

PolymerPlace Notes

A plastics technology newsletter

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- Despite the many benefits of eCollaboration in the plastics industry marketplace, the lack of a single universal software standard for design applications is the main obstacle to its long-term success...

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THIS MONTH AT POLYMERPLACE

Happy Holidays from all of us at Polymerplace.com. We wish you a wonderful Holiday Season and a healthy and prosperous New Year!

Polymerplace offers a myriad of business development services included targeted customer surveys and market research. E-mail us at info@polymerplace.com for a no charge, no obligation consultation.

FEATURE STORY- STRATEGIC MANAGEMENT IN THE PLASTICS INDUSTRY

Strategic Planning in 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 additives 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/exec/obidos/tg/detail/-/1566768837/qid=1040137374/sr=1-17/ref=sr_1_17/002-3995936-1536861?v=glance&s=books. This book would make a wonderful gift for your boss or colleagues.

Over the next few issues of our newsletter, we will show highlights from each chapter. This issue will cover Chapter One-Introduction. This chapter is divided into three sections. The first is "Why a Management Book for the Plastics Industry?" As suggested above, the plastics industry seems to be in difficult straits at the moment, particularly as globalization and a weak economy are causing cutbacks and bankruptcies. The industry is not yet mature but some segments in the industry are. Other segments are still in the specialty category and continue to grow profitably. Where does your company draw its managers from- are they engineers and scientists originally or are they sociology majors? Who is best equipped to organize and run your company and its departments?

The second section is titled "Management as a Career". This is aimed at the professional who has to decide whether or not to stay in the lab or plant as a senior engineer, or to start climbing the professional ladder. There are many differences between being an individual professional and a manager. This section analyzes how to plan your career, what to expect as you move up in the organization, what you will get out of it, spotting a bad boss, family owned and run companies- all the things you will need to know before making the commitment to become a manager.

The third section, "Six Things Management Must Do", tells what the irreducible responsibilities are for the top manager. If the CEO cannot carry out these tasks, his or her business will surely fail.

FEATURE ARTICLE- "CHINA – THE WORLD'S FACTORY"

This may seem like a shocking phrase but just in the last week I have received two e-mails soliciting me to consider moving my manufacturing to China. In the e-mail, they essentially indicated that they could handle prototyping through manufacturing. We don't do any manufacturing at Polymerplace but we recognized the ease by which someone can communicate and promote via e-mail these days.

There are enterprises starting up where the principal acts as a local presence to help move more domestic manufacturing to China.

In recent interview during our project work we have learned that some segments of the US Electronics components industry are down 60-70%. Some of this is reduced demand but a large part of it is that whole sectors of electronics component manufacturing have moved to China. On another project, we learned that entire medical assemblies like IV sets have jumped right over Mexico and are now manufactured in China. And in yet another project, some small appliance manufacturers like Sunbeam have all of their manufacturing done now in Asia.

It seems that Automotive, Construction and Packaging are the only manufacturing segments that haven't been largely affected. Recently in a Plastics News editorial, Hoop Roche of Erie Plastics emphasized the importance of understanding the role that China has and will play in our manufacturing future. His prognosis was not a good one.

We would like to put on a conference on of the Impact of China on Manufacturing in the US and what we can do about it. In order to gauge interest in such a program we would like feedback from you. E-mail us at info@polymerplace.com if you would attend a program like this. Also please let us know what format you would like to see it in web-based or in person. In addition if you are interested in participating in the program as a speaker please contact us at info@polymerplace.com.

POLYMER MARKETS

Packaging

[EVAL Company of America \(EVALCA\)](#) has released a [research paper](#) presented at the 2002 conference of the Technical Association of the Pulp and Paper Industry (TAPPI) on September 9th.

The paper, Effects of Polymer Structure on Gas Barrier of Ethylene Vinyl Alcohol (EVOH) and Considerations for Package Development, was presented by Robert B. Armstrong, manager of new business development at EVALCA.

EVOH resins are used in a wide variety of food and other applications where outstanding gas barrier properties, excellent resistance to odor and flavor permanence, and easy processability are desirable. EVALCA is a leading provider of EVOH resins.

The paper provides package designers, process engineers and machinery designers an overview of the effects that polymer structure, including crystalline properties, have on the gas barrier properties of EVOH. EVOH properties can be heavily influenced by processing and certain secondary converting steps. According to the paper, product development engineers and researchers can manipulate the converting process to maximize barrier properties of a given thickness of EVOH or meet a stringent barrier requirement.

