

PolymerPlace Notes

A plastics technology newsletter

By Margaret Baumann, G.H. Associates

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- MBA Polymers, Inc. (MBA) of Richmond, California, USA and Guangzhou Iron & Steel formation of a joint venture company to build and operate a state-of-the-art plastics recycling facility in the Nansha Development Area
- Moldflow Corporation announced this week that it will acquire American MSI Corporation.

What's Happening at PolymerPlace

In January we attended the MDM/Plastec/Design West/WestPack shows in Anaheim and the North American Auto Show, which was held in Detroit. In this month's newsletter we will cover some information from both shows.

On January 22nd, Maggie Baumann of G.H. Associates presented an on-line presentation entitled: [Optimizing the Supply Chain: Gaining a Competitive Edge through Supply Chain](#)

Management. The presentation was sponsored by SPE (The Society of Plastics Engineers). The goal of the presentation was to make organizations aware of the supply chain in which they operate and to explain the ways they can make their role in the supply chain a competitive advantage. In addition tips on getting started were discussed. If you are interested in a copy of the presentation please go to <http://www.polymerplace.com> and click on On-Line Presentation.

In February, Maggie Baumann will be presenting a paper on [The Impact of Biotechnology on the Chemicals and Plastics Industry](#). This will be at the [GPEC 2004](#) conference sponsored by the SPE Plastics Environmental Division (February 18-19th) in Detroit. Roger Jones another Polymerplace colleague will be making a presentation on the Globalization of Recycling. Bob Eller (Robert Eller Associates) a frequent contributor to Polymerplace Notes (see this month) will also be presenting a paper on the Role of Environmental Plastic Technologies in Automotive Interiors.

For more information on the GPEC 2004 conference visit: <http://www.4spe.org>.

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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 <http://www.amazon.com>.

Last month we completed the review of the final chapters of Roger's book. But what about the dramatic changes that have taken place in our industry? Does the book help us to deal with these changes? The answers are simple but sobering. First of all, the last three years have seen an acceleration of the problems confronting all of us. The industry is consolidating at a faster rate than ever. Competitive pressures from everywhere, in the USA as well as from overseas, are forcing every engineer and every company to focus on how to manufacture less expensively, while offering more options than ever to customers. One must differentiate oneself from competitors in order to prosper, if not merely to survive. This course of action demands that your firm be on top of the latest technology; how to do this best is described in Chapters Two and Three. It's likely time to reexamine your company's organization structure, to see if it fits your business strategy; how to do this is contained in Chapter Five, while finding and developing the right people for your organization is discussed in Chapter Six. If you're not sure what is wrong – and what is right – with your business, then apply the tests shown in Chapter Seven. Finally, if an acquisition or joint venture is in your future, you need to read Chapter Eight.

Also, make a note in your calendar to attend the Society of Plastics Engineers Annual Technical Conference in Chicago, May 17-20, 2004. Roger and other experts will be participating in a panel dealing with globalization and how to cope/survive/prosper with it.

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POLYMER MARKETS

Automotive

Return of the North American car- The widely hyped commitment by the North American Big 3 to focus on the car sector after 10 years of commitment to the highly profitable light truck sector will have a range of implications for automotive plastics. The Ford 500, Pontiac Solstice and Chevy Cobalt are excellent examples of this.

The “European look” favored by GM, which benchmarks the fit and finish of high end European interiors (such as the Audi A4) combined with intense price pressures from the OEMs will have the following effects:

- Encourage the use of backmolding techniques for A, B, C pillar covers European molders are bringing their “hinterspritzen” technology to the US. This will cause knitted fabric suppliers to benefit.
- Hard (e.g. “unskinned”) will continue to gain share of the instrument panel and door trim sector. This will continue to support the trend toward high quality molded-in color polypropylene instrument panels.
- Closer fitting interior and exterior panels for a more refined look in instrument panels and door trim medallions. This will encourage the use of processes capable of achieving new fit and finish tolerances. The Johnson Controls CraTec™ process is one example.

Acoustics- This was the year of promoting acoustic performance and the quiet cabin (see 2005 Mustang and Chevy Cobalt). Acoustics materials (lightweight fiber mats, PU foams, metal/plastic laminates) are getting more sophisticated and often lighter than the traditional regenerated fiber “shoddy” mats that they replace.

