

1990 PLC Conference and Trade Fair attract and hold interest in Boston

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Tappi Journal

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The 1990 conference of the Polymers, Laminations and Coatings (PLC) Division from Sept. 4-7, at the Marriott Copley Place in Boston, Mass., U.S.A., was attended by 677 registrants who attended the sessions and by representatives of 41 companies that exhibited at the trade fair on Sept. 4-5.

The registration for the sessions represented an increase of 71 over the registration for the sessions at the division's 1989 conference and there were six more exhibitors at the trade fair than at the one held by the division during its 1988 conference.

The registrants were from 16 different countries and heard a total of 133 papers given during the technical program.

The division's awards banquet was opened by Jeffrey S. Brandenburg, Union Industries, Inc., the conference chairman, who welcomed those present. Ray Edwards, Texas Eastman Co., the division's vice chairman, underlined TAPPI's global scope in his welcoming address.

Dragan Djordjevic, manager, plastics converting R&D, Er-We-Pa Maschinenfabrik, Erkrath, Federal Republic of Germany, was presented the Division Award and the Sam Zweig Prize, which included a US\$ 1000 honorarium made possible by a gift to TAPPI by Morton International, Inc.

John V. Benham, manager, R&D planning, for the USI Division of Quantum Chemical Corp., was given the division's Leadership and Service Award and the Andreas G. Ahlbrandt Prize, which included a US\$ 1000 honorarium made possible by a gift to TAPPI by Enercon Industries Corp.

Best papers

The Best Paper Awards for the papers given at the 1989 PLC Conference were presented to the following persons:

William C. Harris, Jr., George E. Ealer, and Sari B. Samuels, all of Union Carbide Corp., co-authors of a paper entitled "Characterization of Surface-Treated Polyethylene for Water-Based Ink Printability," sponsored by the Flexible Packaging Committee; Charles E. Geisel, Jefferson Smurfit Corp., for a paper entitled "Making Statistical Process Control User Friendly," sponsored by the Extrusion Coating Committee; Hua-Feng Huang, E.I. du Pont de Nemours & Co., Inc., for a paper entitled "Microwave Food Packaging, What to Specify and How to Measure," sponsored by the Microwaveable Packaging Committee; Thomas I. Butler, Dow Chemical U.S.A., for a paper entitled "The Influence of Extruder Residence Time Distribution on Polymer Degradation," sponsored by the Film Extrusion Committee; Dragan Djordjevic, Er-We-Pa Maschinenfab-

rik, for a paper entitled "How to Process Barrier Resins," sponsored by the High Barrier Packaging Committee; Marianne F. Sturdevant, Dow Chemical U.S.A., for a paper entitled, "Sterilization Compatibility of Rigid Thermoplastic Materials," sponsored by the Health Care Packaging Committee; and Paul A. Mancinelli, E.I. du Pont de Nemours & Co., Inc., for a paper entitled, "Advancements in Acrylic HMPSA's via Block Copolymer Technology."

Best session

Russell H. Cramm, Dow Chemical U.S.A., was given the Best Session Award for a session, held at the 1989 PLC Conference, entitled "Update in Coextrusion," which was sponsored by the Extrusion Coating Committee.

Michaeline M. Tharp, a student of mechanical engineering at the University of Evansville, Evansville, Ind., U.S.A., was given the Ralph A. Klucken Scholarship Award of US\$ 1000.

TAPPI Certificates of Appreciation were given to outgoing chairmen of the division. They were Thomas Bezigian, James River Corp., chairman, Extrusion Coating Committee, 1989-1990; Michael L. Opacich, Quantum Chemical Corp., chairman, Film Extrusion Committee, 1989-1990; Peter J. De Marzio, Lord Corp., chairman, Flexible Packaging Committee, 1988-1990; Cynthia L. Tanner, International Paper Co., chairperson, High Barrier Packaging Committee, 1988-90; Kendall F. Foley, Hercules Inc., chairman, Hot Melt Committee, 1988-1990; Norman O. Davis, Top Inc., co-chairman, Microwaveable Packaging Committee, 1988-1990; and Ronald B. Schultz, R B S Technologies Inc., co-chairman, Microwaveable Packaging Committee, 1989-1990.

