November 29, 2007 **For users of Pro/ENGINEER, Windchill, and other PTC affiliated products**

American Precision Prototyping

By John Myers, ConnectPress Staff Writer

Jason Dickman co-owner of American Precision Prototyping and Spectrum 3D explains selective laser sintering (SLS) and how it can be distinguished from other rapid prototyping processes. American Precision offers SLS and other rapid prototyping services, including stereolithography (SLA) and fuse deposition molding (FDM).

Dickman grew up in the Cincinnati area and studied engineering at the University of Cincinnati. While attending school he learned to create 3D CAD designs and how to use them to create parts for rapid prototyping. He would go on to work for several companies in this field, including Hasbro.

Dickman says American Precision Prototyping started a few years ago after he and his partner left a production company in Oklahoma. Together they formed American Precision Prototyping a company that has grown from a small operation with only one machine to a much bigger production with multiple machines capable of offering several different types of rapid prototyping services.

Recently, the company acquired Spectrum 3D, which offered SLA and urethane plastic parts to the California area.

“The purchase has turned into a good move for us and given us a footprint into the California market,” says Dickman. American Precision also recently completed a deal with 3D Systems, makers of rapid prototyping machinery and materials, to receive preferred service provider status. “It’s an all encompassing deal that deal that means they trust our quality and are willing to refer customers to us,” says Dickman. “It also gives us access to more of their resins which is important for our SLS customers.”

Currently, customers creating parts through American Precision can choose from up to seven different materials for SLS. Including DuraFrom EX, a new material released by 3D systems. Dickman says the material is a superior impact resistant product.

Dickman explains that SLS is the process of sintering powdered materials layer by layer to create a prototype of a part—a process he says typically takes three to four days to complete.

UnlikeSLA prototypes, SLS are not cured using light which means they do not undergo the long-term degradation that SLA prototypes do. “Anything cured with light will continue to cure with light and become brittle. The SLA parts that have been on my shelf for the last few years have continued to degrade,” says Dickman.

Dickman says SLS is the best choice for customers who are looking for strength and functionality over accuracy. SLA will give customers a very accurate and cheaper prototype but parts created through SLS will be sturdier and capable of being much more complex.

In addition SLS is a far more challenging system to run. “It takes real mechanical aptitude and takes a lot of hard work turning the machine over. Getting the mixture right on the powder is a challenge. And the programming is also difficult. On a scale of one to 10, I’d say SLS is a nine, while something like SLA is a three.”

He continues explaining that SLS is popular in industries like aerospace, motor sports and the military. “It’s become popular to use it for those unmanned aerial vehicles (UAV) because UAVs don’t have the same burn requirements and are relatively small.”

Dickman continues saying the biggest challenge to companies who offer SLS services is meeting the ever increasing demands of customers. “I would say the biggest challenge is satisfying customers in terms of delivery time and materials,” says Dickman. “I remember when I first started, if I told a customer we could get them a part in a week they would be impressed. Now they want parts by the next day.”

Dickman elaborates saying that in addition to shorter delivery times clients always want better materials. “Back in 1990 rapid prototypes were very crude and inaccurate. Now materials need to be more like end-use plastics.” He goes on to say that bridging the gap between prototypes and functioning parts is the ultimate goal. “Making working parts is really the brass ring” says Dickman.

Using rapid prototyping methods to create useable parts is often referred to as “rapid manufacturing.” Dickman says that while using SLS for manufacturing is not becoming a widespread practice it is a growing reality. “10 years ago I wouldn’t dream of making a working part with SLS but now we have a few customers who do. 10 years from now we will have even

more." Dickman says several major corporations are using parts in their final products that have been made using SLS, including companies like Bell Helicopter and Boeing.

Finally, in the future Dickman says he expects to see a broader spectrum of both metals and plastics available for SLS users.