

FDM HELPS ACIST MEDICAL PURSUE PERFECTION

Medical Device Firm Creates Complex Production Parts

"There are so many benefits to using FDM parts, but it has to become a mindset."

— Dave Scott, Acist Medical Systems

Acist (Advanced Contrast Imaging System Technology) is a medical-device company that specializes in developing contrast injection systems in the fields of cardiology and radiology. Acist's devices infuse dye into the vascular system, letting physicians visualize anatomies.

Headquartered in Eden Prairie, Minn., Acist has a clinical presence in more than 40 countries. It fulfills its mission of pursuing "the perfect image" by researching and producing new medical technologies that lend greater ease and control.

Providing the Best Solutions

Acist uses Stratasys' FDM (Fused Deposition Modeling) technology to maximize efficiency beyond rapid prototyping alone. According to Dave Scott, manufacturing engineering manager at Acist:

"We haven't picked a single path for FDM. We like to use it everywhere. We use it for fixtures, functional testing, industrial design and end-use parts. We want to use as many FDM parts as possible in our machines that are going to market. FDM allows for putting greater complexity, form and function into one part as opposed to traditional methods."

Incorporating Feedback

Acist stays in communication with its machine's operators, because some improvements aren't conceived until a machine is used in the hospital. For example, operators pointed out the need for multiple types of transducers to be connected to the same machine along with the ability to switch rapidly from one transducer to another. Acist quickly designed a part in CAD software to solve this problem, and printed it with a Dimension 3D Printer as a functional part to be shipped and used on machines worldwide. Acist emphasizes that the part, easy to create and print with FDM, would have been very challenging to mold using traditional methods.

EmpowerCTA Injection System Updates

Acist recently updated its EmpowerCTA[®] injection system, a lower-pressure injector. Thirty-six parts went into the new EmpowerCTA display, seven of which were FDM parts included in the marketed system. The product's FDM casing is as attractive as a molded case. FDM Technology enabled Acist to design for manufacturing in a new way by combining parts and building in additional complexity. This approach would have been impossible with traditional manufacturing methods like injection molding. Specifically, if Acist hadn't used FDM's additive manufacturing method, the seven parts that now complete the display would have been 15 — more than double the parts to manufacture and stock. Acist designed the FDM parts around the machined parts, circuit boards and integrated circuits to optimize design for manufacturing ability. A solid, tested design is important before moving on to mold and machine parts. FDM lets Acist produce small runs and get feedback from operators before committing to expensive production molds.



Physicians use Acist technology to view heart and arteries.



Updated CTA device containing FDM parts is ready to ship to customers.



FDM enabled Acist to design this display assembly with fewer parts than were possible before.

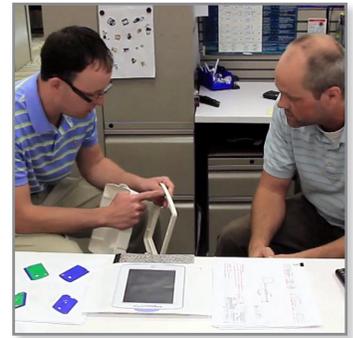
Reducing Inventory

With FDM, Acist's inventory is a digital file on a server. The company doesn't have to manage shelf space or relationships with vendors. If an FDM part breaks — even five years later — Acist simply prints a replacement on its Fortus 3D Production System or Dimension 3D Printer, and ships it the next day. Scott calls FDM "the ultimate lean technology."

Rapid Prototyping and Beyond

Acist Medical Systems continues to explore how FDM can help it improve creativity and efficiency, and lower costs throughout all manufacturing aspects. No other method can handle the complex geometry and immediately produce ready-for-market parts. The technology has helped Acist stay on the cutting edge of the medical industry.

"FDM is saving us time and money everywhere in our operations. We have invested so much in this technology; we really live by it. There are so many benefits to using FDM parts, but it has to become a mindset," Scott said.



Acist team working on CTA monitor with FDM parts sprawled over table.



A Fortus and two Dimension printers in Acist's lab.

For more information about Stratasys systems, materials and applications, call **888.480.3548** or visit www.stratasys.com

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