Tailored interiors- Interior surface variety is increasing. Good news for suppliers of decorative films (wood grain, metallic, carbon fiber-look), metallic insert technology and bezels that proliferate on many new models (e.g. Infinity G35 console/door handles, Pontiac Bonneville door medallions). OEMs are offering this enhanced range as part of their personalized interiors approach (Mustang instrument panel, others).

Wide body side cladding- as previously seen on Pontiac Aztek appears to be declining in favor of cleaner sheet metal designs. This will mean a loss for suppliers of TPO and TPU compounds. This is partially offset by an increase in plastic rocker panel covers.

Luxury fabrics- The increased use of luxury fabrics in seating inserts (PT Cruiser, Ford Focus Z4ST) and a broadened range of applications (A, B, C pillars, door medallions, instrument panel trim) is beginning to take hold in North American vehicles, but utilization is still considerable lower than in European interiors. Contenders include Alcantara, Kuraray’s Clarino, Freudenberg’s Evolon and a range of new offerings from Milliken and others.

Front-end systems- Bumper fascia are getting larger not only because of the increased proliferation of SUVs and new crossovers (e.g. 2005 Ford Freestyle) but because the fascia are being extended upward into the hood and rearward into the fender region. Good news for TPO suppliers.

Overhang continued to be reduced to achieve a “European” look. (e.g. Pontiac G6). This puts increased emphasis on molding precision, lower CLTE TPO grades and energy absorption designs. It also increases the performance requirements for plastic front-end module (FEM) designs that are proliferating in Europe (e.g. VW/Audi, Volvo and BMW) but have not yet been accepted by North American OEMs

The Floor- Acoustics isolation is among the many functions of the floor. Lightweight fiber acoustic mat constructions from Rieter, Lear, Collins+ Aikman and Faurecia are entering the acoustic portion of the floor module and reducing the weight traditionally used for heavy layer.

The advent of third seating rows in SUVs and Vans and increased share for “tall cars” creates a space below the seat for a variety of functions (seat stowage, spare tire/tools, cargo storage). A broad range of designs for clever folding load floor, spare tire covers and flat floor designs are evolving to create a new market for 3-5 layer semi-structural laminates. This creates a lively intermaterials competition between:

- Carpet vs. nonwovens. Tufted carpet growing in higher end models
- EPP foams (starting in Europe at Mercedes, Acura RSX, several tool kits) vs. PU foams

- Extruded foams vs. foam in place
- Lightweight glass fiber/PP constructions (e.g. from Quadrant and Azdel) vs. other traditional PU/heavy layer
- Blow molded vs. injection molded PP.

Current North American models often use a simple hardboard spare tire cover with a loose carpet on the surface (e.g. Ford Freestyle).

The trunk surface coverings and underlying rigid components are currently based on separate components. We believe these components will be combined into a single, large molded "trunk module" combining surfacing (carpet or nonwoven), semi-structural function, acoustic function, energy absorption (e.g. to meet the recent European "beer crate" legislation), stowage and eventually the vehicle floor (probably a composite, such as Faurecia's concepts in Europe).

(The above article was written by Bob Eller, President of Robert Eller Associates, Inc. (REA) from his company's annual review of automotive plastics trends at the Detroit North American Auto Show and REA's recently completed multiclient study "Automotive Interior Soft Trim" (see www.robertellerassoc.com for information).

We will include more on the North American Auto show next month...

Packaging

When the Owens-Illinois Plastics Group, Plastic Containers introduced [the first line of multi-layer, injection-blow-molded plastic bottles and vials for drugs and other pharmaceuticals](#), it selected Topas® cyclic olefin copolymer (COC) from Ticona, the technical polymers business of Celanese AG as the moisture barrier layer. Topas® COC was chosen because of its low permeability to water vapor, high transparency, clarity and chemical resistance, and ease of processing.

The new bottles offer a more user friendly alternative to pharmaceutical glass in packaging injectable drugs, diluents and other products, because they are more shatter resistant, contain no aluminum, and do not chip or craze during production. The bottles are injection-blow-molded using Owens-Illinois' SurShotSM multi-layer injection technology, a precise method that controls barrier content down to 2 percent of total package weight. All bottles are inspected for barrier content as a redundant quality check. The company also uses this technology to produce millions of food and beverage containers the world over each year.

