R·I·T Center of Excellence in SUSTAINABLE MANUFACTURING
ROCHESTER INSTITUTE OF TECHNOLOGY

Case Study

Replication of Hand-carved Woodwork using Technology

"The people at RIT walked us through the process of using new technology to accurately and efficiently replicate hand-carved woodwork using existing equipment. With this new capability, Woerner is positioned to expand our product offerings and be more competitive."

Steve Anderson, Vice President
Woerner Industries, Inc.

Our Partner

Woerner Industries, Inc., a specialized manufacturer of worship furniture and furnishings in Rochester, NY, has been active in manufacturing since 1915. The company is noted for its strong commitment to quality in the production and restoration of furniture designed to enhance the worship service.

Opportunity Area

St. Patrick's Cathedral in New York City, now undergoing renovation, was interested in adding decorative woodwork that matched their existing artisan hand-carved furnishings. Woerner Industries knew there had to be a cost-effective way to replicate these carvings using their existing production equipment and reached out to the Rochester Technology and Manufacturing Association (RTMA) through its blog site. In response, an RTMA member suggested that the company contact the Center of Excellence in Sustainable Manufacturing (COE-SM) to see if our 3D laser scanner would be the right solution for them.

Objectives

The main purpose of the project was to develop a cost-effective production process that accurately replicated the artisan-carved furnishings using their existing CNC routing equipment in Woerner's facility.

Work Performed

Two hand-carved panels were scanned with a 3D laser scanner that generated data within three-dimensional space using a computer and specialized design software. With further processing this data was converted into a triangulated mesh and then a computer-aided design (CAD) model suitable for production using existing CNC machining equipment at Woerner.

Results

The preciseness of the CAD model accurately captured the complex contours of the carvings as well as their original imperfections. COE-SM engineers refined the 3D CAD model to remove the undesired imperfections from the original carved furnishings, and the final product exceeded the customer's expectations. The use of this advanced technology allowed Woerner Industries to submit a competitive bid (still outstanding) for the Cathedral renovation and will enable them to be more competitive when proposing similar work in the future.

Phone: 585.475.6550 ◊ Fax: 585.475.5455 ◊ Email: SustMfg@sustainability.rit.edu
www.rit.edu/gis/cesm