

Thermoforming 2006

16th Annual Thermoforming Conference

September 17th – 20th, 2006

Nashville 2006



**“Creativity & Innovation
in Thermoforming”**



**NASHVILLE CONVENTION
CENTER**

RENAISSANCE HOTEL

NASHVILLE, TENNESSEE

For More Information:

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Conference Coordinator: Gwen Mathis
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CHECK OUT OUR WEBSITES AT:
<http://www.4spe.org/communities/divisions/d25.php>
www.thermoformingdivision.com



Martin Stephenson

“CREATIVITY & INNOVATION IN THERMOFORMING”

Nashville, Tennessee

September 17th – 20th, 2006



**“Creativity & Innovation
in Thermoforming”**

I would like to take this opportunity to invite you to the 16th Annual SPE Thermoforming Conference to be held in “Music City” – Nashville, Tennessee. Many of you have requested a Sunday evening start as opposed to the usual Saturday night. In response to this request, the 2006 Conference will kick off on Sunday evening, September 17th and go through Wednesday, September 20th, 2006 with a theme of “Creativity and Innovation in Thermoforming.” This will be our third time in the “Music City” and we are glad to be back in Nashville! The 1998 and 2002 conferences were well attended and highly rated and we know that the 2006 Conference will be no exception!

Mike Book, Technical Chair for 2006, and I are very excited about the direction of our program. We have already lined up speakers from North America and Europe to conduct both seminars and joint sessions. Many people in our industry are very creative and innovative and we are working to bring them to speak in Nashville. Topics we will cover will be competing in today’s hotly competitive global market, dealing with issues of cost vs. value, and the technical aspects of innovations in the Thermoforming Industry, i.e. material processing, tooling technology, and machinery. This is an excellent forum to launch your new products and conduct business with the leaders of the thermoforming industry.

The convention center in Nashville is a very dynamic location with friendly people to tailor to your needs. We think 2006 will be our largest show ever, so reserve your space now to exhibit. If your company has never sponsored before, we invite you to look at the value one gets by sponsoring. We do have a lottery to draw the sponsors due to the response we get each year. It is a great value! Even if you are not drawn as a sponsor, you will move down to the top of the list to select your exhibit space. Our SPE Thermoforming Board is grateful for the continuous support our sponsors and exhibitors give us each year. We could not do it without you!

Nashville is a very economical venue so that companies can bring CEOs, Sales/Marketing Executives, along with their Engineering and Operations people. This year’s Conference aims to have a particular orientation toward the men and women in the trenches (Engineering and Operations) of the Thermoforming Industry.

It is never too soon to reserve your space for 2006. Gwen Mathis, Conference Coordinator, is happy to help you. Please call her at 706.235.9298, (fax) 706.295.4275 or e-mail: gmathis224@aol.com.

The bands are warming up and awaiting your arrival to the Music City. I am ready and hope to see you in Nashville for a successful Conference in 2006! ■

FIRST CALL FOR EXHIBITORS

16th Annual Thermoforming Conference & Exhibition

September 17th - 20th, 2006

NASHVILLE CONVENTION CENTER

Nashville, Tennessee

Gwen Mathis, Conference Coordinator

“THERMOFORMING 2006: CREATIVITY & INNOVATION IN THERMOFORMING”

The 16th Annual Thermoforming Conference and Exhibition – “Thermoforming 2006: Creativity & Innovation in Thermoforming” – plans are beginning to take shape. This show will be a forum for the newest techniques, latest equipment, materials, auxiliary equipment and current industry news. As an Exhibitor, this event will enable you to showcase your products and services at the only show geared just to **THERMOFORMERS!** If your company sells to **THERMOFORMERS**, then this is the place you must be. This industry event is a prime opportunity for you to reach the decision makers in the field and create a brighter future for your business as well.

Full exhibits will be offered. Our machinery section continues to grow each year. If you are not participating in our machinery section, you are encouraged to do so. Each 10' x 10' booth is fully piped, draped, carpeted and a sign will be provided. As an extra value, one comp full registration is included with every booth sold. This gives your attendees access to all **Technical Sessions, Workshops, Special Events, Plant Tours and all meals. A great bargain at \$2,250.00.**

Where else can you make personal contact with more than 1,000 individuals who are directly involved with our industry. Your **SPONSORSHIP** or participation as an **EXHIBITOR** has demonstrated its potential to help your sales and it is contributing to the strength and success of our industry as a whole.

We urge you to join us at **THERMOFORMING 2006 in Nashville!** Reserve your space early to avoid disappointment. Booth assignments are made on a first come, first serve basis.

Should you have questions, please call (706) 235-9298, fax (706) 295-4276
or e-mail to gmathis224@aol.com.

EXHIBIT GUIDELINES

EXHIBITOR PACKAGE: \$2,250

10' x 10' Booth, Piped, Drape, Sign and Carpet provided.
Additional booth spaces: 2nd \$2,000, 3 or more \$1,750 each.

All Exhibit packages include the cost of (1) Full Conference registration which includes all meals to a company representative. One is given for each booth purchased. All additional attendees must be registered and pay full conference registration to staff your exhibit.

Exhibitors must arrange for any additional services or needs in advance with the designated decorating service. Exhibitor packet will be sent no later than June 1st, 2006.

Parts Competition and Plastics Van to be located in Exhibit area.

Ribbon Cutting Opening Exhibits on Sunday, September 17th, 2006 followed by Welcome Reception on Exhibit floor.

DEADLINE FOR CANCELLING EXHIBIT SPACE WITH REFUND IS JUNE 1st, 2006. No refunds available after June 1st, 2006.



2006 THERMOFORMING CONFERENCE

Creativity & Innovation in Thermoforming

September 17th - 20th, 2006
Nashville, Tennessee



EXHIBITOR REGISTRATION FORM

(Please complete and return with your check today.)

_____ YES, we want to be a 2006 Thermoforming Exhibitor. Enclosed is our check for \$2,250. Additional 10' x 10' booths as needed will be 2nd \$2,000, 3 or more \$1,750 each. We will require _____ Booths. We understand that space assignments will be assigned after Sponsors have been selected. Cancellations will be accepted up to June 1st, 2006.

COMPANY NAME: _____

CONTACT: _____ SIGNATURE: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

PHONE: _____ FAX: _____ E-MAIL: _____

To properly plan exhibit or badge needs, please list everyone who will be attending. For each exhibit space purchased, a complimentary registration is included (\$395 value). All other persons must be registered for the full conference which includes all meals.

Name: _____ Name: _____

Name: _____ Name: _____

MAKE CHECKS PAYABLE TO: 2006 SPE THERMOFORMING CONFERENCE

MAIL TO: GWEN MATHIS, CONFERENCE COORDINATOR
SPE THERMOFORMING DIVISION
P. O. BOX 471, 124 AVENUE D, SE
LINDALE, GEORGIA 30147-0471
FAX (706) 295-4276

2006 Thermoforming Conference EXHIBITORS

(Signed Up at Press Time)

“Creativity & Innovation in Thermoforming”

* DENOTES 2006 SPONSORS

If your company name is not listed here, please get your form in to reserve your space. Contact Gwen Mathis at 706.235.9298.

COMPANY

- Airtech Vacuum, Inc.
- * Alcoa Kama Corporation
- * Allen Extruders
- Altuglas International, Div. of Arkema
- * American Tool & Engineering, Inc.
- Aaron Equipment Company
- * Aristech Acrylics LLC
- AVT / NESSCO
- * Brown Machine LLC
- Carolina Materials
- * Castek Aluminum
- CMT Materials
- Compuplast International, Inc.
- Copper and Brass Sales
- Davis – Standard LLC
- Diversified Machine Systems, Inc.
- Ensinger/Penn Fibre
- * ExTech Plastics
- FACTS, Inc.
- Futurex Industries
- * Geiss Thermoforming USA LLC
- GN Plastics Company Ltd.
- Irwin Research & Development
- JRM International
- * Kiefel Technologies, Inc.
- Kleerdex Company LLC
- Klockner Pentaplast
- * Land Instruments International
- L.L. Brown, Inc.
- * Maac Machinery Company
- Modern Machinery

COMPANY

- Naugahyde
- * New Hampshire Plastics
- ODC Tooling & Molds
- * Onsrud Cutter
- Plastics Concepts & Innovations, LLC
- Plastimach Corporation
- * Portage Casting & Mold, Inc.
- * Premier Material Concepts
- * Primex Plastics Corporation
- * PTi (Processing Technologies, Inc.)
- Producto Company
- Quintax CNC Routers
- * Raytek Corporation
- * Robotic Production Technology
- RTP Company
- * Sencorp, Inc.
- * Senoplast USA
- Society of Plastics Engineers
- Solar Products
- Solvay Engineered Polymers
- * Spartech Plastics
- Stiles Machinery, Inc.
- Stopol, Inc.
- Thermoformer Parts Suppliers
- * Thermwood Corporation
- * Tooling Technology LLC
- * Total Industries International
- Trelleborg (Emerson & Cuming)
- Vytech Industries
- WECO International
- Zed Industries

2006 THERMOFORMING CONFERENCE

Creativity & Innovation in Thermoforming Technical Program Announced Nashville Convention Center

**MONDAY,
SEPTEMBER 18th, 2006**

***“Plant Floor Innovations I: Joint Session” -
Moderator: Vin McElhone, Stand-Up
Plastics - Convention Center: Room 204-
205***

***7:30 - 8:30 am - Breakfast - Renaissance
Hotel - Center Ballroom***

***8:30 - 9:00 am - Art Buckel, McConnell
Company, Inc., “Survival of the Strongest?”***

***9:00 - 9:45 a.m. - Frank Wilson, Tadhg
Whooley, and Marshall McGuffin, Weco
International and Ceramicx Ireland,
“Heaters: How, Where, When, Cost.”***

Abstract: The process of choosing a heater is difficult due to the complexity of the systems and the variety of proposals made by OEM's. The paper presents an overview and evaluation of the Performance issues associated with the three types of radiant heat. The selection of the correct heater performance as a measurement of absorption, transmission and reflection will be described. The effect of the three types of radiant heating on a single target substance will be discussed. Cost and energy efficiency is a huge issue with present costs and will be reviewed in relation to the three peak wavelengths that are possible vs. the type of heater that produces them. The paper will favour no single radiant source; it will describe the best radiant source according to the values required by the target material.