Owens Illinois has spent ten years developing and testing these bottles for pharmaceutical use and are now getting a lot of interest from drug companies. Currently they have the only alternative to Type 1 pharmaceutical glass. Topas® COC helps Owens Illinois build high-integrity structures since it has good processing compatibility with the other plastics we use, and is one of the best transparent, moisture-barrier polymers available. Topas® COC offers glass-like clarity while it is low in extractables and works well with liquid pharmaceuticals.

As a barrier material, the water vapor transmission rate of Topas® COC at 23°C and 85% RH is just 0.071 g·mil/100 inch²·24 hr·atm. It absorbs little moisture because its equilibrium moisture level is 0.01 percent. Topas® meets U.S.P. Class VI requirements, and has received U.S. FDA Drug and Device Master File numbers. In addition, it has good heat resistance, is compatible with all common sterilization processes, and resists hydrolysis and a wide range of substances, including polar organics, acids and bases.

In addition to pharmaceutical bottles and vials, typical applications for Topas® COC include thermoforming, pre-fillable syringes, medical and diagnostic devices, rigid films for pharmaceutical blister packages, optical components, and toner binders. It has received an FDA Food Contact Substance Notification for use in direct contact with all food types under all conditions of use and so may be used in food packaging films.

For information on Owens-Illinois' new line of multi-layer plastic pharmaceutical bottles and other healthcare products, contact: Karen Baker at 1-419-241-2221; Email: KBaker@r-p.com. Or visit: <http://www.o-i.com>.

For information on Topas® COC and its use in pharmaceutical packaging and other applications, contact: Ticona, Phone: 1-800-833-4882 or 1-908-522-7500. Email: prodinfo@ticona.com. In Europe: Ticona GmbH, Phone: +49-(0)180-584-2662 (DE) or +49-(0)693-051-6299 (EU).

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POLYMER DEVELOPMENTS

GLS Thermoplastic Elastomers, a wholly-owned subsidiary of Great Lakes Synergy (formerly named GLS Corporation), has supplied elastomeric raw materials to the industry and custom TPE compounds since 1984.

GLS has recently introduced DYNAFLEX® G2711 thermoplastic elastomer (TPE) compounds (made with Kraton® polymers). This compound recently has been approved to be used in applications that require United States Pharmacopoeia (USP) XIX class VI certification.

The United States Pharmacopoeia (USP) XIX biological tests are designed to provide information on potential biological effects of polymer materials used in containers. There are six different classes - I through VI -- depending on performance in the other biological tests. The higher the class, the more severe the tests. A material which meets the most severe class VI may be considered for use in food and drug containers in which the container has direct contact with the contents. DYNAFLEX G2711 TPE compounds have passed the most severe test requirements in order to be qualified as a UPS XIX class VI material.

This DYNAFLEX grade is designed for injection molding and extrusion applications to provide products with a soft touch, rubbery feel. It has a Shore A hardness of 43. Benefits of this naturally translucent compound include excellent colorability as well as excellent overmold adhesion to polypropylene.

Applications include, but are not necessarily limited to, medical and packaging tubing, closures and seals, infant products and earplugs as well as non-medical products such as household and personal care goods.

For more information on the [new USP Medical Class VI grades of DYNAFLEX G-2711](#), contact: Marketing Department, GLS Thermoplastic Elastomers, 833 Ridgeview Drive, McHenry, IL 60050-7050. Telephone: (815) 385-8500 or (800) 457-8777. Fax: (815) 385-8533. E-mail: info@glscorp.com. Web Site: <http://www.glscorp.com>.

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Ensinger/Penn Fibre, a division of Ensinger. Inc. has introduced the first line of thermoformable polyphenylene sulfide (PPS) sheet and roll products for applications needing high thermal and chemical resistance and inherent flame retardancy. The supplier introduced the PPS products as good candidates for stationary and mobile chemical tanks, underhood automotive parts, and interior panels and other large, thin-walled elements in buses, planes and trains.

Ensinger/Penn Fibre products in this line are based on Fortron PPS from Ticona. The new line encompasses neat, glass-filled and modified grades containing impact modifiers, tougheners and other ingredients. The PPS sheet offers manufacturers a formable, crystalline plastic having an exceptionally high melt point so processing can occur between 550 and 600°F (288 and 315°C). Ensinger/Penn Fibre will customize the sheet to create ribbons slit to widths as narrow as 0.2 inch (5.1 mm), provide a specialized backing, or produce parts punched to a needed shape.

The supplier suggests that the PPS sheet can compete successfully against fluoropolymer and can save as much as 30% vs. sheets made of fluoropolymers.

