

The Part We Play

March 2001

Envisioning the Future:



We have a critical role to play in expanding rapid prototyping into rapid manufacturing—and we all must be advocates for this advancement.”

The DSM Somos Technology Focus was attended by representatives of various corporate interests, such as RP service bureaus, auto manufacturing, small and major appliance manufacturing, technology development and stereolithography machine production.

A wide range of R&D materials were introduced and, while actual commercialization will be based upon further market analysis, it was announced that these materials are already in various phases of alpha or beta testing.

“DSM Somos has a critical role to play in expanding rapid prototyping into rapid manufacturing—and we all must be advocates for this advancement.”

-- Jim Reitz

Somos Shares Emerging Technologies at 1st Annual Technology Focus

DSM Somos® recently announced the progress of a major research and development campaign aimed at responding to the growing global demand for differentiated material product lines for the RP industry.

To kick things off, we hosted our first annual Technology Focus in December 2000—giving guests a very special preview of emerging Somos technologies.

In his opening address, DSM Somos Business Manager Jim Reitz stated, “We’re here today to open our doors and show you what the Somos R&D teams are currently working on—and to explore together how these materials can respond to your current and future needs.”

“What we hope you’ll see is that Somos’ commitment to this industry goes beyond the business of simply selling materials.

Among the products presented during the two day event were:

Stereolithography Resins for Water-Clear Parts

The need for optical clarity has been a consistent demand from the marketplace as engineers attempt to understand fluid flow behavior at the prototype level.

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Sibco, Inc. Named Exclusive Supplier to Ford Motor Co.

DSM Somos is pleased to announce that Sibco, Inc. has been named the exclusive supplier of Somos® stereolithography materials to Ford Motor Company on a global basis.

Established in 1993 as a second source of sales and support for users of all rapid prototyping technologies, Sibco has become a leading supplier to companies such as Ford, Caterpillar, Raytheon and Boeing. The company was chosen to exclusively represent Somos products at Ford due to its outstanding customer support capabilities for the RP industry.

Sibco is located both in Europe and the United States. Based on their commitment to providing Somos customers the highest quality of service, the company has also been designated as a distributor in the United Kingdom and in Germany.

Incentives Address Energy Crisis

The energy crunch in the Pacific Northwest has become a significant problem for SLA systems utilizing Argon ion or HeCd lasers.

In response to the growing concern, DPSS Lasers Inc. is now partnering with certain electric companies and government agencies to provide significant incentives to convert SLA-500 and SLA-250 systems to DPSS solid-state lasers. In many cases, a new system can be paid for within one year with state-sponsored incentives and reduced power costs.

To determine the incentives that might apply to you, contact DPSS Lasers Inc. as soon as possible. Some of these incentive programs must be implemented within the next few months to be fully funded.

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So you want to do a Resin Swap...



As of yet, there is no one stereolithography resin that can be all things to all people. Potential applications are as varied as form/fit evaluation, patterns for tooling applications, functional testing and investment casting patterns. For this reason, many people have chosen to run multiple materials in their stereolithography equipment to meet all of their prototyping needs.

The thought of running multiple materials may seem daunting, but the actual implementation doesn't have to be. Equipment manufacturers should provide information on what specific steps are required to perform a resin swap, and additional information is also available on the DSM Somos website (www.dsmsomos.com).

Here are some things to keep in mind when performing a resin swap:

- **Use proper personal protective equipment when handling uncured and liquid resin.**
- **Minimize light source exposure of any kind when handling the old and new resin.**
- **Update resin-specific parameters on your equipment when using the new resin for the first time.**
- **Use correct resin-specific build files when performing file preparation for the new resin.**

- **Keep old and new resin up to operating temperature when not in use to minimize down time.**

The first time you perform a resin swap will probably be the most time-consuming, as you will be unfamiliar with the steps and probably concerned about making mistakes. Expect about 2 – 3 hours on large-frame equipment and about an hour on small-frame equipment.

Future resin swaps should go much faster (one hour to half an hour are realistic time goals) once you have developed a routine and are comfortable with the process.

Experience has proven that having the correct tool for the job is important to achieving the desired result. Once you have implemented the decision to run multiple materials on your equipment, the benefits will clearly outweigh any associated costs.

Bigger *is* Better

Large Prototypes now possible with Technology from Materialise and DSM Somos®

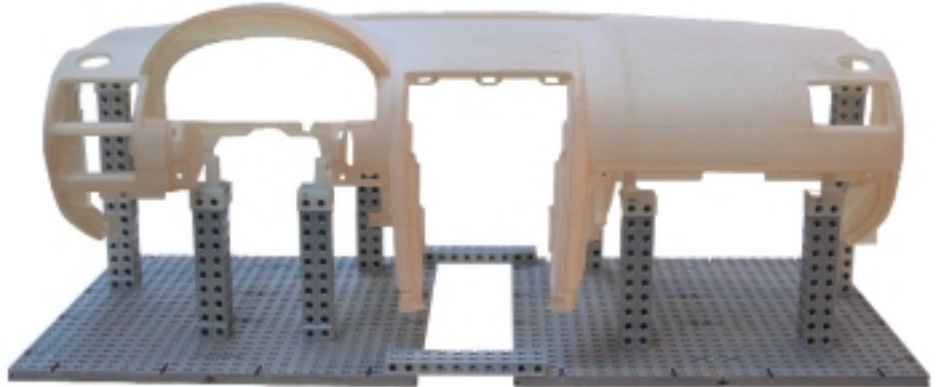
At the Euromold fair 2000, Belgian service bureau Materialise unveiled its latest technological breakthrough for the rapid prototyping industry: a single-piece construction automotive dashboard with material properties similar to polypropylene.

