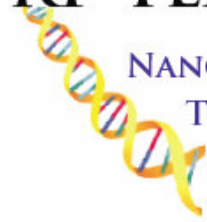


RP TEMPERING™ TECHNOLOGY NEWS



NANO-COMPOSITE
TECHNOLOGY

VOLUME 25

SOLID FREEFORM ADDITIVE TECHNOLOGY &
PATENT PENDING ENGINEERING TECHNIQUE

DECEMBER 2008

Alphacam attends Euro-Mold - Displays RP Tempering™

Alphacam attended this year's Euro-Mold trade show for rapid technologies. The Alphacam Temperman business venture, that gives them sole master distribution rights for RP Tempering™ Technologies overseas, is off to a great start. The Alphacam booth was a world class display that included a special section for RP Tempering™ Technologies. We would all like to thank Michael and Sepp for the prestigious display.

Baran Dag reported an excellent turnout during the 4 day event for all Alphacam products and services. The RP Tempering™ Technologies section stayed steadily busy with inqui-

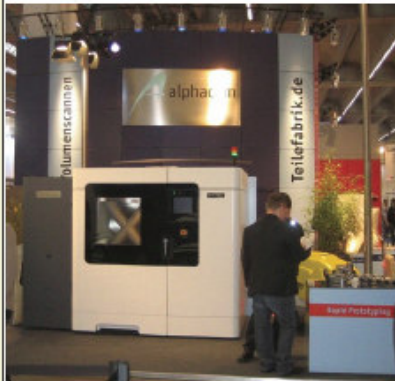
ries that sometimes required 3 sales engineers to man this section.

In the following pictures you will see Jurgen, Lutz, and Baran explaining RP Tempering™ Technologies to potential customers. This was excellent exposure for both Alphacam and RP Tempering™ Technologies.

Alphacam has put into place the infrastructure that will support RP Tempering™ Technologies oversea. Many people came to see the Stratasys machines and RP Tempering™. There were many publications about RP Tempering™.

Composite Tempering™ was introduced at the show for the first time to the European market and was received well; resulting in several interested companies.

Alphacam Booth at Euro-Mold 2008 Displaying a Stratasys FDM Machine (left) & RP Tempering™ Technologies (far right)



RP Tempering Display at Euro-Mold 2008



Baran at the RP Tempering™ Section



Jurgen explaining RP Tempering™ to a group



Lutz explaining RP Tempering™ to Customers

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ConducTemp® – Electrically Conductive Material

RP Tempering™ Technologies would like to introduce our ConducTemp® product line featuring your choice of multiple micron sized conductive particles. This material (any particle choice) goes on so thin you can actually create an electrical connection. By applying this material in the shape of a plug on your SFF part and then apply the material for a mating design to plug together you create a connection. You can create a design similar to a fiber optic connector without requiring a stamping to make the connection and more.

ConducTemp® offers our customers multiple easy to follow application techniques for every ConducTemp® Product. ConducTemp® comes in convenient kits. It is easy to apply, dries fast, and cost effective. The kits come in the following particle materials:

- Copper-Temp®

- Silver-Temp®
- Gold-Temp®
- SS-Temp®
- Aluminum-Temp®
- Carbon-Temp®
- 2Combo-Temp®
- 3Combo-Temp®

Materials/products are explained:

The materials listed above come in 4 to 7 micron sized conductive particles. The particles, per our application instructions, stay exposed for maximum conductivity in most cases. The particles are held into place by our ConducTemp® base infiltrate coating that is only .0002" thick when applied to almost any substrate. The base infiltrate coating can be applied to pre-designed or particular masked off or stenciled areas or patterns. More than one particle can be per mixed for specific applications.

The Kits come with a 3 gram container of your particle of choice and 3 ounces

ConducTemp® infiltrate base coat. The material will cover a surface area of 12" square inches completely.

Product Applications are:

Conductive Leads or Connections - EMI Shielding - RFI Shielding - RF Absorption Electronic - Connectors Electrical Field - Wave Impedance - Conductive Services - Energy Transition - Absorption of Electrical Wave - Microwave Absorption - Impeding Fields - Energy reflection - Absorption of Attenuates - Inhibiting Electro-magnetic Waves - Shielding Magnetic and Electro-magnetic fields

For easy to use instructions and engineered layering techniques please read the ConducTemp® Application Procedures and Standard Application Procedures. MSDS and Technical Data sheets for ConducTemp are available at www.RPTempering.com

New Options for our Proven Proto-Plasma-Rx™ Spray

Proto-Plasma-Rx™ Spray when used with Proto-Reinforcement® Infiltrate Coating and sometimes RP Tempering™ Compound will enhance your Mechanical Properties when applied to a SFF/RP part. Like all RP Tempering™ compounds, it is very fast drying, cost effective and easy to apply. Colors are available in Black, Clear, Blue, Yellow, White and Red 12oz. cans:



Depending on the base SFF/RP material used, the typical mechanical property enhancements are:

Increased Impact Strength, Torsion, Durability and 3 Point Flex Strength. Tensile Strength will not change and Flexural Modulus will stay within 3% of its original specification depending on the RP Tempering™ Engineered Layering Technique and materials used. Other Physical and Typical Property Enhancements to be expected are: Seals Porosity to a Microscopic Level, Excellent Chemical and Moisture/Water/Humidity Resistance, Thermal Properties (Heat Deflection, Heat Resistance, UV

Resistance, Insulative), Electrical Insulative, and Vibration. Multiple materials, equaling hundreds of samples, have been tested with Proto-Plasma-Rx™ using RP Tempering™ Engineered Layering Techniques. Test Data can be found on the Proto-Plasma-Rx™ Test Data Sheets. ASTM industry test standards were followed whenever possible.



ENHANCES PARTS MADE FROM THE FOLLOWING SYSTEMS: FDM, SLA, SLS, Digitally Printing & Others

Proto-Reinforcement® Infiltrate Coating

Proto-Reinforcement® Infiltrate Coating is used in most of our Engineered Layering Techniques. Proto-Plasma-Rx™ Spray when used with Proto-Reinforcement® Infiltrate Coating and sometimes RP Tempering™ Compound will enhance your Mechanical Properties when applied

to an SFF/RP part. Like all RP Tempering™ compounds, it is very fast drying, cost effective and easy to apply. Colors are available in



RP Tempering™ Compound New Additions

RP Tempering™ Compound, when used with Proto-Reinforcement® Infiltrate Coating and sometimes Proto-Plasma-Rx™ spray, will enhance your Mechanical Properties when applied to a SFF/RP part. Like all RP Tempering™ compounds, it is very fast drying, cost effective and easy to apply. Colors are available in Black, Clear, and Red 12 oz. cans.



Black Clear Red

Brush on and injectable compounds are available with stock container sizes of 4oz, 1 gallon and 5 gallon.

RP Tempering™ Technologies and Patented Engineering Techniques were developed to enhance Rapid Manufacture parts made from SFF systems. SFF technology presents OEM's with an opportunity to create and design geometric pre-engineered shapes within the wall of the physical part. RP

Tempering™ internal wall geometry technology and additive material science will enhance SFF parts either in combination or individually including: Mechanical Properties, Electrical Properties, Thermal Properties and Chemical/ Environmental Resistance Properties.



RF C-13 Absorb© – RF & Microwave Absorption Capabilities

The RF C-13 Absorb© RP Tempering™ Technologies and Patented Engineering Techniques were developed for Rapid Manufacture parts made from SFF systems. SFF technology presents the industry with an opportunity to design and manufacture end application parts that typical manufacturing methods cannot achieve. Internal wall geometry can be controlled better than ever. Earl Dunlap P.E., has just been awarded 74 claims on his RP Tempering™ Patent based on ways to use internal wall geometry and additive materials to enhance SFF parts in Mechanical Properties, Electrical Properties, Thermal Properties and Chemical & Environmental Resistance. Below we have listed some general information about our progress for RF applications:

Radar/Microwave Absorbing Materials

Designed to Attenuate or Absorb Microwave Energy

- Microwave Energy Absorbers Example: attenuation ranging from 5dB to 15dB on SFF honeycomb substrate.
- Dielectric loss to absorb the electric field of an electromagnetic wave
- Absorb propagated microwave energy
- Load Absorber
- Cavity dampening Absorbers

Result: Reduced Broadband (frequency & angle), Volumetric, Conducting Ground Plane & RAS High Frequency behavior.

Microwave Magnetic (loss) Absorbers (fillers) Available:

- Iron Particles
- Iron Ferrite Particles
- Nickel Particles
- Other specialty particle disbursement

Resonant Dampening Absorbers Available:

- RP Tempering™ Compounds with Multi-walled Carbon Nano Tubes (MWCNTs)
 - o Back fill complex SFF internal wall geometry

- o Use as coating
- o Can be excellent electrical insulator
- Proto-Plasma-Rx™ Spray
- o Can be used as an insulation barrier
- Proto-Reinforcement® Infiltrate Coating

Results: Wideband behavior (interference/absorption), Increase Bandwidth, Frequency Dependent (UHF & GHz Range)

Applied Carbon Varied Result:

- Absorb Microwave Energy
- Electromagnetic wave propagating empty space
- Dielectric Loss
- Conductive
- Reduces Bandwidth (frequency & angle)
- ROS high frequency behavior

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