Frank Wilson has over 25 years experience working in the plastics processing industry. Frank established Ceramicx Ireland Ltd. in 1992 after Infrared International for whom he was the MD closed their Irish operation. He has developed the company from start up to a well-established dynamic and innovative company servicing 65 countries with a well-trained, motivated work force. He holds an international patent for a thermocouple designed for use in ceramic heaters and was recipient of the Ernst & Young Enterprise Award from the Irish Department of Enterprise and Employment in 1995. Ceramicx is the only company where all three types of radiant heaters are produced on site Long wave, Medium wave and Short wave. Ceramicx Ireland also received the company of the month award for Ireland in April 2004 and has been involved in an innovative SME

(Small & Medium Enterprises) partnership program known as Eucopet, which received European recognition. Applications engineering and the development of infrared solutions and concepts for customers is and will remain the primary focus for Frank and the Ceramicx Ireland team. The conference address is split into 3 sections being presented by Frank Wilson (MD, Ceramicx Ireland), Tadhg Whooley (Technical Manager, Ceramicx Ireland) and Marshall McGuffin (Vice-President, Weco Products).

9:45 - 10:00 am - Break - Foyer 204 - 205

***10:00 - 10:30 am - Jay Waddell, Managing
Partner, Plastics Concepts and Innovations
LLC, “Thermoforming: Where Are We?
Where Are We Going? Is Our Future
Global?”***

Abstract: For centuries men sought to prove the world was round but now, because of technology, the world grows flatter. All industries, but particularly the thermoforming industry, have to be able to adapt to the fact that we are dealing in a global arena. We have to compete in changing environments while incorporating new technologies. Thermoformers must look to alternative means to grow, adapt, and cut costs while focusing on their core strengths and talents. This presentation, in two parts, attempts to give an overview of the current status of both roll-fed and cut sheet thermoforming as we know it. The first part will emphasize the importance of process controls and current technology. The second part of the presentation will be directed at future trends for the industry and how to move towards “world-class” capability.



James M. “Jay” Waddell – Mr. Waddell is a Plastic Concepts & Innovations, LLC founding partner and key management principal, bringing the skills from his 23 years of military training and 16 years of manufacturing and management at Curd Enterprises dba Multiplastics to bear. In the plastics industry he is considered to be an expert in materials and manufacturing techniques as well as setting up turn-key operations. Mr. Waddell is experienced in developing products for industries as diverse as circuit board handling packages to critical-care patient life-support systems. He is considered an expert in materials and manufacturing techniques having developed processes for fabrication and bonding of dissimilar materials and having extensive experience in twin-sheet forming of filled olefins. While at Multiplastics he led the company to become the first ISO 9001 certified heavy-gauge thermoformer in the United States. As a compliment to his consulting efforts he shares his expertise by teaching advanced thermoforming techniques in hands-on semi-

nar-format "schools" at various locations around the country and in Europe. Mr. Waddell earned his BA at the Citadel and continued his graduate studies in business there also. He is a Senior Member of Society of Plastic Engineers (SPE) and has been a member of the national Board of Directors for the Thermoforming Division of the SPE for the past nineteen years.

10:30 - 11:00 - Jim Caliguri, President, Design & Software International, Inc., "New and Useful Innovations in CAD/CAM Software."



Jim Caliguri has 15 years experience as Journeyman Patternmaker, 16 years experience as a CAD/CAM Solution Provider. President of Design & Software Int'l, Inc. Current responsibilities include Sales, Technical Support and Training for CAD/CAM software. Development of custom Post Processors and custom software for automation. Providing service and support for over 400 customers in 24 states and Canada.

8:00 - 11:00 am - Mini-Seminar in Advanced Topics in Thermoforming - 3 Hours (Limited to 25 attendees) - Dr. James Throne, Sherwood Technologies, Inc., Convention Center Room 201

This 3-hour advanced seminar is designed for the technologist who needs to know how the major engineering aspects such as heat transfer, rheology, interfacial mechanics, and fracture mechanics are applied to thermoforming.

Attendees should consider this as a graduate-level seminar that assumes a thorough undergraduate working knowledge of engineering concepts and mathematics through calculus. If you do not have this background, do not attend.

Please note that attendance is restricted to 25. A waiting list will be available for late registrants.

There will be no handout. Attendees may download the instructor's PPT slides via their personal memory sticks at the end of the seminar.

Not all topics given in the following list will be covered, additional topics may be added, and those that will be covered will be at the discretion of the instructor.

- The Technology of Sheet Heating
 - Understanding the Fundamentals Behind the Energy Dome
 - Radiant Transparency
 - Heating Sagging Sheet
- Mechanics of Sheet Stretching
 - Elastic Modulus and the Forming Window
 - Catenary and Elliptical Catenoid Models for Sag
 - K-BKZ Model – What and Why?
 - Melt Strain Hardening and the Stress Growth Function
 - Finite Element Analysis and Other Methods of Determining Wall Thickness
- Mechanics of Plug Assist
 - Plane Strain vs. Biaxial Strain
 - Plug-Sheet Interfacial Concerns
- Trimming as Fracture Mechanics

11:00 - 11:30 am - Thermoforming Division Announces Dale Henry as Plenary Speaker - Renaissance Hotel - East Center Ballroom



Dale Henry has served in many different roles and brings a wide range of experience to the forum. After earning a B.S. and M.S. in Secondary Education, he gained a Ph.D. with a concentration in Adult and Continuing Education. He has served as Associate Dean of Professional and Graduate Studies for Tennessee's oldest college, Tusculum College in Greenville, TN. He is the founder and president of Your Best Unlimited, Inc., a Tennessee-based training company.

Years of consulting and speaking in seminars and in-service trainings throughout the country led him to the world of public speaking and professional development. He now speaks to and trains over 100,000 professionals and executives each year. Dr. Henry's many experiences in the field of business and education make him a natural when it comes to lively and humorous presentations. Dale believes in the importance of laughter, yet his presentations always deliver a strong message packed with useful tools. A native of East Tennessee and the foothills of the Smoky Mountains, he draws heavily on his storytelling background to hold the audience in the palm of his hand. He has been described as one who presents topics much in the manner of Zig Ziglar, but does it more like Jeff Foxworthy to make them especially entertaining. In Dr. Henry's program, "The Drive Attitude," he explores the necessary components that make up our ability to deliver exemplary customer service. Author, speaker, educator, business owner, and entrepreneur – Dale understands the importance of delivering customer service that creates new business and keeps valued customers coming back. Through humorous anecdotes and stories, Dr. Henry delivers timely lessons in servant-hood while allowing the audience to laugh and learn in a contagious environment. This entertaining process is what Dr. Henry calls "edu-ainment." During this program, attendees will learn how to:

- Be Determined and Dedicated in offering service that builds long-term customer relationships
- Be Responsive instead of Reactive to customer needs
- Be Innovative in service delivery alternatives
- Create New Vision and directions through positive prospecting
- Effectively deal with and dazzle the customer with individual service delivery

11:30 am - 1:00 pm - Lunch and Business Meeting

“Business Topics in the Thermoforming Industry” - Moderator: Lola Carere, Account Executive, Thermpro, Inc. - Convention Center: Room 204-205

1:30 - 2:15 pm - Rich Freeman, President, Freetech Plastics, Inc., “Fire, Flood, Famine, Locusts, Whatever. Are You Ready If Disaster Strikes?”

Abstract: Disaster recovery has become a major concern in the aftermath of Katrina. Will your business be able to bounce back, retain its customers and rebuild all at the same time. Learn how one company came back from a total burn out, and how you can be prepared if a major loss event strikes your company. Also since most insurance policies are written to protect the insurance company in the event of a loss and not necessarily the insured learn how to make sure your insurance policies are written to protect you and not the carrier. Learn from Private adjusting industry veteran Randy Goodman how to protect your self from the common pitfalls buried in most insurance policies.



Richard Freeman has been involved in Thermoforming for over 35 years, the last 28 with Freetech Plastics in Fremont, California. His experience providing Pressure Formed products in the close tolerance, technically demanding, and highly competitive, environment of Silicon Valley has led to a number of innovations. It also gives him a unique perspective on Production, Quality, Marketing, and Design Issues. Rich's Articles, Compan and Products have been featured in Plastics Engineering, Appliance Manufacturer, Innovation, Machine Design, Plastic News, Mechanical Engineering, and International Designer to name a few. He has spoken out about many issues important to Thermoformers over the years. Considered one of the founders of the West Coast Style of Thermoforming, he's been a regular feature of the SPE Thermoforming Division conference programs both in the U.S. and in Europe as well as other SPE and Industrial Design forums. His continual promotional efforts in behalf of the industry have benefited not just his own company but Thermoformers as a whole. Freetech Products has won numerous industry awards including the 1996, 1999, and 2004 People's Choice Award, the Thermoforming Industry's Top Prize. Freetech has provided the Pressure Formed parts for 7 ID Magazine award winners and has worked hard to make the design community aware of Thermoforming possibilities. Rich has been an active member of the SPE Thermoforming Division Board of Directors since 1991. He is responsible for the Thermoforming Division's web page and Machinery Grant program.

2:15 - 3:00 pm - Randy Goodman, Managing Partner, The Goodman-Gable-Gould Company, “Common Insurance Pitfalls and How to Avoid Them.”

Abstract: Air travel. Telephone and video conferencing. Overnight delivery. Fax machines. E-mail. The Internet. Today, there are few things companies whose operations encompass multiple locations won't do to stay connected. Much attention is paid to items that support and underscore the affiliation and interdependence of each site on the other – and ultimately on the whole. Unfortunately, that same priority is not always given the firm's insurance program, especially when it comes to understanding and addressing the coverage that recognizes that interdependency – and how a loss at one facility can have a dramatic, unforeseen impact on the overall income of the business, even though site seems to be properly insured. That coverage is blanket business income insurance. Veteran public adjuster Randy Goodman takes an informative look at the matter, using examples to point out how and why this coverage is too frequently overlooked by even experienced insurance brokers, buyers and risk managers – and how it was a lifesaver to one business that had the right program in place. He also includes some sound, basic information and suggestions on business income insurance and helps project the levels of business income insurance that your firm – or your client's firm – might need. More than interesting, this seminar is a must for anyone involved in developing or maintaining an insurance program aimed at adequately protecting an organizations with multiple operating sites.