"The useful shelf life of a foodstuff, for example, is one of the most critical factors in developing the appropriate package," said Armstrong. "To maximize shelf life of food, environmental factors such as temperature, water content and composition of atmospheric gases surrounding a product must be controlled. We wanted to give the industry some process-related tools with which to help manage those factors."

The paper reviews the effects of different processing techniques on the degree of polymer crystallinity. Armstrong also provides a practical method for initially determining the barrier thickness required for a given packaging application and shelf life.

The paper is available in PDF format online at http://www.evalca.com/new_dev.html. Or call 800.423.9762 for more information.

In addition EVAL Company of America (EVALCA) just published a new brochure on EVAL Active Barrier Polymers (ABP). This 4-page brochure contains detailed information on the benefits of EVAL ABP oxygen-absorbing technology.

This unique barrier resin represents a new generation in oxygen-absorbing technology. EVAL ABP combines outstanding CO₂ barrier properties of EVOH with active oxygen-absorbing properties that prevents oxygen ingress. Bottles with EVAL ABP retain more CO₂ and keep more oxygen out, so beverages stay fresher and taste better for months.

For more detailed information call 800.423.9762, or visit <http://www.evalca.com>.

Recycling update:

EU environment ministers have agreed on a regulation which will require countries to recycle between 55% and 80% of all packaging waste by December 2008. The only dissenters were the Netherlands and Belgium, which called for higher targets and for earlier deadlines.

There are various targets for each type of packaging. The target is 22.5% for plastics, 60% for paper and card, 60% for glass, 50% for metal, and 15% for wood. Greece, Ireland, and Portugal were granted an extension past 2008 because of individual circumstances. The ministers have asked the European Commission to prepare and submit a report on the project's implementation by June 2005.

In North America, plastic bottle recycling was essentially flat in 2001, according to a report from the American Plastics Council. The less-than-impressive numbers suggest that recycling of plastic bottles may be losing steam, posing a new set of challenges for the industry.

Transportation

HP Pelzer Automotive Systems is helping to create durable, sound-deadening belly pans for diesel models of DaimlerChrysler's PT Cruiser by selecting Compel® PP-GF30-0501 polypropylene long fiber-reinforced thermoplastic (LFRT) over fiberglass-reinforced sheet molding compound. Compel LFRT is produced by Ticona, the technical polymers business of Celanese AG. The belly pan sits beneath the engine and reduces drive-by noise to meet European regulations. It has a flat base and two sidepieces. The 3-mm-thick base is about three-feet square and extends from under the radiator to the firewall. An 8-inch-square, removable panel in the base allows for oil changes. The 8-by-16-inch sidewalls hold the base in place by attaching to the car and the base with screws. "The part needs to be flexible and must withstand impact from stones and other objects," says Pat Wundrach, program manager at HP Pelzer. "We first compression-molded the belly pan out of sheet molding compound (SMC), but road tests showed it was too brittle. After looking at a second fiberglass-based material, we turned to an impactmodified grade of Compel® LFRT reinforced with one-inch long glass fibers in a polypropylene matrix." "Compel LFRT gives us a higher use temperature than we achieved with SMC and a more consistent thickness throughout the part. Compel LFRT also provides a greater margin of safety during assembly and end use because it yields smoother edges." The Compel part has a notched Izod impact strength of 21 to 29 kJ/m² at temperatures from -30° to 100°C, as well as excellent resistance to gasoline, motor oil, antifreeze and other fluids commonly found in automotive environments. It passes a rigorous series of tests in order to meet DaimlerChrysler specifications, including MSDD529 Type B and PF-8500. Compel LFRT thermoplastics contain one-to-two-inch long fibers chemically coupled to a plastic matrix. The fibers are fully wetted in a patented pultrusion process that provides for high strength, stiffness and toughness, especially in thin walls. For example, the standard grade with 30 percent glass fibers in a PP matrix has 215 percent greater penetration energy and 350 percent greater fracture energy than 30 percent short glass fiber-reinforced PP. Compel thermoplastics flow well to provide consistent glass fiber concentration and create smooth surfaces. In processing, they are usually plasticized and extruded into a compression mold, rather than having to heat a mold and compress a cold blanket as with SMC.

For more info on the case study click here, -

http://www.polymerplace.com/Case_studies/December_featured_case_studies.htm

For information on Compel® long fiber-reinforced thermoplastics, contact: Doug

Mankoff, Ticona, 2600 North Opdyke Road, Auburn Hills, Michigan, 48326, USA. Phone: 1-734-878-9396. E-mail: doug.mankoff@ticona.com. Or visit: <http://www.ticona.com>.

