

Productive SolidCAM

Innovative CAD/CAM system supports the manufacturing of complex implants

Socinser is a young and dynamically growing company headquartered in Gijón, Spain, dedicated to development and engineering of surgical implants and hospital equipment. It was founded in 1996 with a clear vision to deliver innovation to the traumatology sector, based on the experience and market knowledge of its management team. At present Socinser has 25 employees and a very active R&D department with 14 patented inventions. So it is not surprising, that Socinser received the 2001 Industrial Innovation Award of Spanish Autonomous Region Asturias in the "Industrial design" category.

Socinser's professionals develop and manufacture implants and surgical equipment for hips, vertebral columns, knees, feet and fastening for ligaments. Furthermore, they offer hospital equipment designed in close cooperation with medical scientists and other health professionals, and they distribute dental implants. Although most of the implants are standard products, they are not manufactured in series but in small lots whose number normally does not exceed 50 units. Some are even unique parts, due to a relatively new activity of the company that has found very good acceptance in the market: Socinser has started to design and manufacture custom made implants, for example for patients suffering from tumours affecting their osseous structure.

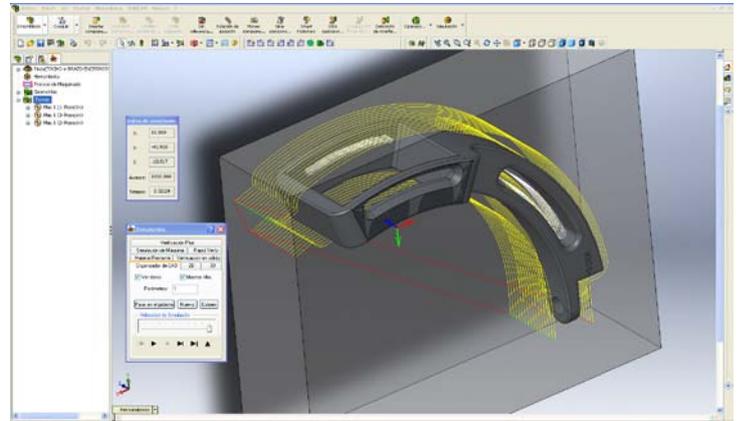
Despite of the challenging economic conditions, Socinser is expanding its business, moving operations to a new site in the Science and Technology Park of Gijón. Other challenges the team of professionals is facing are the development and manufacturing of custom made implants and the generation of a new software product for surgical planning (NETEOUS®), as points out Luís Costales Ponga, one of the company's technical engineers. The custom-made implants are used for patients in a life-threatening situation who need a fast and efficient solution, minimizing the time of delivery. This requires powerful tools to speed up and facilitate the production

process through a close integration between 3D scanning of the patients anatomy, 3D CAD design of the implants and computer aided manufacturing (CAM).

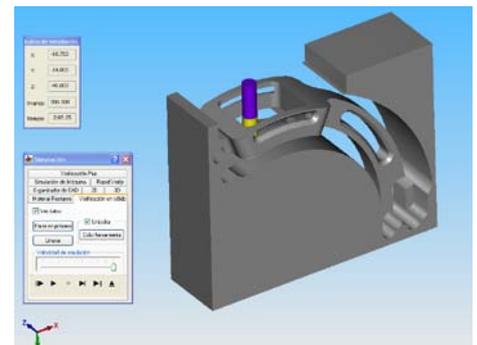
Complex surface design

"As we try to reproduce the anatomy of the patient, we have to work with very complex organic surfaces which are impossible to manufacture without a powerful 3D CAM system", explains Luís Costales. "That is why SolidCAM plays an important part in this process, converting complex parts to reliable NC programs, which saves us a lot of time in comparison with the solution we used before."

Until four years ago, engineers at Socinser designed implants with an outdated CAD system with a proprietary module for generating NC programs. The replacement of this system by SolidWorks also required a new approach to CAM. The company considered various options and finally selected SolidCAM as the most convenient solution in terms of price performance ratio and integration level with the CAD system. "It is like a normal SolidWorks module that the user activates in the same environment, working with a common 3D model", says Costales. The associativity between the two systems enables the introduction of changes in the CAD model and the update of the related NC programs for milling.



3D software simulation of manufacturing operations: one of the main benefits of SolidCAM is the ability to visualize the NC toolpaths on the screen and detect collisions





“SolidCAM gives our users much more flexibility than the old system”, as Luís Costales comments. They share a single PC workstation operating Windows XP with an Intel Pentium 3 GHz Processor and 2 GB RAM, but the company plans to expand the installation to a floating license to be able to use it on more than one computer. Due to the ease-of-use of SolidCAM, some of the users did not even have to attend training but learned to handle the software under the supervision of more experienced colleagues.

On-screen collision control

Apart from the easier and faster generation of the NC programs, one of the main benefits of SolidCAM is the ability to visualize the NC toolpaths on the screen and detect collisions much easier than in the past. Consequently, the NC programs are more reliable, speeding up the tryout process on the FADAL 4 axes milling center which is used to manufacture the parts. Normally the implants are made of titanium, a biocompatible, light and resistant material; however this material is also expensive and tough to cut. “For small parts, better visualization would be beneficial”, comments Luís Costales a proposal for future enhancements of the system.

In general, users are very satisfied with the continuous enhancements of the SolidCAM software. An important improvement in the current software version is the higher flexibility when editing an NC program and moving operations in the CAM-Manager operations tree. Furthermore, when several milling operations are based on a profile geometry, if this geometry is changed, all the milling operations are automatically synchronized to the updated profile and the NC programs are automatically regenerated. This saves a lot of time when manufacturing the shafts of the hip

prostheses that exist in a big number of variants. To further improve the surface quality of the parts, the implementation of SolidCAM’s new High-Speed Machining module is also being considered.

Summing up, the deployment of SolidCAM at Socinser led to significant time savings, in the generation of CNC programs as well as in test of the CNC programs on the machine. In addition, the higher reliability in tool path calculation and post processing has reduced the amount of possible errors which would only be detected later onwards in the workshop. As Luís Costales puts it: “For our requirements, SolidCAM is the best choice.”



Finished component of a surgical instrument to place implants



SolidCAM

Founded in 1984 by its Managing Director Dr. Emil Somekh, SolidCAM provides manufacturing customers with a full suite of CAM software modules for 2.5D and 3D Milling, High-Speed Machining, Multi-sided Indexial 4/5 axes Milling, Simultaneous 5 axes Milling, Turning, Turn-Mill up to 5-axes and WireEDM. SolidCAM has the Certified Gold-product status from SolidWorks and provides seamless, single-window integration and full associativity to the

SolidWorks design model including parts, assemblies and configurations. SolidCAM has today more than 13,500 seats installed. The company has been on a very rapid growth path since it implemented the SolidWorks integration strategy with annual growth rates over 30%. SolidCAM is sold by a worldwide reseller network in 46 countries.

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