Randolph H. Goodman, SPPA (Randy) has been engaged in the profession of public insurance adjusting for 37 years. He has developed extensive experience and expertise in the adjustment of commercial and mercantile losses and insurance coverage that should be in place to properly protect a business against potential loss. Randy's expertise includes adjustment of both property losses and related business interruption/extra expense claims. Mr. Goodman began his career at The Goodman-Gable-Gould Company/ Adjusters International in Baltimore in 1970 and from 1979 through 2002 practice public adjusting in California, where he was managing partner of the largest public adjusting firm on the West Coast. Mr. Goodman returned to The Goodman-Gable-Gould Company in late 2002 and is presently managing partner of the Baltimore office. Over the years Mr. Goodman has represented companies that have experienced large commercial losses. His clients have included The Pillsbury Company (for earthquake damage sustained during the Loma Prieta earthquake), Southern Pacific Railroad (for flood losses resulting from flooding in the Midwest in 1993), The Department of the Interior, National Park Service (for flood damage at Yosemite National Park), New Piper Aircraft (for damage sustained during the hurricane season of 2004), PerkinElmer (for damages resulting from a fire in Boston in 2005), Jazz @ Lincoln Center (fire damages sustained during the course of construction at a new facility in the Time Warner building in New York City). Mr. Goodman served as President of the National Association of Public Insurance Adjusters (NAPIA) in 1998/1999. He earned his designation as a Senior Professional Public Adjuster (SPPA) in 1986. Mr. Goodman has been an education presenter at the RIMS convention and has served on numerous educational panels for many years.

3:00 - 3:15 pm - Break - Foyer 204-205

3:15 - 3:45 pm - Tim Shestek, Director, State and Local Public Affairs, American Chemistry Council, "State Legislative/Regulatory Issues Impacting the Plastics Industry."



Tim Shestek is Director, State and Local Public Affairs for the American Chemistry Council, the major trade association representing the U.S. chemical industry. ACC's membership also includes major plastic resin producers and as well as a division representing plastic container manufacturers. In this capacity, he is responsible for developing and implementing ACC's lobbying and issue management programs in 15 western states; analyzing legislation; advocating policy before legislative bodies and regulatory agencies; developing the industry's legislative and political grassroots programs; serving as media spokesperson and creating and managing public service campaigns, events, and awareness programs. Prior to joining ACC, Tim began his government and public affairs career in 1994 with the American Plastics Council (APC) and also served as Legislative Assistant to California Assemblymember Paula L. Boland (R-Granada Hills) and California State Senator Frank Hill (R-Whittier). Tim holds a bachelor's degree in Government from California State University, Sacramento and graduated from the University of California, Davis' specialized program in public relations. He resides in Folsom with his wife Michelle and their 6-year old son Andrew.

3:45 - 4:15 pm - Phil Karig, Vice President of Purchasing and Supply Chain Management, Spartech Corp., "Global View of the Resin Market."



Phil Karig is Vice President of Purchasing and Supply Chain Management for Spartech Corporation, a \$ 1.4 billion producer of extruded plastic sheet and rollstock, compounds and color concentrates and engineered plastic products. Spartech has over 40 production locations in North America and Europe and a recently established purchasing office in Shanghai, China. Prior to joining Spartech in 2000, Mr. Karig held various purchasing, logistics and materials management positions for twelve years with Uniroyal Technology Corporation, a producer of extruded sheet, PVC-Nitrile foams, adhesives and vinyl coated fabrics. Prior to working directly in the plastics processing industry, Mr. Karig was with Leaseway Transportation in strategic planning and logistics capacities and was responsible for developing a nationwide network of bulk rail transfer facilities that specialized in transferring, shipping and storing commodity plastic resins. Mr. Karig holds a Bachelor's degree from the State University of New York and a Master's in Planning, with a transportation specialization, from Harvard University. He speaks German and is currently studying Chinese.

4:15 - 4:45 pm - Bowen Smith, Brand Specialist - Business Development Director, North Star Marketing, Inc., "Brand Now."

6:00 - 7:00 pm - Reception - Renaissance Grand Ballroom Foyer

7:00 - 9:00 pm - THERMOFORMER OF THE YEAR, SPONSOR APPRECIATION DINNER - Renaissance Hotel - Grand Ballroom

**TUESDAY,
SEPTEMBER 19th, 2006**

"Plant Floor Innovations II: Roll-Fed" - Moderator: Jay Waddell, Managing Partner, Plastics Concepts and Innovations, LLC, Convention Center: Room 206

7:30 - 8:30 am - Breakfast - Renaissance Hotel West Ballroom

8:30 - 9:00 am - Dr. Phil Jacoby, Vice President of Technology, Mayzo Corporation, Norcross, GA, "Improving the Thermoformability of Polypropylene by Modification of the Crystal Phase."

Abstract: We have developed a unique masterbatch that can be used to produce extruded polypropylene sheet containing high levels of beta phase crystallinity. This sheet exhibits a much broader thermoforming process window compared to that of conventional polypropylene sheet, and can be processed on wide-web equipment without excessive sagging to give parts with very uniform material distribution. The sidewall density of the final part is also lowered which results in thicker sidewalls for a given part weight, and an overall white appearance without the addition of pigments such as TiO₂. The thicker and more uniform sidewalls allow the part to be down-weighted by at least 15% while still maintaining excellent rigidity. The final parts also exhibit improved high temperature performance relative to that of conventional polypropylene. A final economic benefit of this technology is the ability to run at faster cycle rates leading to productivity improvements of at least 20%.



Phil Jacoby received a B.S. degree in Chemistry from the City College of New York, and a Ph.D. in Physical Chemistry from the University of Wisconsin in Madison, Wisconsin. In 1975 he joined the Amoco Chemical Company where he held various positions in the Polymer Physics and Product Development groups. In early 2002 Dr. Jacoby retired from the Polypropylene Business unit of BP Amoco where he was a Senior Research Associate in Product Development. He holds 12 US patents (and 5 pending patents) covering various polypropylene products

including microporous films, resins with enhanced thermoformability and foamability, high crystallinity glass filled resins, and wood-plastic composites. Several of these inventions make use of beta nucleation. Dr. Jacoby joined Mayzo Corporation in October 2002, as Vice President of Technology. Mayzo provides additives and concentrates including antioxidants, U.V. absorbers and stabilizers, optical brighteners, nucleating agents, and release agents to manufacturers of polymer resins, adhesives, rubber, ink, coatings, caulks, and sealants, and to other allied products. Mayzo also offers proprietary Polyolefin Performance Modifiers which include beta nucleant masterbatches and antifog masterbatches. Dr. Jacoby is President of the Southern Section of the Society of Plastics Engineers (SPE), and he is a former board member of the Thermoforming Division of the SPE.

9:00 - 9:30 am - Hubert Kittelmann, President of Marbach Tool & Equipment/ USA, Marbach, "Thermoforming Trends in Europe."

Abstract: Faster - Lighter - Better – Options and limits in making the thermoforming process more efficient.

- The presentation will give an overview of methods used in Europe.
- High-Efficiency-Tooling, 3rd Generation Machines, Air-Technology, Light-Weight-Tools and Total-Tool-Control are only a few of the benefits to achieve better results.
- The presentation will discuss the experiences of European users.

Decorating & Multi-Functional Packaging - What's new in Europe.

- The presentation will focus on new features in thermoforming.
- IML decoration in thermoforming as finally broken the ice. On the functional side, the spectrum reaches from RFID implementation, tamper evident solutions to multi-part assemblies.



Hubert Kittelmann is Vice President of Marbach Werkzeugbau/Germany and President of Marbach Tool & Equipment/ USA. He has been in the packaging industry for over 10 years and combines the knowledge of both sides of his company in the field of SR-Thermoforming (combined Steel-Rule-Die-Cutting in the thermoform process). Hubert has a Masters Degree in Business from the University of Applied Sciences/Heilbronn, Germany. He has gained extensive experience from both Marbach Werkzeugbau GmbH in Heilbronn and Robert Bosch GmbH in Stuttgart.

9:30 - 10:00 am - Sean Snodgrass, Segment Manager of Packaging, Branson Ultrasonics Corporation, "Assembly Techniques for Thermoformed Packaging."

10:00 - 10:15 am - Break - Foyer 26

10:15 - 10:45 am - Roman Truckenmueller, Technische Ingenieur, Forschungszentrum Karlsruhe, Germany, "Microthermoforming With Life Science Applications."

10:45 - 11:15 am - Noel Tessier, CMT Materials/Tom Gallagher, Sunoco Chemical, "Measuring Plug to Sheet Interactions During the Thermoforming Process."

Abstract: Over the past several years, there has been much research into the measurement of the sheet elongation characteristics and plug material properties at thermoforming conditions. These measurements have improved the understanding of plug assist thermoforming but have not resulted in parameters that closely predict performance. One possible explanation for this discrepancy is that the bulk properties of the materials and the measuring techniques for the characterizations are not representative of the interface interactions between plug assist and sheet. Characterization of the interface interactions for heat transfer and "friction" should lead to improved understanding and correlation between material properties and thermoforming performance. This presentation will report on the measurement of the interfacial interaction between plug assist and sheet during the thermoforming process. The method for doing this will be a combination of measuring actual process parameters including temperature measurements from within the tool during thermoforming, a Design of Experiments statistical technique for determining and setting variable conditions for analysis, and parametric analysis from T-SIM thermoforming simulation software for use in isolating the effects of heat transfer and "friction."



Noel J. Tessier is a Materials Engineer and has over 25 years of experience in the Research and Development of composite materials. He is one of the founding directors of CMT Materials, Inc (1998), the first company to be dedicated to thermoform tooling materials. He holds a Master of Science in Plastics Engineering from the University of Lowell and a Bachelor of Science in Chemical Engineering from Northeastern University. Mr. Tessier is responsible for the development of new materials for plug assist thermoforming at CMT Materials, Inc. Prior to CMT, he was employed with Quadrax Corporation having responsibilities for production, development and quality improvement for all thermoplastic matrix continuous fiber tape products. He has extensive experience in composite materials including syntactic foams, fiber reinforced materials and highly filled plastics having held research and development positions at WR Grace and the Army Materials & Mechanics Research Center.