For information on HP Pelzer in the U.S., contact: Ken Gagnon, HP Pelzer, 1175 Crooks Road, Troy, Michigan, 48084, USA. Phone: 1-248-280-2500. In Europe, contact: Bernd Butow at 49-(0)23-02-6-68-166. Or visit: <http://www.hppelzer.com>.

Electric cars for the US? DaimlerChrysler said it plans to build a four-seat version of its small Smart car in Brazil, paving the way for a possible launch of the brand in the U.S. Zap, the California maker of electric bikes and scooters, said it had made a \$10 million offer to buy Ford Motor Co.'s Think electric vehicle division, which the auto giant scrapped this year due to poor demand.

ELECTRONICS

Meritec, Inc. adopted Vectra® L130 liquid crystal polymer (LCP) to gain the flatness, rigidity and dimensional stability it needed in molding a custom, compression edge-card connector for a money changer system. Vectra LCP, which is made by Ticona, the technical polymers business of Celanese AG (NYSE: CZ; FSE: CZZ), also readily fills the 0.025- to 0.03-inch housing walls in this 4.2-inch-long component.

The compression mezzanine connector accommodates two printed circuit boards: one is a horizontal, fixed-interface card and the other is part of a removable control module that plugs in at 31.5°. This is an unusual configuration because the boards in most compression connectors lie parallel to one another. The contacts within the connector have a high compliance with a minimum working travel of 0.12 inch and can carry 2.5 amps of continuous current on some lines. The one-inch-high connector is injection molded in two sections, a housing and header. The header is 3.6 inches long and has a 0.13-by-0.16-inch cross section. It also has 14 short posts and 30 insert-molded metal contacts. Each contact is positioned between 0.03-inch-thick partitions in the housing that insulate the contacts from each other when the sections are heat staked together using the posts.

Vectra LCP has good heatstaking properties and forms a stronger bond than many other resins, such as glass-filled polybutylene terephthalate. In addition, the LCP is a good insulator and more than meets our solder reflow and thermal requirements.

Meritec uses a two-cavity, three-plate tool made of hardened tool steel to mold the part. Four 0.02-inch diameter pin gates along the top of the part ensure rapid and uniform filling and eliminate the possibility of warpage.

Cores are used at the base of the part to reduce wall thickness there to 0.03 inch. This ensures that the base cools rapidly and uniformly and is free of sinks and warpage. Meritec molds the connector in a 110-ton electric press at 590°F and an injection pressure of 1,600 psi. Part cycle time is 18 seconds.

For more info on the case study, click here

http://www.polymerplace.com/Case_studies/December_featured_case_studies.htm

A product property data sheet on Vectra® L130 LCP is available online at

<http://www.ticona-us.com/DataSheet/DataSheet.cfm?ID=693>.

Phone: 1-800-833-4882 or 1-908-522-7500. Or visit <http://www.ticona.com>.

MEDICAL DEVICE AND PACKAGING

Ticona's MT product line (eleven grades of Celcon® MT. acetal copolymer and four grades of Celanex® MT. polybutylene terephthalate (PBT) provides medical manufacturers with a range of FDA compliant engineering resins. Applications for these resins may include precision internal mechanical elements that meter and dose therapies in such drug delivery systems as dry powder inhalers, nebulizers, prefilled syringes, insulin injection pens, needle-less syringes and metered dose inhalers.

All Ticona MT grades undergo independent testing to ensure biocompatibility with skin, blood and tissue. They also comply with USP 23 Class IV and ISO 10993 certifications and are "animal free" materials. Ticona also maintains active Drug Master Files and Device Master Files for these grades with the U.S. Food and Drug Administration. The grades include unreinforced, injection molding and extrusion grades having various flow qualities, as well as grades modified for low friction, wear and noise. Low-wear grades are also available with polytetrafluoroethylene fillers.

Celcon® acetal MT. grades resist strong disinfectants and many other chemical media. They offer good toughness, rigidity, dimensional stability and resistance to alkalis and hydrolysis. They are often used in precise mechanical elements, such as aerosol valves, spring elements, screw threads, gear wheels, worm gears, and snap-fits and press-fits.

Celanex® PBT MT. grades offer excellent creep resistance, dimensional stability and processability. They have a relatively high continuous use temperature and good resistance to acids, greases and polar and non-polar solvents. These Celanex PBT grades are also suited for use in gamma-ray sterilization applications. They are excellent candidates for finely structured parts, such as those in drug delivery systems, as well as for housings and filter media and other nonwovens.

