

PolymerPlace Notes

A plastics technology newsletter

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In this Issue

- **What's Happening at PolymerPlace**
- **Continuing review of *Strategic Management for the Plastics Industry***
- **OMNEXUS -POSTSCRIPT**

POLYMER MARKETS

- **Fibers:** DuPont Co. has sold its Invista fibers business to Koch Industries Inc Automotive
- **Electronics:** To avoid contaminating the environment, the semiconductor industry is transitioning to lead-free soldering at an accelerated pace
- **Safety/Automotive:** Glow-in-the-dark (GITD) compounds from specialty compounder RTP Company

POLYMER MATERIAL DEVELOPMENTS

- Premix Thermoplastics, Inc., a specialty compounder of electrically conductive thermoplastics
- A new class of materials called Cyclic Resins (CBT™) being marketed by a company called Cyclics

PROCESS DEVELOPMENTS

- DuPont Dow Elastomers has introduced new process aids that are used in the production of blown film, cast film and extruded pipe, wire and cable

NEW BUSINESS MODELS/OTHER

- Techmer PM LLC's plans to grow its Asian business

What's Happening at PolymerPlace

Here's hoping you have a wonderful Holiday season!

One of our principals, Margaret Baumann, will be giving an online presentation sponsored by the SPE on January 22, 2004. The presentation is entitled "Optimizing the Supply Chain". The presentation will discuss the changing face of manufacturing, customer needs, the enhanced supply chain, developing a supply chain strategy and tips for getting started. For more details please go to <http://www.4spe.org>. It is listed on the homepage.

OMNEXUS -POSTSCRIPT

Omnexus was started by BASF, Bayer, Dow, DuPont and Ticona back in 2000. It was announced during NPE and officially launched in October of 2000. Polymerplace was launched about the same time and as you can see we are still operating. The plastics e-commerce site Omnexus was shut down last week following three years of insufficient e-commerce to support the marketplace.

In addition to the initial backers, Omnexus had attracted other high profile companies including Atofina, Biesterfeld, Clariant, Demag Ergotech, DSM, Distrupol, Engel, Entec, Muehstein, Performance Polymers, PolyOne, Resinex & Ravago, and Solvay.

The Omnexus idea was to provide “a single point of connectivity for plastics processors and suppliers” that would become an efficient, cost-effective method of e-procurement. There were headquarter offices in Zurich, Switzerland and in Atlanta, Georgia for the North American market.

Omnexus had been doing some excellent things- on-line seminars, e-marketing services and on line technical expertise. The last three years have not been kind to any start-up business in plastics especially those associated with e-business. The lesson learned from all the dot com failures is that the internet is a complement to other forms of communication. It will not replace the salesperson or customer service rep but can compliment and enhance our interaction with them.

PolymerPlace.com is an internet portal to information, products and services for the plastics product development community. This was imbedded in Omnexus mission but they were trying to “do it all”. They literally ran out of money. Due to the downturn in manufacturing they could have paced themselves more slowly allowing the plastics marketplace to get to know them. When manufacturing picked up they would benefit from the awareness they had developed.

One of the most important lessons we can take from this is: do your homework up front. We feel that if the Omnexus management had studied what the market needed as well as macroeconomics they would have remained a compliment to their supply communities direct marketing efforts and would still be in business.

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Strategic Management for the Plastics Industry was written by Roger F. Jones, one of Polymerplace.com’s founding partners. It was published in September 2002 by CRC Press. Endorsed by the Society of Plastics Engineers, this book covers all of the bases in the plastics industry, from polymer manufacturing, through compounding, distributing, processing – even machinery and additive suppliers are included – in a thoughtful, down-to-earth discussion of the particular problems faced by managers in this industry in running their businesses. Worried about globalization? Can’t decide how to staff and organize your business? Do general management texts fail to cover your special problems? Look no further – it’s all in here. Order your copy today – use our link to www.amazon.com.

We’ve been showing highlights from each chapter in our monthly newsletters. This issue will cover Chapter Nine – Case Studies. Since Chapter Ten summarizes the conclusions, this review will be the last in this series. The case studies are organized by industry segments, and the author stresses that the selection of companies does not necessarily mean that they are the “best managed” – only that information about them and access to senior managers made it feasible to include them in the book. Each of the companies selected has chosen a unique route to establishing itself successfully in the plastics industry; their strategies and their organizational structure are detailed. They run the gamut from very large to medium sized to very small.