Thomas K. Gallagher began in the Quality Control Lab at USS Chemicals in 1979 as an analyst for industrial hygiene and environmental testing. Worked as QC chemist in phthalic anhydride, maleic anhydride, plasticizers and unsaturated polyester resin production. After brief stint in electrochemical sensor production for National Draeger, Inc., became Group Leader of QC lab in charge of Plasticizers and Dibasic Acids. Promoted to Manager,

Technical Service and Product Development at Aristech Chemicals in charge of intermediate chemicals and plasticizers for PVC. Currently holds the position of Product Development Engineer in the Polypropylene Division of Sunoco Chemicals servicing the rigid packaging market including thermoforming, thin wall injection molding and blow molding. Holds a BS in Chemistry/Business Minor from Clarion State College, BS in Computer Science from Point Park College, MS in Chemistry from Duquesne University.

11:15 - 11:45 am - Bill Hiltz, Technical Sales, Ontarior Die Corp., "Match Metal Trim for Thin Gauge Applications."

Abstract: This presentation will cover all aspects of matched metal trimming of thin gauge plastics and the construction of the related tooling. Topics covered will include design, tool set-up, die set construction, punch and die materials, shear angles, part and scrap handling etc. Specific applications to be discussed will include vertical vs horizontal presses, PP, PET, CPET, PLA, OPS, HIPS and PVC materials, side wall trimming of berry baskets, progressive trim, multi-level trim etc.



As a certified General Machinist, **Bill Hiltz** spent his first 10 years in the industry manufacturing tight tolerance Aerospace parts. In 1988, Bill began his career with ODC Tooling and Molds. As a skilled tool builder, Bill was involved in all aspects of thermoforming tooling manufacturing. For the past 12 years, in the role of Technical Sales, he has combined both his hands-on experience and thermoforming knowledge to provide ODC's global packaging customers with forming and trimming solutions. He currently resides in a small town about 1 hour west of Toronto, Ontario, Canada, with his wife and two children.

"Plant Floor Innovations II: Cut-Sheet" - Moderator: Robert Porsche, President, General Plastics, Inc., Convention Center: Room 204-205

8:30 - 9:00 am - Jerome Martinache, ITM - Application Group Leader, Philips Special Lighting - Infrared Lamps, "Development in Infrared Lamp Technology for Thermoforming."

Abstract: In thermoforming process, heating stands for a critical and key step to reach the optimal temperature distribution over the surface and across the thickness of the plastic sheet. This is especially true for semi-crystalline polymers like PP, with very narrow forming temperature windows, well-known as a discriminating material for thermoforming. Moreover, the temperature distribution directly influences the thickness distribution, and therefore the quality, of the eventual thermoformed part. Comparative heating experiments between short-wave infrared halogen lamps and long-wave infrared ceramic heaters were carried out on two different colors (black and white) and thickness (1 and 3 mm) of PP and PS sheets. A pilot testing equipment was specially designed, applying

the heat on one side of the plastic sheets and measuring the temperature on the back surface with an infrared camera, while monitoring the front side temperature with a pyrometer. In order to compare the influence of the two respective emission spectra (short-wave and long-wave respectively), both halogen lamps and ceramic heaters were brought to their nominal output before each experiment (continuous process). Spectrometric measurements exhibited a stronger mean reflectivity of polymers in that particular short-wave infrared bandwidth (0.8 – 1.4 μm), up to 50-60% for white grades. These results confirmed the specific color sensitivity of halogen lamps, which feature the significant part of their infrared emission spectrum in the short-wave region. However, this implies a much gentler heating process for halogen lamps with optimized temperature gradients across the sheets (i.e. minimized temperature difference between front and back sides). It also permits to reach the forming temperature window on the back side of the 3 mm white plastic sheet, which was not achievable at all with ceramic heaters. Nevertheless, heating times are consequently increased with short-wave infrared halogen lamps. Therefore, another type of halogen lamp, designed to feature an infrared spectrum shifted to the medium and long-wave bandwidths, was investigated. Comparative heating performances with short-wave halogen and ceramic heaters, were measured in the case of PP: heating times, temperature distributions, and color sensitivity are assessed and discussed in this paper.



Jerome D. Martinache – R&D Engineer - Application Group Leader - Philips Lighting - Infrared Lamps. Chemical Engineer - graduated in 1999 from the ENSIACET in Toulouse, France. 2001-2005: Philips - Lighting division: steering committee PhD research on curing; steering committee PhD research on thermoforming. 2000-2001: Atofina (now Arkema) at the Kenan CO₂ Center, NC State University, Raleigh, NC. Publications-Patents: *Processing of Polyamide II with Supercritical Carbon Dioxide, Heating System Comprising at least Two Different Radiations, Lamp for Heating.*

9:00 - 9:30 am - Scott Crandall, Director of Quality and Advanced Technology, McClarin Plastics Inc., "Technology, How Much is Right For You?"

Abstract: How much Technology do you have and how much do you need? Does Technology have to cost a lot of money? If your goal is to control your process do you need to purchase expensive equipment or can you retrofit improvements onto your existing equipment? Does testing require that you outfit a laboratory, or are there methods and equipment you can use that will fit your budget? I'll offer tips and opinions I've gained from over 25 years in Thermoforming.



Scott Crandall is the Director of Quality and Advanced Technology at McClarin Plastics. A Journeyman Tool and Die-maker by trade and an Alumna of the State University of New York, his career has been spent in Quality, Engineering and Technology within the Plastics Industry. He is a member of the

Advanced Manufacturing consortium, a group that selects and implements training programs for companies within the region using State and Federal funding. Custom molded large-part cut sheet cosmetic thermoforming is his specialty. Having spent over 25 years in a custom molding environment has trained him to work on multiple diverse projects and implement quick and effective technological and quality-based solutions. Scott has managed projects for the Passenger Rail and Aircraft industries, both of which require numerous tests and inspections to meet product certification. The past several years have been dedicated to McClarin Plastics' ISO certification effort, factory expansions and equipment upgrades. While training management to successfully operate in an ISO/ Lean Manufacturing environment, he implemented procedures that improved the company's quality results. Scott specified, purchased and installed one of the larger Thermoforming workcells in operation in this country. This workcell has had a stellar quality and production record since operation began, and has had a dramatic effect on McClarin's production capacity. During this time period McClarin Plastics received the 2005 Manufacturer of the Year award from the South Central Pennsylvania Manufacturers association. He lives in York Pennsylvania with his wife Lisa and fiddles with his violin collection.

9:30 - 10:00 am - Eric Short, Business Manager, Solvay Engineered Polymers, "Recyclable Olefin Foam Structural Systems for Thermoforming."

Abstract: This presentation will highlight the composition of an all-olefin, melt-bonded foam sheet system that is designed for demanding interior and exterior soft-touch applications. The unique focus of this technology is the high degree of recycled reclaim back into the rigid TPO substrate, greatly improving the overall economics and making it truly viable for thick-sheet thermoforming. This technology marries three distinct layers (low gloss, high coefficient of friction TPE top layer, resilient cross-linked PP foam, and a low CLTE, high stiffness, low-temperature impact TPO substrate) into a truly soft-feel, structural, recyclable system.



Eric Short is the Global Manager of the Thermoforming Business Unit at Solvay Engineered Polymers, Inc. The company is the leading supplier of custom-designed thermoplastic polyolefin materials to the North American automotive industry. Short began his association with the company while he was an undergraduate at GMI in 1991. After receiving his degree, Short joined the company, then known as D&S Plastics International. Short has had responsibilities for the marketing and development for most of the company's portfolio of engineered polyolefins. When the extrusion and thermoforming products were organized as a specific initiative in 1996, Short began to concentrate on these specialized materials. He has headed the Business Unit since its inception in 2002. In addition to his bachelor's degree in mechanical engineering, Short holds an MBA from Oakland University.

10:00 - 10:15 am - Break - Foyer 204-205

10:15 - 10:45 am - Mike Alongi, Sales Manager, MAAC Machinery Corp., "Innovations in Cut Sheet Machinery."



Michael Alongi: Michael is the Sales Manager for MAAC Machinery, contracting machinery sales for MAAC and Comet thermoforming machines as well as Royce Routers. His function includes quoting and specifying machinery to fit the customer's specific application. In this role Michael oversees all sales functions worldwide, marketing and advertising for MAAC. Michael has twelve published articles and is instrumental in our matching funds college machinery program. Michael received his Bachelor of Science degree in Marketing from Illinois State University. In 1997, Michael completed his internship at MAAC Machinery working with Robert Koster, Bill Worley and Bruce Smith. Growing up in the family business gave Michael endless opportunities to work in the plant during summers throughout high school and College. This has been a crucial part of Michael's career as it has enabled him to thoroughly learn the industry from the ground up.

10:45 - 11:15 am - Jeff Bailey, Vice President of Operations, Soliant LLC, "Thermoforming Using Paintfilms and Bright Films."

Abstract: Various issues associated with traditional painting and chrome plating have led to increased use of alternative methods for decorating plastic parts. Thermoforming plastic sheet that has been decorated with paintfilm or bright film is one alternative, and offers many advantages that are attractive to manufacturers and end-use customers. This paper will discuss the use of these films in thermoforming operations to make parts for decorative applications. The focus of the paper will be Soliant's Fluorex' Paintfilms and Bright films.



Jeffrey J. Bailey is currently Vice President of Operations for Soliant LLC, based in Lancaster, SC. Mr. Bailey has 16 years of manufacturing experience in various engineering, production, and plant management positions. Mr. Bailey holds a Bachelor of Science degree in Mechanical Engineering from the University of Pittsburgh (1990) and a Masters in Business Administration degree from Queens University in Charlotte, NC (1998).

11:15 - 11:45 am - Paul Schuch, Routing Systems Sales Manager, Robotic Production Technology Corp., "Robotic Material Removal Options for Thermoformed Parts."



Paul Schuch is in Routing Systems Sales Manager for Robotic Production Technology. RPT based in Auburn Hills, Michigan is a turnkey robotic systems supplier for plastics, appliance, automotive, aerospace, construction, consumer goods,

and marine industries. Since 1985 RPT has been a leading manufacturer of flexible manufacturing systems utilizing five and six axis robots, with an installed base of over 2,500 units. Paul has over 20 years of experience working with automation in the plastics industry. He has held positions ranging from installation/field service to Product Management for CNC automation companies. In his current position he is responsible for robotic router trimming systems sales for RPT in the Americas.