John D. "Jack" Callahan, Hercules Inc., TAPPI Board, and the President's Representative, presented the awards and prizes. In a talk to those present, he mentioned the need to develop programs that attract young, motivated individuals that are educated in ways that enable them to lead the technical advancement of the pulp, paper, and related industries.

Trade fair

Exhibitors at the trade fair liked the reception held in the exhibition area. Tom H. Lindblad, vice president, Flynn Burner Corp., said, "I can see the difference between this exhibit and the ones where there has been no food or drink. The food and drink brings people and they stay. For a

Jeffrey S. Brandenburg, conference chairman, greets those present at the 1990 banquet luncheon and awards ceremony



Ray Edwards, technical program chairman, tells attendees at the 1990 banquet luncheon and awards ceremony about TAPPI's global scope



John D. "Jack" Callahan (left) congratulates **Dragan Djordjevic** as he gives him the 1990 Division Award of the Polymers, Laminations and Coatings (PLC) Division. The award includes the Sam Zweig Prize with a US\$ 1000 honorarium made possible by a gift to TAPPI by Morton International, Inc. Djordjevic was also given a Best Paper Award for a paper entitled "How to Process Barrier Resins," which he gave at the 1989 conference of the PLC Division.



supplier, the interaction with these people is very important."

George E. Stephens, executive vice president, Galileo Corp. of America, said. "I am very impressed by the arrangements. There is a good crowd and its composition changed gradually as new people came to see the show and the afternoon wore on."

Gaetan T. Giannini, Jr., sales engineer, Nametre Co.,

said. "The crowd flow has been good. I have had people backed up in front of the booth."

Interest high

The technical sessions were held on each day. Interest in the information presented at the sessions was high as illustrated by the comments made by a random sampling of registrants:

John D. "Jack" Callahan (left), gives the 1990 Leadership and Service Award of the Polymers, Laminations and Coatings Division to **John V. Benham**. The award also includes the Andreas G. Ahlbrandt Prize and a US\$ 1000 honorarium made possible by a gift to TAPPI by Enercon Industries Corp.



Thomas Bezigian (left) is given a TAPPI Certificate of Appreciation by **John D. "Jack" Callahan** for chairing the Extrusion Coating Committee from 1989-1990.



Rumpai Sukhyanga, managing director, Strongpack Co., Ltd., Sumatprakarn, Thailand, said, "The technical developments described were of interest to me."

Ronald B. Eritano, manager, Industrial Marketing, Coatings Division, Mobay Corp., Pittsburgh, Pa., U.S.A., said, "This is my first time at a PLC conference. I have gotten some invaluable information from the papers I heard. What surprised me was that a lot of my customers are here."

Jose B. Arbatin, president and general manager, ASA Color & Chemical Industries, Inc., Quezon City, Philippines, said, "I found the sessions very interesting and think this can help my company. I spoke to one of the speakers and now have a connection for the information I want. I need a consultant and now have made the first contacts."

Key issues

The session entitled "Key Issues Affecting Laminating and Coating as We Enter the '90s" informed the audience about key issues affecting laminating and coating. It gave an overview of the multiple regulatory agencies in the U.S. that control and influence the use of adhesives and coatings. The session was well planned and organized and well attended. James A. Full, Morton International, was session chairman.

"Healthcare Packaging and Medical Waste Management," was the title of a session that dealt with the regulatory, economic, and societal problems connected with the disposal of medical wastes. It was noted in this session that although incineration is the best way to dispose of these wastes, permits to incinerate are hard to get. It was also noted that fully 50% of hospital waste is corrugated and other non-medical material, which should be recycled. Those present took part in a thoughtful question and answer session. Ronald B. Schultz, R B S Technologies, Inc., was session chairman.

"Innovation Applications for Pressure Sensitive Products" was the title of a session that covered innovative testing methods, new types of pressure-sensitive adhesives

(PSA), medical applications on skin, and information about effective wetting agents and PSA interaction with silicones. Douglas H. Timmel, Air Products and Chemicals, Inc., was the session chairman.

The session entitled "Film Extrusion Equipment Technology I" covered recently developed technology for blown and cast film extrusion. The session included several excellent papers. These dealt with new developments, equipment evaluations, a method for use in sizing film extrusion equipment, and the development of automatic blown film dies for excellent gauge control. Thomas I. Butler, Dow Chemical U.S.A., was session chairman.