Ticona also offers FDA-compliant grades in other resin families, including Riteflex® polyester elastomer, Fortron® polyphenylene sulfide, Vectra® liquid crystal polymer and Topas® cyclic olefin copolymer.

Additional Information Available - For additional information on medical technology grades of Celcon® acetal copolymer, Celanex® PBT, and other Ticona engineering thermoplastics, contact: Ticona, 90 Morris Avenue, Summit, NJ 07901, USA. Phone: 1-800-833-4882 or 1-908-522-7500.

Or visit: <http://www.ticona.com> and <http://www.ticonafocus.com>.

PROCESS ADVANCEMENTS

Trexel, Inc. Woburn, MA / USA (<http://www.trexel.com>) has recently introduced the MuCell® Modular Upgrade (MMU) for Injection Molding Machines. There are many companies with plans to begin developing and producing MuCell Products who would like to upgrade existing machine capacity to minimize the initial investment. Trexel will now supply them with a new MuCell injection unit that can be installed directly on their current machine. The Upgrade makes it possible for nearly any electric or hydraulic injection molding machines to be easily converted to a the "MuCell" microcellular process technology at the customer's site. The upgrade unit meets all European and US safety requirements. The cost of the new MuCell injection units, including installation, begins at USD \$30,000 and varies depending on the screw size. As with factory built machines, the end user then installs a Trexel SCF System and MuCell Interface Kit.

For more information about Trexel, Inc., please contact Dan Szczurko, Vice President of Business Development, at (781) 932-0202, ext. 241, or by fax at (781) 932-3324, or by e-mail at d.szczurko@trexel.com, or visit the company Web site at www.trexel.com. In Europe, contact Dr. Hartmut Traut at +49-172-270-3028 or by email at h.traut@trexel.com.

The injection molding giant, [Nypro Corporation](#), has expanded its capabilities in plastics [decorating](#) by acquiring a 20% stake in custom molder Profile Plastics Inc., a specialist in three-dimensional in-mold decorating. This is an example of value added services injection molders are adding to their capabilities to enhance their value as a supplier to their customer base.

PRODUCT DESIGN AND DEVELOPMENT

Despite the many benefits of eCollaboration in the plastics industry marketplace, [the lack of a single universal software standard for design applications is the main obstacle to its long-term success](#), according to Karlheinz Schuster, Global eBusiness Director of Ticona, the technical polymers business of Celanese AG. Polymerplace strongly agrees. eCollaboration is the process of working together dynamically and electronically, be it across the Internet, a company LAN, or through wireless devices.

Mr. Schuster, who recently made his remarks in Philadelphia at an EyeforChem-sponsored conference on Collaborative Product Development, called for the adoption of a common application standard that can be used across all industries. Having a universal standard, he said, would lead to greater benefits for all participants of the product development process. He

indicated that the lack of such a standard has slowed the progress of e-collaboration in the plastics industry.

Mr. Schuster added that if the software standard could be as common as Microsoft Office, Lotus SmartSuite, SAP or Oracle, adoption by companies would be much easier. Mr. Schuster listed other problems inhibiting the adoption of a universal eCollaborative industry standard, including reluctance by people and companies to share proprietary information, as well as fundamental concerns about security issues.

Mr. Schuster said that in a competitive marketplace with limited capital for growth, research and development must provide a return. "We don't just make high-performance polymers," he said, "we create a seamless value chain between Ticona's knowledge base and a customer's products."

E.G. The company recently placed a gear design software package on its web site in order to make the initial design of plastic gears easier for its customers. By quickly estimating gear parameters, the design process is shortened, allowing designers to evaluate the feasibility of using the gears in an application. Mr. Schuster said that cooperation within the value chain, including original equipment manufacturers (OEMs) and systems suppliers, as well as processors and raw materials suppliers, is becoming tighter in product development processes. Product lifecycles are becoming shorter as technology improves at increasing rates, he said, noting that the design time of a car today is only half of what it was in the 1980s.

"...As a result the need for innovation is greater than ever" Mr. Schuster said another key to success in eCollaborative development is to align business processes so they will allow the integration and implementation of new design applications. "It all comes down to what we see as a 'culture of sharing,'" he said. "The more we share ideas when we interact outside our own companies, the more we will generate ideas that lead to new innovations."

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.

www.Polymerplace.com

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