11:30 am - 12:30 pm - Buffet Lunch on the Exhibit Floor - Convention Floor - Center Ballroom

“Bio-Degradable Polymers in Thermoforming” - Moderator: Laura Pichon, Ex-Tech Plastics Inc., Marketing Manager, Convention Center: Room 204-205

1:00 - 2:00 pm - Dr. Ramni Narayan, Ph.D., Department of Chemical Engineering & Materials Science, Michigan State University, East Lansing, MI, “Biobased Plastics Products: Rationale, Drivers, and Technology Exemplars.”

Abstract: Sustainability, industrial ecology, and green chemistry are new principles that are guiding the development of the next generation of materials, products and processes. Biobased plastics hold great promise for achieving the goals of sustainable development and implementing the principles of industrial ecology. Biobased plastic products offer value in the sustainability/life-cycle equation by being part of the biological carbon cycle, especially as it relates to carbon-based polymeric materials such as plastics. Life Cycle Assessment (LCAs) of these biopolymer materials often show reduced environmental impact and energy use when compared to petroleum-based materials. Biobased polymers are synthesized by many types of living matter – plants, animals, and bacteria – and are an integral part of ecosystem function. Because they are synthesized by living matter, biopolymers are generally capable of being utilized by living matter (biodegraded), and so can be disposed in safe and ecologically sound ways through processes like composting, soil application, and biological wastewater treatment. Therefore, biobased content and biodegradability are essential elements for single use, short-life disposable packaging and consumer articles. Biobased and biodegradable plastics based on annually renewable agricultural and biomass feedstocks can form the basis for a portfolio of sustainable, ecoefficient products that is an environmentally preferable, sustainable alternative to current materials based exclusively on petroleum feedstocks. Two basic routes are possible. Direct extraction from biomass yields a series of natural polymer materials like cellulose, starch, proteins, fibers, and vegetable oils that can form the platform on which plastic products can be developed. Alternatively, the renewable resources/biomass feedstock can be converted to bio-monomers by fermentation or hydrolysis and then further converted by chemical

synthesis to bioplastics like polylactic acid. Bio-monomers can also be microbially transformed to biopolymers like the polyhydroxyalkanoates plastics. Vegetable oil based lubricants and urethane foams can be prepared. In conclusion, bioplastics will play an increasingly important role in a society moving towards a sustainable and environmentally responsible materials base. This presentation captures the rationale and drivers for such a change towards biobased plastic materials, presents the LCA's of select bioplastic product as an example, and showcases technological and commercial successes of bio-based polymer materials.



Ramani Narayan is Professor of Chemical Engineering & Materials Science at Michigan State University, E. Lansing MI 48824. He has 104 refereed publications in leading journals to his credit, 18 patents, edited three books and one expert dossier in the area of bio-based polymeric materials.

His research encompasses design & engineering of sustainable, biobased products, biodegradable plastics and polymers, reactive extrusion polymerization and processing, studies in polymer biodegradation and composting. He works on LCA (Life Cycle Assessment) protocols for assessing a product's environmental stewardship. Another focus area is biofiber -reinforced composites using synthetic and natural polymer matrices. Under his supervision, 16 students have obtained their Master's degree and six students have obtained their Ph.D. degrees. He has major research programs with industry and serves as consultant for several companies. He is on the Board of Directors of ASTM International – a premier international standards setting organization. He chairs the committee on Environmentally Degradable Plastics and Biobased Products (D20.96) and the Plastics Terminology committee D20.92. He is also the technical expert for the USA on ISO TC 61 on Plastics – specifically for Terminology (TC61 SC 1) and Biodegradable plastics (TC 61 SC5 WG 22). Dr. Narayan also chairs the scientific committee of Biodegradable Products Institute (BPI), North America – a biodegradable and biobased plastics trade industry organization (www.bpiworld.org). He has testified before U.S. congressional hearings on the biodegradable and biobased plastics issues. He serves on the Board of Directors of Northern Technologies International (www.ntic.com) – a \$100 million publicly traded micro cap company, and on the Technical Advisory board of Tate & Lyle (www.tateandlyle.com) – a world leading manufacturer of renewable food and industrial ingredients. He is a successful entrepreneur having been responsible for commercializing several technologies. Starch foam sheets for cushion packaging and insulation material is being marketed under the trade name GreenCell by KTM Industries (www.ktmindustries.com); biodegradable and recycling friendly starch based nanoparticle adhesives through Eco Synthetix (www.ecosynthetix.com); polyester-modified starch resins for biodegradable/compostable bags for retail and lawn-leaf collection through BioPlastic Polymers & Composites LLC and Northern Technologies International (www.ntic.com); and modified polysaccharides for drug delivery through BioPolymer Innovations (www.biopolymerinnovations.com). He is also developing technology for improved biodiesel product, and the

manufacture of new soy based esters and polyols that can be used in the manufacture of polyurethanes and unsaturated polyester resins (UPR's). He developed poly(lactic acid) materials technology and conducted engineering scale-up studies for Cargill Inc. The technology is currently being commercialized through a Cargill owned subsidiary NatureWorks LLC (www.natureworksllc.com). He developed biodegradable, modified starch ester thermoplastics technology, covered by three patents and formed the basis of a joint venture company in Michigan, which was acquired by a major Japanese corn wet miller, Japan Corn Starch (JCS) in 2003. He has won several awards: Governors University Award for commercialization excellence; University Distinguished Faculty Award, 2006 – awarded to 10 faculty from amongst all the faculties at Michigan State University; 2005 Withrow Distinguished Scholar award – awarded to one faculty in the MSU College of Engineering based on exemplary research accomplishments, national & international recognition; Fulbright Distinguished Lectureship Chair in Science & Technology Management & Commercialization (University of Lisbon; Portugal); First recipient of the William N. Findley Award for “significant contributions to the application of new technologies within the scope of ASTM Committee D20 on Plastic; Research and Commercialization Award sponsored by ICI Americas, Inc. & the National Corn Growers Association.

2:00 - 2:30 pm - Steve Mojo, Bio-Degradable Products Institute, “Designing for Compostability & Creating Value.”

Steve Mojo is currently the Executive Director of the Biodegradable Products Institute, which represents the leading manufacturers and users of biodegradable plastics in the US and Canada. As such, he has been instrumental in the BPI's labeling efforts as well as in the harmonization of biodegradability and compostability standards in Europe, Asia and North America. Steve started in the field of biodegradable plastics more than 15 years ago and has worked and consulted for some of the leading biodegradable plastic manufacturers, including Pfizer's Novon Products Group; NatureWorks PLA, Nat-UR, Inc., Norse Natural Products, the U.S. Feed Grains Council and the U.S. Navy. He has a thorough understanding of the development and marketing of biodegradable applications in North America and other parts of the world. And has spoken at conferences, such as this in Europe, Asia and Canada, as well as the U.S. Steve is also active participant in ASTM D20.96, the subcommittee for environmentally degradable plastics, where he helped to develop some of the key standards used today. He is participating on the Advisory Board for the California Integrated Waste Management Board's project on compostable materials. Additionally, he has served on the Board of Directors for the U.S. Composting Council, where he led the development of the “Compostable Logo” certification program in conjunction with the BPI. His presentation will discuss “Designing for Compostability & Creating Value.” It will cover the science behind biodegradability and compostability; relevant ASTM Standards and the BPI Labeling efforts. Also, it will highlight the growing number of markets, programs and products that are utilizing these new products.

2:30 - 2:45 pm - Break - Foyer 204-205

2:45 - 3:15 pm - Daniel Gilliland, Metabolix, Business Development Director, Metabolix, Inc., “PHA Natural Plastics: A Disruptive Technology for a Sustainable Future.”

Abstract: Metabolix is commercializing a family of polymers (PHA natural plastics) made from renewable resources such as sugars and vegetable oils. Within the foreseeable future, this technology will also enable the production of these natural plastics directly in non-food plant crops. These high performing new materials have the potential to put a large portion of the plastics and chemicals industry on a sustainable basis. Metabolix's natural plastics range in properties from rigid, strong and stiff to tough and highly elastomeric to soft and tacky. They can be made as resins or aqueous dispersions with excellent film forming characteristics. Robust in use, yet biodegradable, they offer a renewable and environmentally friendly alternative in many applications now served by synthetic plastics, including sheet and film, molded goods, extruded products, adhesives, and coatings. In November 2004, Metabolix formed an alliance for the production of its natural plastics via fermentation with ArcherDanielsMidland, one of the world's largest producers of agricultural products. The company was also honored with the 2005 Presidential Green Chemistry Challenge Award for its development of natural plastics. Metabolix will update progress in the development and commercialization of its PHA natural plastics, discuss properties and performance capability of PHA, describe target applications for packaging, and elicit the various environmental benefits for transitioning from traditional plastics to PHA natural plastics.



Daniel J. Gilliland (Dan) is the director of business development at Metabolix, Inc. In this role, he leads development of new markets and business opportunities for the company's new “natural plastics” product line. In his thirty year career in the chemical industry he managed two polymer businesses at E.I. duPont de Nemours and was vice president of two businesses at Cabot Corp, a \$2billion/yr nano-particle company. Dan has spent much of his career developing new products for industry. Dan resides with his wife and two teenage children in suburban Boston. He enjoys flying airplanes, scuba diving, and backpacking. He is a leader of the local Boy Scout troop and involved in coaching youth soccer.

3:15 - 3:45 pm - Frederic Scheer, President & CEO, Cereplast, Inc., “Displacing Petroleum Plastics with Biobased Resins.”

3:45 - 4:15 pm - Anthony Georges, Vice President for AMUT North America - A Division of AMUT S.p.A. of Italy, Toronto, Canada, "Can Bio-Degradable Materials Be Recycled? Or Are We Just Throwing the Energy Away? Pro & Cons of Bio-Degradable Materials."



