

Great Plains Rapid Prototyping Consortium

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COMMUNIQUE**



- GPRPC Commences Operations
- SDSU Students Realize Conceptual Designs
- Partner Raven Employs SLA Technology
- GPRPC & Falcon Plastics Team for Symposium

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GREAT PLAINS RAPID PROTOTYPING CONSORTIUM BEGINS OPERATIONS

During the month of November 2001, the Great Plains Rapid Prototyping Consortium commenced full operations. GPRPC equipment includes the Viper SLA made by 3D Systems and the 3D Color Printer manufactured by ZCorp.



The Viper SLA (Stereolithography Apparatus) builds plastic parts from a liquid photopolymer. The Viper employs a solid-state UV laser to cure (solidify) a thin cross sectional layer. This 0.004 inch layer-by-layer approach allows for very complex geometries.



Shown above, GPRPC provides members access to a faster prototype build process through ZCorp. The Z402 Color printer "prints" both monochrome or in color by first applying a thin layer (0.004 inch) of plaster powder on the build platform. Using ink jet technology, it prints the cross section including a binder solution.

While the 3D Printer is faster, prototype functionality is limited and part precision is limited. We at GPRPC will help you choose the appropriate technology for your application.

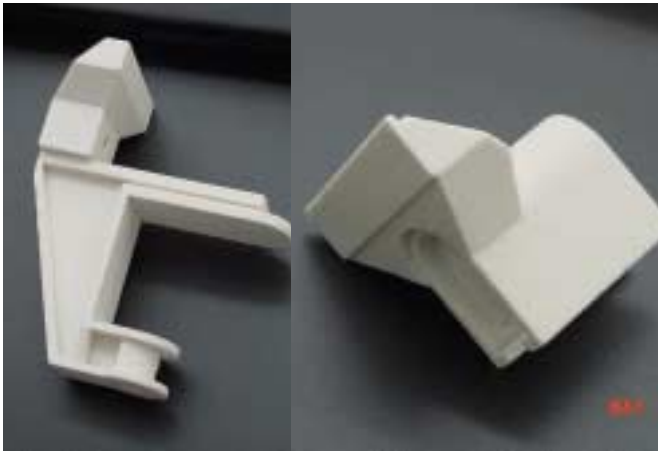
GPRPC TEAMS WITH FALCON PLASTICS FOR SYMPOSIUM

Reza Maleki and Jerry Visser of the GPRPC teamed with Shaun Riedesel of Falcon Plastics, Brookings, SD to present *SDSU and Falcon Plastics Employ Rapid Prototyping Techniques Through Collaborative Effort—A Case Study* at the 12th Annual Sioux Empire Excellence in Industry Symposium. This presentation illustrated specific rapid prototyping techniques employed by Falcon Plastics. These approaches included SLA and 3D printing.

If you were not available to attend this informative event, copies of the presentation are available. Contact our consortium Operations Manager, Jerry Visser for a copy at (605) 688-5960.

SDSU Students Realize Conceptual Designs

Mary Tolle, Instructor of Engineering Technology and Management has incorporated rapid prototyping techniques into her course. For the second semester, her students in the Computer Aided Design/Drawing class utilized technologies available at GPRPC to realize their own conceptual designs.



Students created designs using Pro-Engineer, a parametric 3D solid modeling software used at SDSU. After each team finished their design, an STL file was made using the Pro-E software. STL files are common denominator file type for most RP technologies. The STL file is a triangular tessellation or mesh of the solid model. The STL file was

emailed to the GPRPC facility to build plaster powder based models. The six teams each received their own design prototype.

Industrial Partner Raven Industries Employs SLA Technology

Raven Industries' Product Engineer, Steve Jensen, of the Flow Controls Division required a test comparing actual and theoretical values of both flow rate and pressure drop. Steve utilized the Viper SLA to build a prototype valve assembly. GPRPC provided a functional prototype in 3 days compared to previous cycle times of 3 weeks.



Shown above is the SLA prototype on the test stand. The arrow indicates the six-piece assembly. The prototype assembly performed well handling pressures over 100 psi. Although some post-processing was required, Steve asserts the prototype met his expectations.

GPRPC Invites New Members

Operations Manager, Jerry Visser encourages interested organizations to join the GPRPC, "With our on-site technologies, we can provide cost effective solutions to a wide variety of design issues."

GPRPC provides access to advanced technologies through three membership levels.