creating a bottleneck. I believe we will

have to look to Cem Alpay for another licence and to provide continuous support for the programmers,” says Sehmuz Isin.

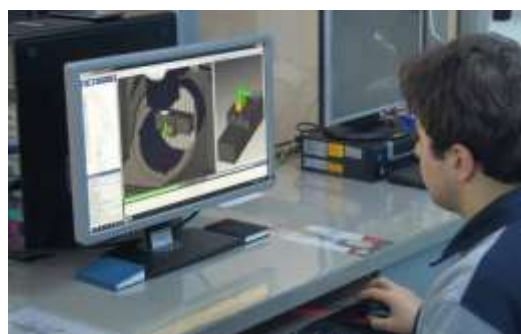
Hexagon Ortho is an exciting company with a good relationship with all the surgeons in Turkey and throughout Europe. Growth and development of the company will remain a focus for Sehmuz Isin and his team, providing engineering solution for medical problems.

He concludes: “In this sector you should use the highest technological solutions available, because everyone is happy to receive the best quality healthcare medical products. It benefits the industry, and the customer which can be the surgeon or other healthcare professional, as well as the patient of course. We use the best raw material and the very latest machine tools, design products to solve medical problems using the leading industry CAD/CAM package, and protect all of this with the very best CNC manufacturing simulation software, VERICUT.”

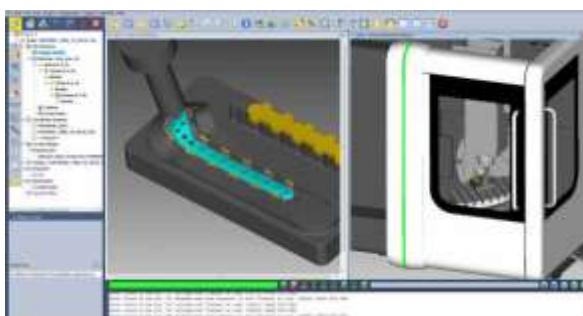
Images and captions



(HO1.jpg) Hexagon Ortho's facility in Istanbul



(HO2.jpg) Checking with VERICUT keeps the CNC machine tools safe



(HO3.jpg) Simulation of complex machining cycles



(HO5.jpg) Advanced machine tools in use

(HO4.jpg) VERICUT ensures NC code is error free for Hexagon Ortho



(HO6.jpg) Hexagon Ortho engineer solutions to medical problems

Note to Editors

CGTech is the developer of VERICUT, the world's leading CNC simulation and verification software product. VERICUT protects expensive CNC machine tools against potentially disastrous crashes and collisions. It allows the user to create detailed software models of all types of CNC machine tool to create a virtual machining environment. Users can then run their CNC programs through VERICUT before attempting to machine components. Errors such as axis over-travel, collision between tooling and workholding devices, rapid moves in material, and tool change collisions are detected and written to an error log.

All types of CNC machine tools are supported, including 5-axis milling machines and machining centres, as well as combination mill-turn centres.

VERICUT includes CNC program optimisation, which can reduce machining times by up to 50 per cent by adjusting feedrates and tool motion based on the material removal rate. Other benefits of optimised CNC programs include improved surface finish, greater tool life and less wear and tear on the machine tool.

CGTech, based in Irvine California, USA has European subsidiaries in UK, Germany, France and Italy and an extensive reseller network.

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