The first category, polymer manufacturers, includes BASF, Asahi Kasei, and Victrex. BASF’s history and its famous “verbund” (integration) strategy are discussed, in addition to the peculiarities of the legally-mandated German management structure. Asahi Kasei’s heavy reliance on developing its own technology, its unique downstream activities, and its emergence from being strictly an Asian player into a global one, are all analyzed. The final company in this group, Victrex, is examined in the light of its singular reliance on a single product.

Among compounders, LNP is first discussed. Here the author brings his own experience at this firm to bear, and looks at how it managed to survive successive ownerships by adapting its culture, up to the takeover by GE Plastics (which has now effectively extinguished LNP as an independent entity). Speaking of survival, the next firm to be studied is Modified Plastics, a small California compounder. Modified has managed to prosper and outlast a series of competitors, including LNP; how it did so is looked at in detail.

Under distribution, the successful evolution of GE Polymerland from Borg-Warner’s Plastics Service Centers into the largest global distributor is examined.

Among processors, the Nypro story is told ("How a small molder became a big one"), as well as the success story of another California small company, Certified Thermoplastics. Husky's approach to supplying machinery to the industry by developing systems instead of merely equipment is detailed. The chapter concludes with a summation of the common threads among these disparate firms that have made them successful where others have failed.

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POLYMER MARKETS

Fibers

[DuPont Co. has sold its Invista fibers business to Koch Industries](#) Inc. for \$4.4 billion in cash. The fibers unit — which includes the Lycra and Stainmaster brands — generated sales of \$6.3 billion in 2002, representing about 25 percent of total sales for DuPont. In February 2002, DuPont had announced plans to sell or spin off the unit, including polyester and nylon fibers, in order to focus on core businesses. The deal does not include DuPont's polyester and nylon resin businesses.

The two largest suppliers of Nylon (Honeywell-Nylon 6) and DuPont (Nylon 66) have now exited either the fiber or resin business. If you recall Honeywell and BASF swapped businesses last year- BASF took the resin business; Honeywell the fiber businesses.

Wichita, Kan.-based Koch also owns PET maker Kosa Inc. of Houston, which also is a major polyester fiber producer.

The deal includes DuPont's adipic acid and hexamethylenediamine assets, which are key raw materials used to produce DuPont's nylon 6/6 resins. Koch is expected to continue to supply those materials for DuPont's market-leading nylon 6/6 business.

In preparation for the sale, last year DuPont placed its nylon 6/6 resin, acetal, specialty polyester and copolyester businesses as well as its interests in DuPont Dow Elastomers and DuPont Teijin Films U.S. LP into its performance materials unit.

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Electronics

Under pressure to protect the environment, the semiconductor industry in Japan is taking measures to implement lead-free soldering technologies for mounting electronics parts and components. To meet the challenging new processing requirements, Shoei Co. Ltd. of Tokyo, a leading manufacturer of aluminum electrolytic capacitors and miniature rechargeable batteries, has decided to replace PPS with high-temperature resistant VICTREX® PEEK polymer for the resin mold cases of its 'PetitCap' aluminum electrolytic capacitor. Soldered on to the surface of a printed circuit board, these super low profile capacitors are used in consumer electronics products such as notebook PCs, DVD players and CD-R/W drives.

[To avoid contaminating the environment, the semiconductor industry is transitioning to lead-free soldering at an accelerated pace.](#)

When compared to conventional solder which has a processing temperature of approximately 482°F (250°C), lead-free alternatives require longer eating times (preheating and reflow) at temperatures exceeding 500°F or 260°C). Prior to transitioning to lead-free soldering, Shoei manufactured the resin mold cases from PPS. However, with heat resistant temperatures of only 464°F (240°C) PPS could not withstand the lead-free soldering process. VICTREX PEEK polymer, on the other hand, has a heat resistant temperature of up to 600°F (315°C).

Shoei is currently producing 7 million "PetitCap" capacitors per month. Some 40% of the total production is being produced using VICTREX PEEK polymer for shipment to customers who have already started to implement lead-free soldering. For more information on the properties and performance advantages of VICTREX PEEK polymer, please call (800) VICTREX or visit the Victrex website at <http://www.victrex.com>

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SAFETY/AUTOMOTIVE

In re-designing its emergency release latch to meet new federal safety standards, Astro Cap Manufacturing decided to make the mechanism both functional and stylish. Astro Cap Manufacturing of Garnett, KS develops products for the truck industry.

By utilizing [glow-in-the-dark \(GITD\) compounds from specialty compounder RTP Company](#), the release latch met the FMVSS requirements for phosphorescent characteristics ensuring emergency egress to anyone trapped inside the trunk of a vehicle.