"Hot Melt Technology" was the title of a session that dealt with new, high-performance, hot-melt adhesive systems and analytical techniques for relating hot-melt adhesive properties and performance. In presenting his paper, entitled "High Temperature GC Analysis of Waxes Used in Hot Melt Adhesives," Alan R. Case, Moore & Munger Marketing, Inc., made very effective use of slides in presenting his information. The session was chaired by Kendall F. Foley, Hercules Inc.

Regulation

Jeffrey S. Brandenburg, Union Industries, Inc., moderated a plenary session about "Quality." It was a panel discussion that featured prominent business, regulatory, and association leaders. The discussion dealt with how far regulation has come and what lies ahead. The quality of the questions, the discussion generated, and the answers given indicated a significant concern level on the part of those present.

John R. Gilmore, Morton International, chaired a session about the "Performance Analysis of Laminate Constructions." The subjects dealt with included the use of infrared microscopy in evaluating both laminated and co-extruded structures and why standard peel testing methods sometimes give erroneous results. There was a lively question

John D. "Jack" Callahan gives **Cynthia L. Tanner** a TAPPI Certificate of Appreciation for chairing the High Barrier Packaging Committee from 1988-1990.



Norman O. Davis (left) is presented a TAPPI Certificate of Appreciation by **John D. "Jack" Callahan** for chairing the Microwaveable Packaging Committee from 1988-1990.



and answer period after each presentation.

"The Future of Medical Device Sterilization" was the subject of a session chaired by Thomas Mestetsky, Hargro Healthcare Packaging, which dealt with the effect of government regulations, economics, and new processes currently being used to sterilize medical devices. One speaker explained why the use of irradiation will increase. Each speaker was well versed in the subject of sterilization as it relates to the healthcare industry and presented interesting information about expected developments in this area.

Katherine Thompson, Quantum Chemical Corp., chaired a session entitled "Raw Materials for Film Extrusion," at which work on degradable additives was described as well as the effects of bubble cooling on HMW LDPE film. Other speakers told about a relatively new resin; how changes in antioxidant can affect the end-use performance in polyethylene and polypropylene; and very low-density polyethylenes, a new family of polyolefins, its end-uses, and applications that take advantage of its properties.

Barrier economics

"Economics of Barrier" was the title of a session chaired by G. J. Jozwiak, Dow Chemical U.S.A. The session addressed many cost-performance aspects of barrier packaging materials. The paper, presentations, and panel discussion focused on the important considerations when choosing a barrier material so as to optimize the performance required versus the package's cost.

Donald G. Pierson, Unocal Chemicals Division, chaired a session entitled "Automotive Pressure Sensitive Adhesives: Development and Application," which dealt with in-depth examinations of interior bonding, engineer compartment test simulations, vibration damping using pressure-sensitive adhesives, and a comprehensive look at the use of acrylic PSA's for various auto applications. A common theme during the session was the need to develop products using a total system approach in order to meet the requirements of the automaker and ensure product success.

"Printing Methods and Practices" was the title of a session chaired by Steven F. Lekan, Carraro Graphic Equipment, Inc. The papers gave an overview of the basic printing processes as well as what promotes each today and may be expected to promote it in the future. Attendees were able to compare the different processes and current state-of-the-art.

James Glover, Texas Eastman Co., chaired a session entitled "Potpourri of Extrusion Coating Papers," which dealt with coextrusion coating, biodegradable materials, low temperature extrusion coating LDPE, and a test for measuring hot tack. A lot of interest was generated by the paper given by George S. Upton, Ampacet, which dealt with biodegradable concentrates ("Degradable Concentrates for Polyolefins") and by the paper by Ray Edwards, Texas Eastman Co., which was about LAPE materials capable of being extrusion coated at melt temperatures below 450°F ("Polyethylene for Low Temperature Extrusion Coating Applications").

Coextrusion

The session named "Coextrusion Technology" was chaired by John Perdikoulas, Brampton Engineering, Inc. The papers given at this session offered valuable information that could be applied to improve the design and operation of coextrusion systems.

Rhonda R. Nichols, Union Camp Corp., chaired a session entitled "Practical Aspects of Plastic Laminates." The session dealt with plastics laminate manufacture and end uses. The papers ranged from specific discussions about resins, adhesives, and manufacturing overlays to statistical process philosophy and laminate end use.

