

# case study

## The Challenge

Southmedic, Inc., a leading manufacturer and distributor of medical instruments, designs, builds, and moulds its own components, then assembles them prior to shipping. The company required solid modelling software that could handle a multi-disciplinary approach to research and development. Designers also needed to reduce errors resulting from software incompatibility, version changes and file-transfer protocols.

## The Solution

"We chose SolidWorks software because it helps us function as a one-stop shop for our customers. Other solutions were difficult to understand and did not allow single-window integration. SolidWorks and its integration-solutions speed the transition from concept to finished product, which is important for us as a single-source supplier for new and customer products."

Using SolidWorks, Southmedic developed the OxyArm™ Predictable Oxygen Delivery System, the first "open" oxygen delivery system on the market. The OxyArm system uses directional diffuser technology to provide superior oxygen therapy to patients.

## Revolutionary oxygen delivery system designed with SolidWorks

Southmedic Inc. designs and manufactures surgical and specialty operating room products for OEM and end-user markets. For many years, Southmedic used 2D CAD technology to support product development. In 1997, management recognised the limitations of the existing 2D system and began evaluating 3D approaches to product design. "We wanted a CAD system that would help us take a product from concept to manufacturing and tooling design more efficiently," explains engineering manager, Maurice Lavimodiere. "We needed a design system that would be more reliable and robust."

After evaluating several 3D packages, Southmedic selected SolidWorks® 3D modelling software because of its proven parametric features, advanced visualisation capabilities and integration with leading engineering applications. "We needed a

tool that would be flexible, easy to use, and would allow us to design intuitively. We chose SolidWorks because we believed it would help us design products faster and we perceived SolidWorks Corporation as a company focused on developing CAD tools that are powerful but easy to use," Lavimodiere says. Using SolidWorks software Southmedic began to investigate new market opportunities and developed the OxyArm oxygen delivery system, the first "open" oxygen delivery system on the market. "Existing oxygen delivery systems produced a level of patient dissatisfaction and discomfort," Lavimodiere notes. "Oxygen masks can feel claustrophobic and create unpleasant odors. Nasal cannulas can produce nasal burns, chafing, and sinus sensitivity. We set out to develop a product that would allow oxygen to be delivered through a headset and address these areas of patient dissatisfaction."

### Streamlining plastics design

The development of the OxyArm required a great deal of testing, rapid prototyping, and refinements. The challenge was to eliminate the need to clamp the apparatus to the patient's ears while still providing uninterrupted oxygen flow. The apparatus was designed so that movement of the



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"Our customers range from large pharmaceutical companies, to local hospitals, to independent doctors worldwide. With SolidWorks software, we exceed our customers' expectations every time."

Maurice Lavimodiere,  
Engineer



patient's head would not disturb it. This way, the boom that delivers oxygen to the diffuser remains stable. "Plastics design is a highly iterative process, requiring numerous design changes," explains Lavimodiere. "For example, you may need to add draft to a part, which affects the assembly, the mold, and all associated drawings. SolidWorks makes handling these design changes much easier. All you need to do is open the FeatureManager® and make a change, and all of the associated parts, assemblies, molds, and drawings update themselves automatically."

### Enhancing design communication

Communicating product concepts is another requirement because in addition to developing its own line of products, Southmedic develops and communicates design concepts to OEM customers on a regular basis. "Because SolidWorks is so easy to use and has such realistic rendering features, I can develop a product concept on site during the first meeting and either animate it on screen or print it," states Lavimodiere. "This truly impresses our

prospects. And since SolidWorks has become so standard we can export files as either SLAs or CAD models for use by our vendors and partners."

In addition to improved communication and collaboration, Southmedic is benefiting from significant time savings since switching to SolidWorks. "With SolidWorks, the design cycle for the OxyArm was about three months," concludes Lavimodiere. "I estimate that product development was 30 to 40 percent faster with SolidWorks."

### Summary and Metrics:

- > Depending on the complexity and requirements of the project, SolidWorks reduces design cycle by 45%
- > Significant decrease in development costs
- > Eliminated 40% of errors prior to manufacturing
- > Designed and built injection moulds for a revolutionary new product and five variations

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