Anthony S. Georges is Vice President for AMUT & ARIOSTEA North America. AMUT Italy, founded in 1958, is one of the world's leading companies focusing on Extrusion, Thermoforming & Recycling technologies. Their developments in Recycling Technologies for plastics started in the 1970's and this year AMUT will receive the acclaimed Global Plastic Environmental - Enabling Technology Award for 2006 from the SPE. ARIOSTEA Italy, specializes in automated material handling system for Industrial Plastic Plants for storage, transport and dosing systems of plastic powders, pellets and flakes, since 1950's with over 100 installations in North America. Georges oversees the North American operations of both companies developing local service, support and sales to better serve their existing customers and creating new opportunities. Prior to joining AMUT/ARIOSTEA, Georges was Vice President of Business Development with REVLON, New York, for their scientific/technology division, RevTech. In 2000, he was part of the team that won the acclaimed US Presidential Award for the EPA Green Chemistry Challenge. Georges has been involved in the plastic industry for over 20 years, on a global basis, even residing in China for a number of years during the early 1990's. Georges has written numerous articles and has been a Speaker at conferences & seminars worldwide to discuss a variety of related recycling and environmental topics to the beverage, packaging and plastic industries. He is an associate member of the APR, and part of their Marketing Development Committee, as well as an active member of the Society of Plastic Engineers, Environmental Division. Georges earned his degree at York University in Toronto, Canada, complementing his degree with post-graduate studies at the University of Freiburg in Germany. He is fluent in English, German and French.

6:00 - 8:00 pm - Parts Competition Awards Reception - Renaissance Hotel West/Center Ballroom

**WEDNESDAY,
SEPTEMBER 20th, 2006**

8:30 am - 4:00 pm - An Extrusion Seminar, Sponsored by the SPE Extrusion Division - Renaissance Hotel - Ryman Room

8:30 am - 4:00 pm - Geiss Workshop on Twin Sheet - Renaissance Hotel - Music City Ballroom

Nashville Scenes



GRAND OLE OPRY



COUNTRY MUSIC HALL OF FAME & MUSEUM



JACK DANIEL DISTILLERY

Workshops

2006 Thermoforming Conference Nashville, Tennessee

*** Attendees can only select one of the four workshops being offered.
You must register for the conference to attend workshops. ***

**SUNDAY,
SEPTEMBER 17th, 2006**

RENAISSANCE HOTEL - MUSIC CITY BALLROOM
8:30 a.m. - 3:00 p.m. – McConnell -
Buckel Cut Sheet Workshop



Bill McConnell



Art Buckel

I. INTRODUCTION

- Advantages and Disadvantages of the Thermoforming Process

II. HEATING REQUIREMENTS

- A. The Thermoforming Environment
- Plant & Warehouse
 - Machine Locations
 - Environment Around Machines
- B. Types of Heat – Advantages & Disadvantages
- Convection
 - Conduction
 - Radiation
 - How to Obtain Uniform and/or Profiled Sheet Temperature
 - “K” Factors and Relative Rates of Heat Transfer
 - Regrind & Heat

III. VACUUM & COMPRESSED AIR SYSTEMS

- C. Vacuum Requirements
- Why Fast Vacuum Needed
 - Vacuum Pressure Measurements
 - Surge Tanks
- D. Compressed Air Requirements
- E. Hydraulic Platens

IV. FORMING TECHNIQUES – BASIC THERMOFORMING METHODS

- A. Vacuum Forming

- B. Pressure Forming
- C. Mechanical Forming
- D. Prestretch Forming – For Better Material Distribution
- Vacuum Snapback
 - Plug Assist
 - Chamber Forming
- E. Twin Sheet Forming
- F. WRAP UP

Limited to 150 - you must register to attend.

RENAISSANCE HOTEL - FISK ROOM

9:00 a.m. - 4:00 p.m. – Throne Roll Fed
Workshop

This basic workshop introduces the various aspects of thin-gauge thermoforming, from materials to machinery, from processing aspects through trimming, to part and old design. A workshop notebook will be provided.

The following will be discussed:

1. General aspects of thin-gauge thermoforming
2. Machine elements
3. Materials
 - Polymers
 - Additives
4. New materials to be considered
 - Biopolymers
 - Nanocomposites
5. The importance of sheet extrusion parameters
6. Heating the sheet
7. Forming the sheet
8. Trimming
9. Molds and mold design
 - Mold materials
 - Plug materials
10. Part design concepts
 - Wall thickness determination
 - Corners
 - Coining
 - Plug design

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11. Regrind considerations
12. Foam forming
13. Production monitoring and control
 Temperance
 Birefringence
14. Lingerin concerns



James L. Throne: Jim Throne is President, Sherwood Technologies, Inc., Dunedin, FL., a consultancy focusing on advanced plastics processing technologies, including thermoforming, foam processing and rotational molding. He is Fellow of the SPE and Fellow of IoM³ (England). He was SPE Thermoformer of the Year 2000. He was honored by the SPE European Thermoforming Division 2004 for his technical contributions to the worldwide thermoforming industry. He has published 10 books in polymer processing, including four in thermoforming. He holds nine U.S. patents, including a fundamental one in thermoforming CPET. He has written more than a dozen technical book chapters and has published and presented nearly 200 technical papers. He is current Technical Editor of SPE Thermoforming Quarterly. He is Fellow of the Society of Plastics Engineers and Fellow of Institute of Materials, Mining and Manufacturing (IoM³).

Limited to 150 - you must register to attend.

RENAISSANCE HOTEL - BELMONT ONE ROOM 9:00 a.m. - 12:00 p.m. – Process Controls Workshop - “Improve Production Capacity of Your Equipment: Use Updated Controls”

Thermoformer life can be extended and better-quality product can be produced with updated control systems. Learn how temperature, gauge, speed, pressure and downstream equipment can all run based on a product code, with adjustments made automatically based on set points and closed-loop control

algorithms (including shot cycle, platen movement, gauge/profile and temperatures). Your firm can reduce scrap, boost throughput, improve quality and consistency with improved controls and by identifying changes with trend charts/graphs and alarming. Data collection is also useful for on-line troubleshooting/diagnostics. This seminar will show you how.



Michelle Curenton: Michelle currently serves as a Sales/Product Engineer with FACTS, Inc., a supplier of closed-loop controls systems for extruders, mixers, calenders and thermoformers. She has spent ten years with the company, which exclusively serves the plastics and rubber industries. During this time she has worked as a project and process engineer, managed many start-up projects and custom installations, and routinely helps clients with trouble-shooting or diagnostic issues. She is often called upon to support the company with technical presentations and has presented several papers at industry conferences and SPE meetings. Michelle holds an electrical engineering degree from The University of Akron. Prior to joining FACTS, she worked for a leading company in the steel industry in several engineering roles. In addition to electrical/project engineering skills, she has a strong IT background and combines process data with a clear understanding of software/hardware capabilities, including ERP and SPC applications. She specializes in identifying clients' processing issues and providing realistic solutions for improved technology and manufacturing practices. Michelle is married and the mother of a son. She resides in NE Ohio and routinely travels the country to work with clients on a variety of integrated line-control projects for plastics or rubber manufacturing.

Limited to 50 - you must register to attend.

Workshops

2006 Thermoforming Conference Nashville, Tennessee

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You must register for the conference to attend workshops. ***

RENAISSANCE HOTEL - BELMONT ONE ROOM 1:00 p.m. - 4:00 p.m. – *How to Do Business in India Workshop*

The global economy has mandated international partnerships, India and China emerging as two strong partners. It is in the best interest of our manufacturing industry to at least be aware of what is happening in India and to understand several ways in which we can do business together. The seminar will cover issues related to doing business with/in India including but not limited to Reasons for Exploring Business Opportunities in India, Market Opportunities for U.S. Firms in India, State of Indian Manufacturing, State of Indian Services Sector, Business Destination - Economic and Political, India's Socio-Cultural Heritage, Challenges to Doing Business in India, U.S. Perception of India's Future, Future Directions and India's Economic Policies, Etc. A few case studies will be discussed to learn from experiences.



Dr. Promod Vohra: Dr. Vohra is the dean of the College of Engineering and Engineering Technology (CEET). Dr. Vohra is a graduate faculty and a full professor in the Department of Technology. Prior to becoming the dean he was the associate dean for six years where he boosted enrollment in the college by 45 percent over the last seven years. Before that he was the electrical engineering technology (EET) coordinator in the Department of Technology. Dr. Vohra, in addition to having a doctorate in Instructional Technology (with cognate in Industrial Engineering), has a Masters as well as a Bachelors degree in Electrical Engineering. The BS degree was earned from Delhi College of Engineering, India and the latter two degrees were earned at NIU in 1988 and 1993, respectively. Prior to coming to the field of academia, he worked in industry (Philips) for five years as a technical support engineer. He joined NIU in 1988 as a lecturer, became an assistant professor in 1993, an associate professor in 1995 and the associate dean in 1997.

His interest areas are digital systems, instruction design, industrial training, new technologies and applications of technologies. As the coordinator of the Electrical Engineering Technology (EET) program (1988-1995), he increased the program enrollment more than 800 percent, published several refereed articles and brought in about a million dollars worth of equipment grants to develop and expand EET laboratories. He recently brought in software and other grants worth approximately 22 million dollars. Dr. Vohra has been very active in university service and in regional and national professional committees/organizations. He was the recipient of the 1988 Outstanding Young Alumnus Award in 1995, he was given the Excellence in Undergraduate Teaching Award by Northern Illinois University and in 1996 he received the Outstanding Professor Award in the region (seven professional registrations such as a professional engineering (PE) and a senior certified industrial technologist (CSIT)).



Kumkum Dalal runs an advisory firm on doing business with India. She helps U.S. exporters find partners in India and set up operations in India. She also helps clients who want to outsource any of a wide range of business and engineering activities. She believes that outsourcing is essential to the export strategy of U.S. companies. Being equally comfortable in both the U.S. and Indian business environments allows Kumkum to be an effective cultural liaison between India and the U.S. Her firm serves as advocates of the client and is unique for not being aligned with any Indian vendor firm. Kumkum has a MA in Sociology from the University of Kansas and an MS in Computer Science from Northern Illinois University. Her longest working tenure was with AT&T Bell Labs and Lucent Technologies. Upon retiring from LU, she started her own consulting firm in 2003. Kumkum is a native of India and lives in Naperville, Illinois.

Limited to 35 - you must register to attend.