Astro's existing release mechanism was an unlit steel rod, which did not meet the visibility requirements of the safety standard, nor was it stylish enough to use with Astro's sleek, newly designed line of bed covers for pick-up trucks. For the re-design, Astro approached LeVic Plastics and emphasized the need for a glow-in-the-dark part with appealing, softened lines that offered high impact and tensile strengths. LeVic contacted RTP Company which recommended an RTP 100 Series GITD polypropylene compound for the mechanism.

The intensity with which a phosphorescent material glows is measured in millicandles per meter squared (mCd/m²) and is an expression of light emitted from the part. The average human eye, adapted to darkness, can typically distinguish an object emitting no less than 0.030 mCd/m². Charged with a 100 foot-candle lamp for 1 minute, the RTP 100 Series GITD compound emitted 0.032 mCd/m² after 8 hours, exceeding the safety standard's requirements.

GITD compounds typically require high loadings of phosphorescent additives to obtain long duration glow properties. Unfortunately, these high loadings often cause significant degradation of mechanical properties. To balance these characteristics, RTP Company has formulated numerous GITD compounds that contain various phosphorescent pigments combined with proprietary carriers, yielding compounds with long duration glow features without significant reduction in mechanical performance. A new generation of brighter and longer glowing GITD compounds uses light stable pigments that do not fade.

RTP Company has formulated GITD compounds meeting the phosphorescent release handle specifications of Toyota, Nissan, Mitsubishi, Honda, Ford, Delphi, and Saab. RTP Company, headquartered in Winona, Minnesota, USA, is a global leader in specialty compounding. The company has six manufacturing plants on three continents, plus sales representatives throughout North America, Europe, and Asia/Pacific. RTP Company's engineers develop customized thermoplastic compounds in over 60 different engineering resin systems for applications requiring color, conductive, flame retardant, high temperature, shielding, structural, and wear resistant properties. For more information call (800) 433-4787 or (507) 454-6900, or visit the website at <http://www.rtpcompany.com>

For more information on Astro Cap visit their website at <http://www.astro-cap.com>

POLYMER DEVELOPMENTS

[Premix Thermoplastics, Inc.](#), a specialty compounder of electrically conductive thermoplastics is opening of its first North American manufacturing facility in Milton WI. Premix Thermoplastics is a wholly owned subsidiary of Premix Oy of Finland, a leader in conductive plastics technology in Europe. The 25,000 sq. ft. facility will have three compounding lines in operation by the end of 2003 with a capacity of over 5,000,000 lbs. In addition to production, the facility will also have development and sampling capabilities with a complete test laboratory.

Premix Thermoplastics formulates its compounds utilizing most of the commercially available thermoplastic resins and all of the electrically conductive additives including: carbon black, carbon fibers, nickel coated carbon fibers, stainless steel fibers, metal flake and powders, inherently dissipative polymers (IDP) and inherently conductive polymers (ICP). Premix Thermoplastics can custom formulate electrically conductive compounds for a wide range of applications including thermoplastic elastomers, polyolefins, styrenics or engineering polymers.

For more information, please contact Steven Kidd at 1-888-284-3304, or sales@premixthermoplastics.com, or visit the website at <http://www.premix.fi>.

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Zeon Chemicals LP of Louisville plans to add lower durometer grades to its thermoplastic vulcanizate (TPV) line in 2004.

Zeon began commercial production in February of [Zeotherm-brand TPVs](#) based on technology that it licensed from Advanced Elastomer Systems LP last year. Those products already are in use on some injection molded auto parts, and are being tested in high-temperature under-hood auto parts such as shaft seals, blow molded exhaust air ducts and in-board CVJ boots.

Zeotherm TPVs are different from standard TPVs in that they are based on polyacrylate elastomers and nylon 6, rather than on the combination of polypropylene and ethylene propylene diene monomer (EPDM) that most TPVs are constructed from. This chemical makeup allows Zeotherm to provide greater heat and oil resistance than standard TPVs, according to the manufacturer.

The materials can retain physical properties after 1,500 hours of exposure at 150° C. They also have a per-pound selling price that's quite a bit higher than standard TPVs. The products are being designed as a material upgrade.

The multi-year AES license only covers heat and oil-resistant TPV grades. Akron, Ohio-based AES is North America's largest TPV maker.

Zeon also expects to launch two additional TPV families — one based on epichlorohydrine (ECO) and another based on hydrogenated nitrile (HNBR) — in the next two years. Each of those new lines will contain several individual grades, Cail said.

Zeon, a division of Zeon Corp. of Tokyo, does most of its business in thermoset rubber production. The firm operates plants in Louisville; Hattiesburg, Miss.; and Bayport, Texas.

