

Jarvik Heart, Inc.

CAD/CAM Adds Years To Heart Patients' Lives

"The heart pump will be scaled down to save the lives of children.

Mastercam's toolpath associativity will allow us to recreate the smaller, fairly elaborate toolpaths in seconds."

— Dr. Robert Jarvik
Jarvik Heart, Inc.
New York City

Advances in manufacturing techniques have enabled creation of the Jarvik 2000 Left Ventricular Assist Device, a product of Dr. Robert Jarvik's vision and tenacity, supported by his skill in CAD design and his associates' Mastercam-based craftsmanship. The miniature artificial heart uses external electrical power to rotate a vaned impeller—its only moving part. The impeller is machined with 5-axis Mastercam technology.

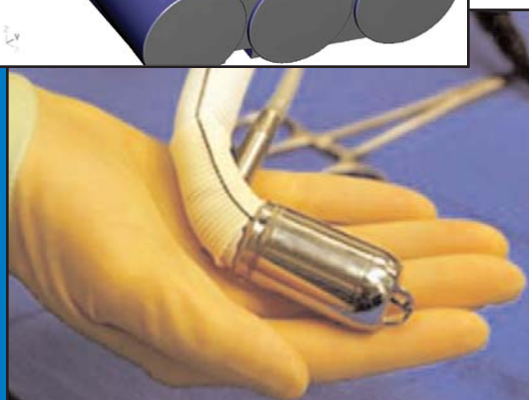
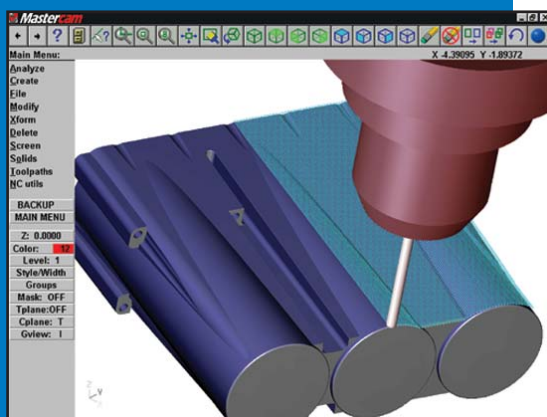
As with any product in the development stage, the Jarvik 2000 benefits from rapid prototyping made accurate and easier by Mastercam. "We started to use Mastercam® 16 years ago because the people there were so helpful," Dr. Jarvik recalls.

The original Jarvik 2000 external battery pack casing was molded of rigid polyurethane. The molds for its next generation have been designed with the structural changes and adjustments of tolerance necessary for liquid casting of the part in flexible rubberized polyurethane for patient comfort.

"We actually made three pieces," says machinist Vern Fulmer, "an inner plug the shape of the hollow of the casing, a separate top, and a solid model of the outside shape of the casing. The difference in their dimensions was the thickness of the final molded casing. We processed several design changes and Mastercam easily created new toolpaths from Dr. Jarvik's new IGES files.

The aluminum parts were sent for casting, where the moldmakers cast the basic shapes and molded thread inserts into the shell for assembly purposes. Jarvik Heart technicians finish assembly details, such as adding electrical connectors and battery contacts, in-house.

"We're going to evolve, hopefully, into a large medical manufacturer," Dr. Jarvik says. His and his staff's skill with Mastercam to drive state-of-the-art equipment has set Jarvik Heart, Inc. on the threshold of explosive growth in the medical manufacturing field.



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