Workshops

2006 Thermoforming Conference Nashville, Tennessee

*** Attendees can choose one only. ** Limited to 100 ** You Must Register to Attend ***

**WEDNESDAY,
SEPTEMBER 20th, 2006**

**RENAISSANCE HOTEL - RYMAN ROOM –
Extrusion Workshop - Presented by the
SPE Extrusion Division**

**8:30 - 8:40 am - Workshop Introduction
- Walt Walker, Prent Corporation,
Thermoforming Division Chair**

**8:40 - 9:40 am - Tim Womer, Xaloy,
“Things Your Screw Designer Never
Told You About Screws!”**

Abstract: In the plastics industry today and as has been since the start of plastic extrusion, the end user has depended on the Original Equipment Manufacturer (OEM) and/or screw manufacturer to supply them with the proper screw design for their material and process. Most processors have learned over the years a few critical points pertaining to screw design, but never totally understanding the reason why their suppliers have recommended certain aspects to the screws that they have purchased. Hopefully, this paper will explain some of the basic knowledge needed in order for an end-user to make the proper decisions when using or purchasing a new single screw for a smooth bore application. Also, a brief review of some new technology will be discussed too.



Timothy W. Womer is the V.P. of Engineering and Technology for Xaloy, Inc. and was also recently elected as the President-Elect of the Society of Plastics Engineers and inducted into the Plastics Pioneers Association. Tim is a recognized authority in plastics technology and machinery with a career spanning over 30 years; and also having worked for other companies like Spirex Corporation, Conair Group and NRM Corporation. Tim has designed over 8,000 screws that have been used in all areas of single-screw plasticizing such as extrusion, blow/injection molding. Numerous patents have been issued for his inventions of screws, mixers, processes and other products. He also has extensive knowledge and experience in heat transfer rolls used in the plastic sheet and paper laminating fields.

**9:40 - 10:40 am - Gary Oliver, Cloeren,
“Co-Extrusion Technology.”**

Abstract: Coextrusion is defined as a process in which two or more polymers are extruded and joined together in a feedblock or die to form a single structure with multiple layers. Coextrusion applications are varied from a simple striped plastic beverage straw, to complex structures with hundreds of layers. The application of coextrusion is based on the viscoelastic properties of the materials combined to produce the composite structure. In both simple and complex structures, the viscosity and the elastic properties of each of the components must be considered to insure success.



Gary Oliver is a Senior Corporate Scientist for Cloeren Incorporated. He worked for Dow Chemical as a Senior Research Engineer in areas such as specialty plastics research, technical service and development, and process development. Gary has worked in development and/or improvement of new polymers, new polymer processing methods, new packaging fabrication methods, as well as extensive development work in coextrusion. Gary has authored numerous technical papers, published articles in domestic and international trade journals, taught courses on extrusion coating and coextrusion in the plastics industry where he has worked for the past thirty five years. He studied Chemistry and Physics at Central Michigan University where he received his degree in 1971. Gary is a senior member of the Society of Plastics Engineers and member of the board of directors of the Extrusion Division.

10:40 - 11:00 am - Break

**11:00 am - 12:00 pm - Paul Anderson,
Coperion, and Charlie Martin,
Leistritz, “Compounding Extrusion.”**

Abstract: The co-rotating twin-screw extruder is the predominant compounding machine in the polymer processing industry. Additionally, the co-rotating twin-screw has been integrated into sheet, profile, thermoforming, compression molding and injection molding lines. To gain and then maintain this status, the mechanical design of twin-screw extruders has evolved over 50 plus years to meet the continual demand for increased product quality and economic efficiency. This evolution has resulted in extruders with increased power (torque), greater internal free volume, running at higher

Workshops

2006 Thermoforming Conference Nashville, Tennessee

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screw rpm. In order to accomplish these increases in power, volume and screw speed, the machine designer had to consider not only the mechanical reliability of the overall system, but also the impact these design “improvements” had on the compounding process. Therefore, the design objective was to transmit maximum torque through the screw shafts while at the same time maintaining sufficient processing volume inside the machine. Throughput rate at a specific rpm determines the degree of fill in the machine. In most processes, a higher degree of fill ensures more gentle treatment of the product because the average shear rate is lower. Another way to approach this issue is to say that greater torque enables use of a lower screw speed and thus, for the same throughput, a higher degree of fill in the screw flights. Unfortunately, all of these design advances will be of no value to the processor without firm understanding of extruder fundamentals. During this presentation, mechanical and process design considerations as well as the impact of the newest developments on compounding technology, along with supporting processing examples, will be reviewed. However before getting into the newest developments, an introductory overview of the technology will be presented. The function of extruder components such as drive, gearbox and process section is described. Also, barrel options and the operating principle behind the various screw elements will be discussed.



Paul Andersen is Sr. Manager of Process Technology and New Development for Coperion Corporation in Ramsey, NJ. In this position, he is responsible for Twin-Screw Extrusion Process Engineering and Technology Development within Coperion Corporation, and R&D coordination

between Coperion in Europe and the U.S. Paul earned a BS in Theoretical & Applied Mechanics from Cornell University and Ph.D. in Materials Science from Northwestern. He has been a member of the SPE Extrusion Division Board of Directors since 1990. During this time, Paul has served as Division Chairman, ANTEC TPC, Councillor for 2 terms, Chairman of the Lew Erwin Scholarship committee, and headed up several Technical Focus Groups. He is currently SPE Treasurer. In addition to his SPE governance activities, Paul has co-authored numerous ANTEC and Topical Conference technical papers, wrote the chapter on Co-Rotating Twin-Screw Extrusion for the SPE Plastics Technician’s Toolbox and served as technical consultant for the SPE Twin-Screw Extrusion educational video series.

Abstract: HSEI twin screw extruders are used for compounding, reactive processing and/or devolatilization, and have historically produced pellets

to facilitate accurate/consistent feeding into a single-screw extruder as part of a sheeting system. There is a fast growing trend to bypass the pelletization step and to extrude a sheet in one-step from the HSEI twin-screw extruder – this is referred to as direct extrusion. There are a host of system integration issues inherent with direct extrusion, including when it is appropriate, materials handling and controls integration. All aspects relative to consideration of direct extrusion and the ramifications of implementing this technology will be addressed.



Charlie Martin has worked in the extrusion industry since 1984 in a variety of technical and marketing capacities for single-screw and twin-screw extrusion. In his current capacity as General Manager, he is responsible for marketing and development efforts for the Leistritz product line of co-rotating and counterrotating twin screw extruders and systems in North America. Charlie has given presentations at more than 50 worldwide industry sponsored events. He is the author of the chapter entitled “Twin Screw Extrusion” for the Society of Plastics Engineers Guide on Extrusion Technology and Troubleshooting (2002). He is also the co-editor of the textbook entitled *Pharmaceutical Extrusion Technology*, published by Marcel Dekker, Inc. in 2003. He also currently sits on the Society of Plastics Engineers’ Extrusion Division Board of Directors. Charlie earned his undergraduate degree from Gettysburg College in 1983, and his MBA from Rutgers University in 1990.

12:00 - 1:00 pm - Lunch

1:00 - 2:00 pm - Reactive Extrusion - Paul Andersen, Coperion, and Charlie Martin, Leistritz

2:00 - 3:00 pm - Mark Spalding, Dow Chemical, “Extrusion Troubleshooting.”

Abstract: The manufacturing costs for a process depend highly on the proper operation of the extrusion equipment. In general, proper operation requires that the metering section of the screw be the rate-limiting step. Using drag flow and pressure flow calculations for the metering section is a simple method to determine if the section is the limiting step. This paper shows how these types of calculations can be used to determine if the screw and process are functioning properly. Several case studies will be presented.

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Mark A. Spalding is a Research Scientist in the Inclosia Solutions business unit of The Dow Chemical Company, Midland, MI. He joined Dow in 1985 after completing a BS degree from the University of Toledo and a Ph.D. from Purdue. His main area of expertise is the design and troubleshooting of single-screw extrusion processes. He is a Fellow of SPE.

3:00 - 3:30 pm - Wrap Up / Q & A Panel, led by Walt Walker, Chair, Thermoforming Division

RENAISSANCE HOTEL - MUSIC CITY

BALLROOM - Geiss Workshop - 9:00 am - 12:00 pm

Manfred Geiss, Geiss Machine, "Latest Development on Thermoforming Machines for the U.S. Market."



Manfred Geiss is Owner of Geiss AG in Sesslach, Germany. Manfred joined Geiss AG in 1970. He is the second generation of the firm which was started by his father, Georg, in 1948. After attending technical school, Manfred's first position in the company was as technical director. Now, chief officer of the company, he co-leads with his wife, Klara Geiss, Geiss' financial manager. Manfred's company is situated in a picturesque village called Sesslach in Germany. When he is not busy managing the facets of his worldwide company, he is a devoted father to four children and one grandchild.

Andreas Gsaenger, Geiss Machine, "Innovations on European Milling Machines for Thermoformed Parts."



Andreas Gsaenger is Design Manager for CNC machines at Geiss AG. Andreas grew up in Coburg, Germany, where he still resides with his wife and two children. He studied machine engineering in the late 70's at the University of Applied Sciences in Coburg and finished with a degree in

engineering. He joined Geiss AG in 1983 as a development engineer where he worked on surfboard and lamination machines as well as GMT ovens. In 1988, he began design and development work on Geiss' CNC machines.

Manfred Geiss, Geiss Machine, "Thermoforming and Trimming in One."