To date, Zeotherm TPV production has been limited to the U.S., but the firm might consider adding production at sites in Europe and Asia as well.

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Several months ago, we wrote about a new class of materials called [Cyclic Resins \(CBT™\)](#) being marketed by a company called Cyclics located in Schenectady, NY. We recently attended an online presentation by Cyclics offered through Omnexus on the cyclic resins.

The CBT resin is an ultra-low viscosity material that polymerizes "reactively" into PBT (poly butylenes terephthalate). The material can be processed like a thermoset or a thermoplastic. It can therefore react with a number of other compounds creating new materials. The developer's goal is to add new markets for PBT replacing metal and thermosets. Their current commercial plant is in Schwarzeide Germany. Currently they produce about 5 million pounds and plan to expand capacity to 30 million pounds by 2007.

CBT is available as a two-part system or one-part system. The advantages of cyclic thermoplastics is gaining the properties of PBT (high temperature resistance, chemical resistance, dimensional stability, recycling, thermoforming, machineable) with the processing advantages of CBT™ (low viscosity, adjustable reaction times, no heat of reaction or VOC's and long shelf life). Some of the applications where CBTs are being evaluated include: Prepreg (wind turbines, automotive), Long fiber molding compounds, Powder coatings, Functionalized polymers (elastomers), rotomolded parts, cast parts, pultruded parts, sheet molding compound and RTM/SRIM parts. Datasheets are available at <http://www.cyclics.com/datasheets/datasheets.html>. For more information contact: Yi-feng Wang, 518-881-1422; email: yi-feng.wang@cyclics.com <http://www.cyclics.com>

PROCESS DEVELOPMENTS

[DuPont Dow Elastomers](#) has introduced new process aids that are used in the production of blown film, cast film and extruded pipe, wire and cable. Introduced at NPE, Viton Freeflow Z represents a breakthrough in process aid technology. The new products-Viton™ Z-100 and Viton FreeFlow Z-200

use a combination of rheology modified fluoroelastomer and innovative interfacial agents to make them work more efficiently and effectively than products currently on the market.

For film converters, the additive eliminates melt fracture quickly, facilitating the production of smooth, clear films with a high gloss finish. It offers robust processing capability, the ability to reduce die gap size in blown films and it reduces die-buildup on extruded goods.

Viton Free-flow Z-100 uses a lower level of polyethylene glycol(PEG) than other fluoroelastomer processing aids. Among its benefits are: reduced potential for olfactory effects in the final products; reduced screw slippage in film extruders and reduced breakdown from oxidatively unstable components and reduced negative interactions with other film additives.

Viton FreeFlow Z-200 uses a new, patent pending interfacial agent. The product uses new polycaprolactone-based technology, which is more oxidatively and thermally stable than PEG. Its benefits include no olfactory effects in final products, virtual elimination of screw slippage, reduced discoloration and reduced potential for negative interactions with other film additives. For more information go to <http://www.dupont-dow.com>.

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NEW BUSINESS MODELS/OTHER

[Techmer PM LLC's plans to grow its Asian business](#) include a production deal with Guangzhou Eastern Rainbow of Guangzhou, China.

Techmer, a Los Angeles-based color concentrates maker, will supply Eastern Rainbow with its formulations and some advanced additive packages. Eastern Rainbow then will make concentrates based on polyolefins, styrenics and engineering resins for the injection molding, film and fibers markets, according to Techmer President John Manuck. More and customers have been asking Techmer to supply them in China with locally produced color concentrates.

Techmer determined it would be extremely difficult to build a plant there so they looked for a partner.

Eastern Rainbow produces color concentrates at plants in Guangzhou and two other Chinese locations. The firm is owned by Far East Plastic Colours of Hong Kong, a family-owned business with more than 40 years of color experience.

Techmer also formed a similar arrangement with Ciba Specialty Chemicals in Malaysia, Australia and New Zealand.

The two firms will share revenues and profit from Chinese sales of Techmer concentrates. The arrangement also gives Eastern Rainbow access to more-advanced additive products, including flame retardants, ultraviolet-light stabilizers and gamma stabilizers. In addition, Eastern Rainbow should provide Techmer with sizable opportunities for nonwoven fibers in the personal-hygiene market.

Techmer, which employs 500 at five U.S. plants, with sales of approximately \$130 million is a smaller manufacturer that has chosen to grow globally by partnering with strong local companies. This model won't work for everyone but if the right partner can be found it represents a viable business model for international expansion.

References: The stories in *PolymerPlace Notes* come from a variety of sources including Company Press Releases, Interviews, and trade publications, e.g. *Plastics News* and newswires.

<http://www.PolymerPlace.com>

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