"Industrial Coatings: Technology and Application" was the title of a session chaired by Nancy C. Smith, Dexter Packaging Products. The session's presentations covered industrial applications of coatings, not all of which were packaging-related. The presentations included the formulation and product development of waterborne coatings to cover

John D. "Jack" Callahan (left) presents a TAPPI Certificate of Appreciation to **Michael L. Opacich** for chairing the Film Extrusion Committee from 1989-1990.



the inside of a beverage can; the electrostatic coating process; conductive coatings applied as a heat transfer coating to be conventionally applied to various substrates for use as a microwave susceptor; and the development and application of waterborne polyurethane coatings, especially for inks. It was recommended that polyurethane coatings be carefully formulated to provide the best cost-to-performance ratio.

Mark S. Hull, H. B. Fuller Co., chaired a session called "Selected Topics in Pressure Sensitive Adhesive Technology." The presentations dealt with the examination of defects induced during wire wound rod coating; the performance of hot melt adhesives in nonwoven application; the process of plasticizer migration from substrates such as PVC; and a new line of aromatic modified aliphatic hydrocarbon resins that is available. The information presented showed research is being done in several areas other than adhesive performance.

Printing processes

Steven F. Lekan, Carraro Graphic Equipment, Inc., chaired a session named "Ancillary Equipment Supporting Printing Excellence," which gave an overview of the different printing processes relevant to the division's members. P. W. Frey, CCI, Inc., in a paper entitled "Inspection of Web Printing by Computer with SPC," said statistical process control will eliminate defects in printing. The session was very well attended and many questions were asked about such topics as the effects of doctor blade angles; the effects of pH on ink; and how to measure ink viscosity.

Thomas Bezigan, James River Corp., chaired a session entitled "General Extrusion Coating Studies," which dealt with how changes in extrusion coating parameters can have significant effects on processability and coating properties. It included the following subjects: the extrusion coating of polyethylene foam; coating crystallinity as a function of extrusion and quenching conditions; the coextrusion coating of woven fabrics; and the effect of resin and extrusion conditions on hot tack and heat seal. William M. Karszes, LenTec

Corp., gave a paper in which he discussed "Bubbles and Voids in Extrusion Coated Films." The paper was an historical review coupled with designed experiments to show how to set die conditions for one structure. It also described other variables from both an experimental and theoretical standpoint.

"Recycling of Barrier and Multilayer Scrap" was the title of a session that David S. Bernard, Bernard Packaging, chaired. The session covered the issues of the source and handling of "clean" scrap, potential toxicity problems, cost and efficiency, the performance of blended or coextruded scrap, EPA emission concerns, the percent of scrap that can be used, and the technology of processing barrier scrap products.

It was pointed out in one paper that the present classification systems for identifying plastic materials for potential recycling are inadequate, particularly from the post-consumer, collection standpoint. Another speaker advocated an integrated system that includes source reduction, recycling, incineration, and landfill to solve the problem, and another said the key recycling problem is in the collection stage.

Melts and mixes

Dragan Djordjevic, Er-We-Pa Maschinenfabrik, described a new type of secondary recycling machine that melts and mixes the components without shear. He said the development of new types of additives for scrap reclamation is on the way.

David H. Fishman, BASF Corp., was chairman of a session named "Waterborne Inks for Non Porous Surfaces," which dealt with requirements for the further reduction of volatile organic compounds (VOC) emissions, wetting adhesion, raw material selection, printability, and resolubility. During the session, presenters noted that the enactment of more limiting governmental regulations about VOC emissions from inks and coatings is a challenge that requires the development of new systems that will wet, print well on, and stick to films and foils. The speakers presented information to make the audience aware of the changed demand for low-VOC of water-based systems, new technology, where industry is headed, and what must be done to comply with the new regulations.

James F. Komerska, Komerska Enterprises, Inc., chaired a session entitled "Requirements and Regulations for Packaging in the Health Care Industry." The presentations addressed the need in packaging design to safeguard contents during storage and to ensure safe and effective use. In the panel discussion that followed the presentations, the issues raised centered around the future of ethylene oxide (ETO) versus other sterilization methods such as gamma, electron beam, and steam. The consensus was that ETO will probably be phased out by industry where possible, but remain in use in hospitals under strict guidelines set by the Environmental Protection Agency.