Using their solid-state laser stereolithography machine and the new DSM Somos® 9120 epoxy resin, Materialise is now producing tough, flexible parts of large dimensions that can be directly applied to realistic performance testing.

As a leader in the European RP industry with an impressive list of clients from the automotive, aerospace and consumer electronics industries, Materialise believes that the next significant step for the market lies in the demand for rapid prototyping of ever larger parts.

"One of the biggest problems we face with building prototypes in multi-part units is the warping and deformation which can occur during the process," says Materialise founder Wilfried van Craen.

"Creating large parts in single piece units has two benefits: accuracy and speed.



← 61 inches →
 "This one-piece dashboard measures 1550x550x480 mm and took less than 53 hours to build and finish—with exceptional cost savings to the client."

By producing a single piece we avoid the complex division of the electronic stereolithography (STL) file, as well as the assembly of the component pieces. This not only saves time, but more importantly, improves both the mechanical strength and quality of the finished prototype."

To prove their point, Materialise has built its own solid-state laser stereolithography machine (known in-house as 'the Mammoth'), with the physical capacity to build prototypes of up to 2000 x

650 mm and 480 mm deep. Both Somos® 7120 and Somos® 9120 resins have been successfully used in the machine.

"The results", says Materialise Prototyping Division Manager Bart van Scheuren, "are outstanding. We used Somos resin to produce this one-piece dashboard for the concept stage of a new vehicle model. It measures 1550 x 550 x 480 mm and took less than 53 hours to build and

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This high-modulus material, with superior elongation at break, meets the need for optical clarity while also providing fast photospeeds and low viscosity—properties which will increase the overall productivity of the build process.

High Temperature / High Resolution Stereolithography Resins

Prototypes that can be used in high temperature applications are being regularly requested from a variety of sectors—notably the automotive industry, where under-the-hood testing of prototypes is frequently needed. This material combines high-temperature resistance



(>250°C) with high resolution, also making it a good candidate for rapid tooling applications. Additional new applications for the material are expected in a variety of markets.

Experimental Material for Investment Casting

The use of stereolithography to create patterns for investment casting applications for foundries is growing rapidly—most notably within the aerospace

industry, where a small number of custom manufactured parts are needed to fulfill manufacturing needs.

Based on significant demands for accuracy in these foundry applications, a key characteristic of this experimental resin is its superior water and humidity resistance, which prevents the part from growing when exposed to different environmental conditions. An added benefit is that a distinctive color can easily be added to identify the source of the prototypes.

The First Filled Resin for Direct Injection Applications

As the first filled resin to be introduced in the western world, this material is designed to provide rapid tooling moulds (continued on page 4)

Large Prototypes

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finish—with exceptional cost savings to the client.”

He continues, “The Somos® 9120 resin, in particular, with its combination of strength and flexibility, has properties which are ideal for large-part prototyping, where components are at risk for breaking under their own weight.”

Mr. van Schueren is convinced that the demand for larger prototypes will increase. ‘The possibilities of stereolithography are limitless—but as with any technology, it’s an evolutionary process. A decade ago, prototype engineers were fixed on subtractive technologies such as milling and grinding. Even simple prototypes could take weeks to produce. The availability of high-performance resins such as Somos 9120 are proving key in helping to shift this paradigm.”

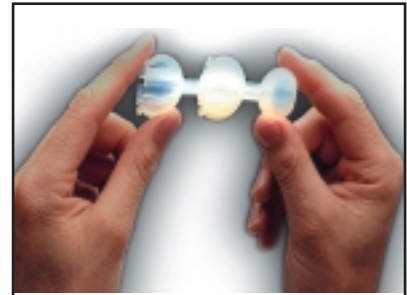
Technology Focus

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for direct injection applications. The filled resin offers two significant advantages—high modulus and high heat tolerance—which are both crucial for success in injection molding applications. Somos’ patented technology in this area ensures that it will lead in the future introduction of other filled resins.

David Green, Director of Engineering at Scicon Technologies, said of the Somos Technology Focus, “We are extremely pleased to be able to participate in this event. DSM Somos’ technical experience and reputation for patenting new technologies, combined with the direct input of those present today, is bound to bring to market some truly new and exciting materials.”

For more information regarding the DSM Somos Technology Focus, please contact us at 302-328-5435. The second annual event is currently scheduled for late 2001.



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Editor

The Part We Play is published by DSM Somos as an information resource for the rapid prototyping industry. Reader inquiries and suggestions for content are welcomed and should be directed to:

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