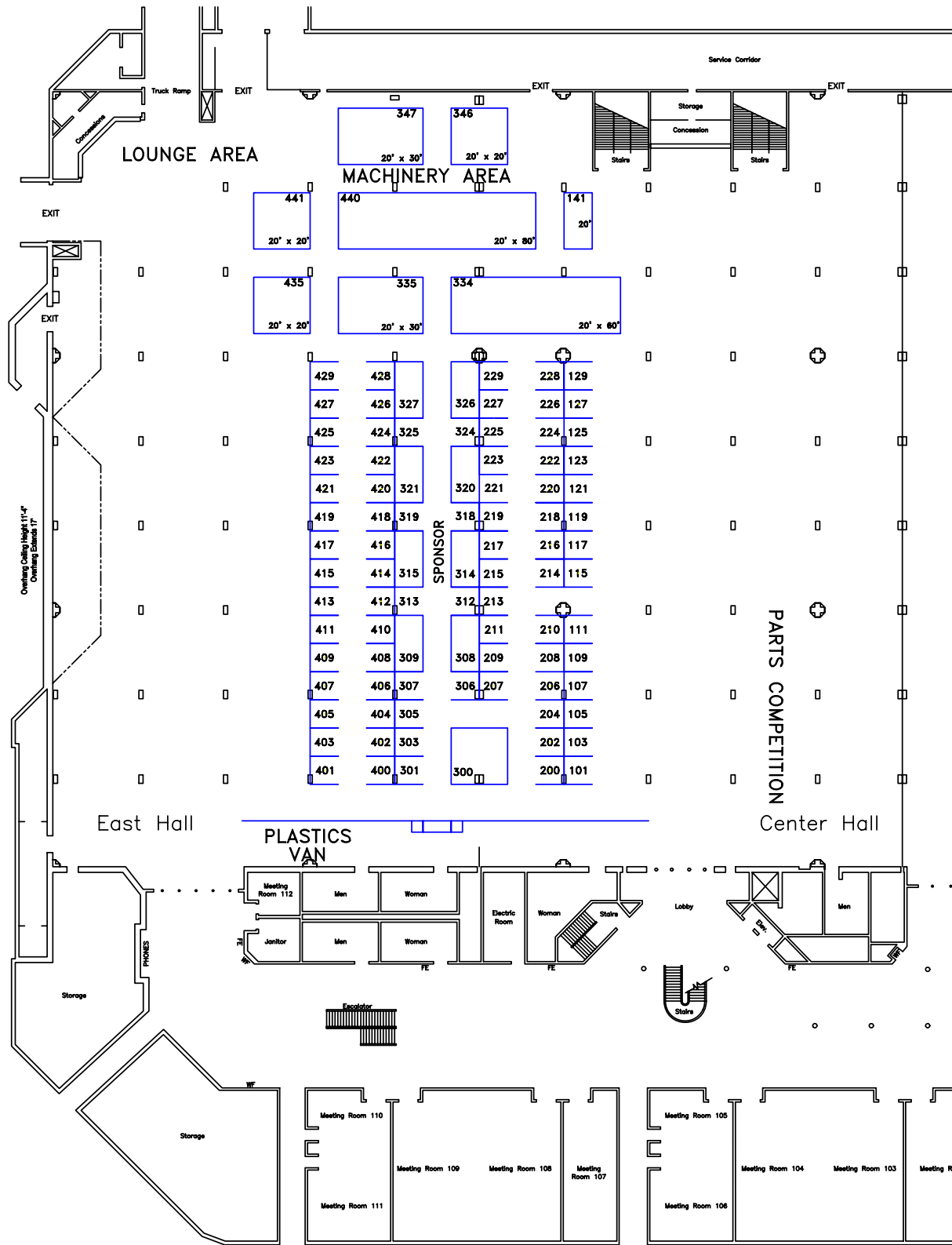
John D. Pirkl, Technical Sales Engineer, Geiss USA, "Scientific Thermoforming."

John D. Pirkl – Graduate of Michigan Technological University with a Mechanical Engineering degree. John has 20 years of experience in the Plastics Industry. Has worked in the Injection Molding Industry performing project engineering and processing, the Automation Industry performing design and technical sales, and most recently in the Thermoforming Industry. He has worked with Geiss since the K Show of 2001. Lives in Chicago, Illinois.

Nashville 2006



"Creativity & Innovation in Thermoforming"



LEVEL ONE

SPE THERMOFORMING 2006

NASHVILLE CONVENTION CENTER
 2006
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 REV 12

BOOTHS ARE 10' x 10' UNLESS NOTED
 AISLES ARE 10'





THERMOFORMING CONFERENCE 2006
 SEPTEMBER 17-20
 NASHVILLE CONVENTION CENTER & RENAISSANCE HOTEL
 NASHVILLE, TENNESSEE, U.S.A.



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SPE Member: \$395 New SPE Member: \$505 Non-member (No Membership): \$525
 (\$110 Membership + \$395 Registration)

After August 15/Onsite:

SPE Member: \$495 New SPE Member: \$605 Non-member (No Membership): \$625
 (\$110 Membership + \$495 Registration)



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I would like to renew my SPE Membership: \$110 \$ _____

Workshops (Included with full conference registration)

(✓) One for Sunday, September 17

- McConnell-Buckel Cut Sheet (attendance limit: 150)
- Throne Roll Fed (attendance limit: 100)
- Process Control (attendance limit: 50)
- Doing Business in India (attendance limit: 35)

(✓) One for Monday, September 18

- Advanced Topics in Thermoforming (attendance limit: 35)
- (✓) One for Wednesday, September 20
- Geiss Workshop (attendance limit: 100)
- Extrusion Workshop (attendance limit: 100)

One-Day Full Conference Registration (Includes Sessions, Exhibits, & Meals):

\$ _____

Early Registration: SPE Member: \$200 Non-Member: \$330

After August 15/Onsite: SPE Member: \$250 Non-Member: \$380

(✓) One: Monday, September 18 Tuesday, September 19

Exhibit Hall Only (Does not include Meals, Breaks, Workshops or Technical Sessions):

\$ _____

Early Registration: \$100 Per Day \$150 Both Days

After August 15/Onsite: \$150 Per Day \$200 Both Days

(✓) One: Monday, September 18 Tuesday, September 19

TOTAL: \$ _____

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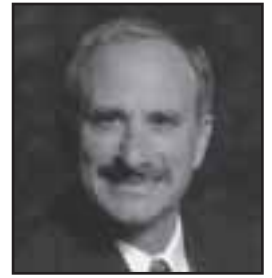
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EARLY REGISTRATIONS ARE NON-REFUNDABLE AFTER AUGUST 15, 2006

All cancellations must be made with the designated hotel by August 13, 2006.
 Hotel cancellations made after August 13, 2006 will result in the forfeiture of one night's deposit.

16th Annual Parts Competition and Showcase



BY JAMES ALONGI, PARTS COMPETITION CHAIRMAN

We invite you to participate in this year's Thermoforming Parts Competition and Showcase. This important event is a part of our 2006 SPE Thermoforming Conference in Nashville, Tennessee, September 17th - 20th, 2006. In order to make this year's Parts Competition and Showcase the best ever, we need your support. Take advantage of this unique opportunity to support your industry, get in front of editors from major publications, and show off your thermoforming skills.

SHOWCASE OF PARTS

The Showcase of Parts was developed as a non-competitive forum to display products from our industry. This year's showcase will feature past award winning parts, as well as parts not involved in the competition. We also encourage any thermoformer, machinery manufacturer, material supplier, and attendee to share parts with us. This will be a show and tell area for all to promote their parts. Items of interest in the industry like thermoforming versus other processes, new materials, or environmental issues are encouraged. Do you have a success story to share with us?

Cut Sheet Parts Competition

The following Categories will be Judged:

- Automotive
- Consumer Products
- Twin Sheet Product
- Multi-Part Assembly
- Electronic Products
- Industrial Application
- Point of Purchase



Roll-Fed Parts Competition

The following Categories will be Judged:

- Consumer Packaging
- Consumer Housewares
- Critical Barrier
- Consumer Electronics
- Food Container
- Industrial Packaging



Best International Part

PEOPLE'S CHOICE AWARD

This award is voted on by the attendees and exhibitors of the SPE Thermoforming Conference. Ballots are provided at the Conference registration and the ballot box is located in the Parts Competition Pavilion. One entry per person. The award is presented at the Parts Competition Awards Dinner on Tuesday, September 19th, 2006.

JUDGING

The judging will be conducted by a panel of six industry professionals, from both the cut sheet and roll fed industries. The judges will have extensive knowledge of all aspects of the thermoforming process. A minimum of 3 entries per category is required for an award to be presented.

JUDGING CRITERIA

The judging criteria will include technical mastery, surface finish, distinct quality, market viability (compared to other processes), originality, material difficulty, mold complexity, and secondary operations. All entries will remain anonymous until the judging is completed. A part and process write up will be allowed for the judging if it does not include the name of the thermoformer. The parts will be judged based on the process and not the end use of the products.

AWARDS

All participants and award winners will be recognized on Tuesday, September 19th, 2006 at the Parts Competition Awards Dinner at the Renaissance Hotel.

*For more information, contact: James Alongi
(630) 665-1700 Fax (630) 665-7999*



OFFICIAL ENTRY FORM

16th Annual
Parts Competition and Showcase

Parts Competition

Showcase Entry

Company: _____

Address: _____

City: _____ State: _____ Zip: _____ Country: _____

Company Contact: _____

Telephone: _____ Fax: _____

E-mail: _____

Entry Specifications:

Category: Cut Sheet

Roll Fed

Parts Description: _____

Material Type: _____ Gauge: _____ Supplier: _____

Mold Construction: _____ Mold Builder: _____

Part Description and Unique Challenges for Consideration: _____

FOR SHIPMENT UP TO 30 DAYS IN ADVANCE OF SHOW:

Please ship to: Roadway Express
c/o RPM / Complete Expo Parts Competition
3240 Franklin-Limestone Road
Antioch, Tennessee 37013

- Please supply this form with a company labeled photo with each part entry.
 - A supplemental sheet can be provided to expand the part description/unique challenges section. Please refrain from mentioning the company name in this section.
 - A faxed copy of your entry is required by August 21st, 2006 to Fax: (630) 665-7799.
 - **CLEARLY LABEL EACH CARTON: SPE PARTS COMPETITION – DO NOT OPEN!**
 - Parts will be accepted from August 21st to September 11th, 2006.
 - Judging will be done prior to opening of show – entries must be received prior to September 11th, 2006.
- IF YOU DESIRE TO HAVE YOUR PARTS RETURNED, YOU MUST PROVIDE PACKAGING AND ENCLOSE A PRE-ADDRESSED RETURN LABEL AND PREPAID SHIPPING INSTRUCTIONS.**

Signature: _____ Date: _____

For more information, please contact James Alongi, Maac Machinery, (630) 665-1700, Fax (630) 665-7799, or email: jalongi@maacmachinery.com.

16th Annual Thermoforming Conference

Nashville 2006



**"Creativity & Innovation
in Thermoforming"**

September 17th – 20th, 2006
Nashville Convention Center
Renaissance Nashville Hotel
Nashville, Tennessee



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For Reservations: Call 615.255.8400
Request: SPE Thermoforming Rate
of \$143.00

***Please note! The hotel will require a deposit of one night's room and tax at the time the reservation is made. Cancellations made after August 13, 2006 will result in the forfeiture of one night's deposit. Any reservation made after August 13, 2006 will require a non-refundable one night's deposit at the time the reservation is made.*

Check out our websites at:

<http://www.4spe.org/communities/divisions/d25.php>
www.thermoformingdivision.com

For Information Contact:

CONFERENCE COORDINATOR:

GWEN MATHIS

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