The audience also asked about seal verification and many said they expect an eventual requirement of 100% robotic package seal inspection and verification. The opinion was that if this happens the inspections will probably be done electro-optically, or by similar non-contact means.

John D. "Jack" Callahan presents the 1990 Ralph A. Klucken Scholarship certificate and a US\$ 1000 check to **Michaeline M. Tharp**.



Processes and equipment

Barry J. Conrad, Peereon National Corp., was chairman of a session called "Production Processes and Equipment in Microwave Packaging." Each speaker at this session addressed the production of microwaveable packages as a process. It was their view that one should not buy machines and start production until one knows exactly what the package must do. Up-front homework is, therefore, needed in order to identify the food load characteristics, tray design, distribution, and other factors that will affect it and then choose the right package material, design and make it.

"Film Extrusion Technology II" was the title of a session chaired by W. Bode, Battenfeld Gloucester Engineering. The papers dealt with film extrusion equipment. One described a common sense way to explain how to evaluate how much to expect from a blown film line. The method involves applying a series of factors to an assumed basic rate.

Debbie Bogash, Quantum Chemical Corp., chaired a session entitled "Testing and Quality Control," which reviewed everyday results and important decisions made based upon data presented. The presenters explored a laboratory process control program; identified simple and effective techniques for evaluating the measurement process when testing is destructive; presented a more reproducible technique for measuring surface tension; and described the tools needed to make consistent HMW-HDPE film within a description of the extent to which properties can be altered during fabrication.

Developing new products

Gary Alexander, Pressware International, Inc., chaired a session named "Microwave Packaging Design, Development, and End Use," which focused on the process of developing new products, integrating the functions of the raw material suppliers, the converter, the independent packag-

ing professional, and the end user. The papers were, therefore, presented by representatives from each of the areas in question. Each presenter told about his experiences in developing and introducing certain new products and highlighted the need for strong relationships and partnerships with other companies.

During Alexander's session, A. D. Cramer, Heinz Venture Group, Ltd., described a food company's requirement for the introduction of new products and Norman O. Davis, Top Inc., told how independent packaging professionals can link the different areas together to help companies introduce new products.

"Solid Waste" was the title of a session chaired by Jeffrey S. Brandenburg, Union Industries, Inc. The session was a follow-up to one held at the division's 1989 conference. It focused attention on the amount of change in the solid waste management area in the last 12 months and addressed the changing role of packaging within the solid waste stream as well as requirements and industry's response to the growing solid waste issue.

Jason Weisman, Energy Sciences, Inc., chaired a session entitled "Advances in Electron Beam (EB) Processing," which covered state-of-the-art topics such as EB equipment and processes, available EB-curable chemistries, and a review of newly developed EB-cured products. One speaker noted that EB inks and coatings are compatible with conventional printing and coating equipment, but users of EB equipment should be aware that it may require some minor adjustments or modifications when these are used. Another paper described some new applications in terms of the coating properties that make them possible.

Surface properties

Ray Edwards, Texas Eastman Co., chaired a session entitled "Polymer Surfaces Studies," which focused on the extrusion coating surface properties and their effect on adhesion, heat seal, chill roll release in relation to various resins, additives, and treatment techniques. One paper given at this session emphasized the importance of flame quality in plastics priming and treating and said that, if lacking, this can leave hydrocarbon surface contaminants to detract from heat sealing. Another paper told how varying the extrusion coating limits of output, back pressure, air gap, differences in aluminum adhesion, and heat seal performance were observed for the resins studied.

Rick Knittel, Sano, Inc., chaired a session named "Film Extrusion Technology," at which six excellent papers about film extrusion by the Society of Plastics Engineers (SPE) were given as part of an exchange between SPE and TAPPI on the subject. In one presentation, Steven A. Best, Exxon Chemical Co., described the influence of linear low-density blends on high-molecular weight films and said coextrusions are quite superior to blends in this application. In another, J. Dooley, Dow Chemical Co., explained how finite element analysis could be used to analyze melt flow instead of air flow. Other papers were by Lee Woo, Baxter Health Care Group, who told how various polymers performed as films at low temperatures; C-W. Park, University of Florida, who gave a paper about extensional flows in slot cast extrusion; and Sandra J. Pifer, Quantum Chemical Corp., who told how the carrier resin of a concentrate can affect the properties of the final film product. □