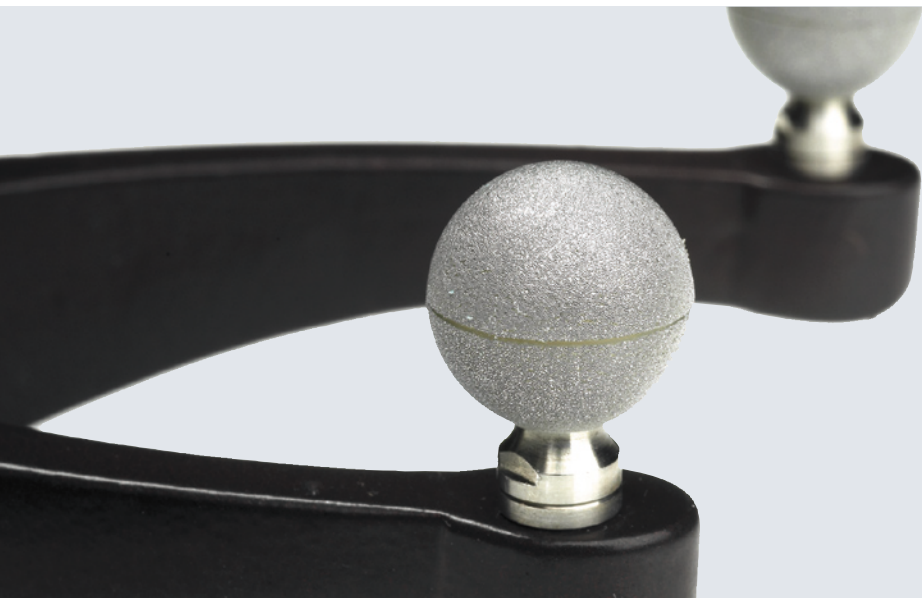


Radionics

DESIGNING ADVANCED NEUROSURGICAL INSTRUMENTATION WITH SOLIDWORKS



Using the SolidWorks Professional software suite, Radionics has improved the use, visualization, communication, and management of 3D design data, which has helped the company to leverage advanced manufacturing methods and increase the complexity of its products.

- Shortened design iteration cycles
- Condensed drawing time
- Reduced number of prototypes required
- Decreased postproduction design changes

A global leader in the fields of neurosurgery, neurological pain treatment, and radiation therapy, Radionics designs and manufactures advanced neurosurgical instrumentation that helps brain surgeons operate with a higher degree of precision, causing less trauma to the patient. Neurosurgeons use Radionics equipment to plan and run through surgery in advance, to track surgical instruments in relation to a person's anatomy, and to navigate vital structures in the brain.

For years, Radionics engineers used the VersaCAD® 2D CAD system for product design. According to Jim O'Connor, Radionics research and development group leader, organizational changes and the need to create more complex parts and more sophisticated designs prompted the company to upgrade to 3D mechanical design software. "We realized we needed to upgrade our CAD capabilities," O'Connor explains. "We were moving to a new MRP system for bill of materials (BOM) integration. We wanted to keep our product development data consolidated under one system. We had first used SolidWorks® 3D CAD software in 1995 and decided to standardize on it as our full-time design software in 1998."

O'Connor says Radionics selected SolidWorks because of its ease of use, automated detailing capabilities, advanced visualization features, assembly functionality, ability to make design changes easily, and compatibility with other engineering and manufacturing applications.

Faster iterations, easy design changes

Since implementing SolidWorks, Radionics has been able to shorten design iteration cycles and reduce prototype development costs while minimizing the incidence of design problems that require changes after production release. O'Connor attributes these results to the ease of making design changes in SolidWorks.

“SolidWorks allows us to design more complex parts. We now take advantage of blended surfaces to design parts that we just couldn’t do in 2D.”

Jim O’Connor, Research and Development Group Leader



Radionics has standardized on SolidWorks for developing its products, which neurosurgeons use to plan and operate with a higher degree of precision.

“With SolidWorks, we can go through design iteration cycles much faster,” O’Connor explains. “Although the number of design iterations has increased, that’s a good thing because we know more about the design and have a higher degree of certainty before going to prototype, which makes us less apt to have to make changes later.

“We’ve reduced the number of prototypes because our designs are much better developed at the prototype stage,” he adds. “The autodimensioning and drawing creation features also reduce the time it takes to produce drawings, particularly at the assembly level.”

Improved visualization and assembly design

All Radionics products involve the development of mechanical assemblies. Some are small: four or five parts. Others are larger: 100 parts or more. By transitioning all new product development into the SolidWorks environment, Radionics engineers can better visualize and work with assembly and component designs.

“It’s very easy to communicate what something is going to look like in 3D,” O’Connor notes. “You can spin it around, move parts in the assembly, and work with marketing at a much earlier stage when working in 3D. We build all of our assemblies from top to bottom in SolidWorks and use the collision detection capabilities to check for interferences. We also work with configurations, using multiple configurations of an assembly to show different design iterations and unique model views.”

Compatible data, new manufacturing techniques

SolidWorks software allows Radionics to improve its management and utilization of product data as well as innovate new products with more complex parts. Radionics has upgraded its SolidWorks seats to SolidWorks Professional, which includes SolidWorks product data management (PDM) software, the SolidWorks eDrawings® Professional design communication application, and a full range of other design communication and productivity tools.

“We needed a solution for PDM that would help us manage SolidWorks files without creating a drag on IT resources,” O’Connor recalls. “We selected SolidWorks PDM software because of its integration with SolidWorks, ease of use, and low overhead. For example, you don’t need to set up a special database to manage product data and can use SolidWorks product data management software to set up folders on our existing server.

“With SolidWorks Professional, we can manage, communicate, and leverage CAD data in ways that were not possible before,” O’Connor stresses. “We pull data into SURFCAM® for machining, send eDrawings files for collaboration, or provide the 3D model. We send models to a partner that produces the sterilization trays that our instruments sit in. In the past, they would have to wait for our prototype to begin work. Now, we just send the model, which saves time for both of us.”

The company has also increased the complexity of its products, utilizing modern manufacturing techniques that were problematic in 2D. “SolidWorks allows us to design more complex parts. We now take advantage of blended surfaces to design parts that we just couldn’t do in 2D.”



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