For more information on Fortron[®] PPS, contact: Ticona, USA. Phone: 1-800-833-4882 or 1-908-522-7500. Email: prodinfo@ticona.com. In Europe: Phone: +49-(0)180-584-2662 (DE) or +49-(0)693-051-6299 (EU). Or visit <http://www.ticona.com>.

For information about Penn Fibre's line of thermoformable PPS sheeting, contact: Ensinger/Penn Fibre, 2434 Bristol Road, Bensalem, Pennsylvania, 19020, USA. Phone: 1-800-662-7366. Or visit: <http://www.pennfibre.com>.

PROCESS DEVELOPMENTS

Potters Industries, a division of PQ Corporation manufactures glass beads that are used in the compounding industry largely to improve dimensional stability in glass-reinforced compounds. Potters makes both solid and hollow glass spheres. Although hollow glass spheres offer weight benefit they were not able to be used in compounding of thermoplastics in the past because they would crush during the processing pressures. At NPE 2003, Potters Industries introduced a [new line of glass microspheres that are hollow and can withstand the conditions of the compounding process](#). This is the first product of its kind available to the product developer.

Spherichel[™] hollow glass spheres (Spherichel 110P8) displace the same volume of resin as solid spheres of the same size but are lighter. The specific gravity is 1.1 g/cc. This low density will enable plastics engineers to produce lighter-weight filled parts. Potter's Industries customers report success with the hollow spheres with loadings of up to 25% by volume.

Addition of Spherichel hollow glass spheres reduces the viscosity of most resin mixes, resulting in increased mold flow. The processability is improved and throughput is increased. In fiber-reinforced systems, the spherical particle disorients directional orientation of the fibers and enhances the reinforcement benefit. The small size of the sphere and the mold flow benefits provide a smooth finished surface and facilitate the molding of intricate parts.

For more information on Spherichel[™] hollow glass spheres, contact Potters Industries Inc. (an affiliate of PQ Corporation) in Valley Forge, PA. Phone: 610-651-4700 or go to www.pottersbeads.com.

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MBA Polymers, Inc. (MBA) of Richmond, California, USA and Guangzhou Iron & Steel [formation of a joint venture company to build and operate a state-of-the-art plastics recycling facility in the Nansha Development Area](#) Enterprises Holdings, Ltd. (GISE) of Guangzhou China recently announced the. The joint venture plans to begin operation of a 40,000 ton per year plant by the beginning of 2005. MBA has been operating in the re-claim of materials used in industries like business machines and appliances in North America. Approximately 85% of the business machine market housings are produced in Asia. This is a logical next step to process these mixed streams in an area which consumes so much virgin material..

MBA Polymers owns 55% of the JV and GISE owns 45%. MBA brings technology, know-how, customers and suppliers to the JV while GISE provides local and national experience working in China, important government contacts and relations and its scrap import and processing background.

The new Company, called GISE-MBA New Plastics Technology Co. Ltd., will process highly mixed plastics resulting from the legislated take-back and recycling of durable goods such as appliances and electrical equipment. This recycling is taking place on a very large scale in places like Japan, Taiwan, Korea and all over Europe, where the producer- responsibility legislation has been implemented. China is also expected to implement such legislation.

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[Moldflow Corporation announced this week that it will acquire American MSI Corporation.](#)

American MSI, which is in Moorpark California, is a supplier of hot runner systems that are used

in the manufacture of large components or molds with high cavitation for industries such as medical instruments, packaging and automotive. American MSI's hot runner controls are used by the leading suppliers, including Abbott Laboratories, Becton Dickinson, Gillette, Baxter Healthcare, SC Johnson, 3M, Bose, DaimlerChrysler, Delphi, Colgate-Palmolive, TRW, Eastman Kodak, Schick, Nypro, Ciba Vision, Johnson and Johnson, Vistakon, Terumo Medical, Volkswagen, Mattel, Whirlpool, and Nissan. Moldflow is the world's leader in process-wide solutions for optimizing the design and manufacture of plastics products.

Together, Moldflow and AMSI will offer a wide range of automation and optimization solutions for the plastic injection molding industry helping customers in all stages of the process of design through manufacture of plastic parts. This combination of skills should give the injection molding community improved solutions for enhanced productivity, a critical element in today's global injection molding business.

For more information visit <http://www.moldflow.com>.

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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