

ATTENDANCE STRONG AT THE 1997 NONWOVENS CONFERENCE

J. ROBERT WAGNER

NOT EVEN A FLOODING RIVER COULD KEEP ATTENDEES FROM MEMPHIS.

THE PEABODY HOTEL IN MEMPHIS, TN, LISTED IN the National Register of Historic Places, was home to the 1997 TAPPI Nonwovens Conference and Trade Fair, drawing approximately 300 attendees. Perhaps best known for the ducks that parade daily to and from the travertine marble fountain in the lobby and the duck palace on the roof, The Peabody offered a grand view of the swollen Mississippi River, which had not been at this level of flooding for 50 years.

Attendees were able to enjoy various Memphis attractions; some managed to get in a game of golf, while others visited Elvis Presley's home, Graceland. As an added feature to the conference, attendees were treated to a St. Patrick's Day parade complete with accompanying bagpipes.

Norman B. Scheffel, the outgoing division chairman, formally opened the conference proceedings and was followed by Conference Chairman Paul Kochar, who discussed the advantages of being active in the Nonwovens Division, especially for one's own professional development and leadership skills.

TAPPI Board Member M. Bruce Lyne was on hand to present awards to Division members. A plaque for distinguished service as Nonwovens Division Chairman was presented to Scheffel. The 1996 Overall Conference Best Paper award for the paper "Comparative cut strip and biaxial tensile behavior of resin bonded nonwovens," also a Session Best Paper, was presented to Janet Bulan-Brady and J. Robert Wagner. Other Session Best Paper awards for 1996 were presented to G. C. Young, Eugene H. Burrows, Mary E. Pierce and Norm Lifshutz; Maryann C. Kenney, Sandra K. Barlow and Sheri L. Eikleberry; Robert L. Shambaugh, Thomas F. Gilmore, Neelesh B. Timble and Glenn P. Morton; and R. R. Bresee and T. S. Daniluk. Certificates of Appreciation were presented to the Exhibits Co-

chairs Jenifer A. Woods and Kelleen L. Loewen and to the 1997 Session Chairs Royall M. Broughton, Michael A. Madden, Irwin M. Hutten, Jenifer A. Woods, Alex S. Williamson, Robert J. Bender, John R. Deputy, Rudolph F. Janis and Don B. Gillespie.

The high point of the awards was the presentation of the Nonwovens Division Leadership and Service Award and the Technical Award. Douglas Klauber of Hollingsworth & Vose Co. received the Division Leadership and Service Award. He assisted in the formation of the Nonwovens Division, was a past Division Chairman and served on many other committees. Christine Jarvis of Clemson University received the Nonwovens Division Technical Award and Hollingsworth Prize. In addition to her activities in various committees, she has presented technical papers both for TAPPI and other organizations. She holds several patents and is especially known for her research work in apparel manufacturing, color technology, reaction kinetics and dynamics, combustion reactions, nonwovens and foam processes.

Wayne H. Gross, executive director of TAPPI, discussed the current status of TAPPI activities. In addition, he discussed TAPPI's desire to collaborate with other organizations and associations. He also addressed current activity regarding the production of publications, books, and conversion of those to CD-ROM format. The success of TAPPI's web site also was mentioned.

The Technology Exhibition was an important facet of the conference, as it provided an occasion for exhibitors to show equipment and provide literature to attendees. Those attending could get a glimpse of what was new in their field and also have the opportunity to network with the exhibitors, friends and associates.

The technical sessions were the highlight of the conference. The Product Characterization and Performance Committee had papers on the theoretical aspects



Conference attendees pose for photos with Elvis

of needle-punch fiber transfer and quality improvement of needle-punched semiconductor nonwovens. It was also shown that an image analyzer can be used for product characterization and problem solving to analyze yarn size and quality, dyeing and soiling, size of interstices, seam puckering, pilling, fabric squareness and its associated problems and dimensional shape and performance of products such as tennis balls. A statistical study was presented relating the percentage of binder fiber and web weight on the tensile, stiffness, compression, dimensional stability and air permeability of nonwovens for use as electrical insulation.

A fibers tutorial emphasized how the chemical structure, as well as morphology, affect the properties of the fiber, processing and the performance characteristics of the ultimate nonwoven product.

A fibers session described the manufacture and use of Lyocell® cellulosic fiber, which is produced by dissolving wood pulp with a solvent. The fiber has the ability to be fibrillated in wet processing and serves well as a binder. Cellulon®, another cellulosic fiber, which is produced by agitated aerobic bacterial fermentation, can also be used as a binder to produce specialty papers, nonwovens and medical and hygiene products. Being cellulose, the fibers are easily recycled. Another paper described the use of feather fibers for the binding of heavy metals and are said to be more efficient than using particle type filters for the same purpose. A panel discussion was presented on processes, properties and application of cellulosic bleached cotton, cotton linters, abaca and wood pulp.

A session on life-cycle assessment (LCA) stressed the need to document the goal and scope of the assessment, the materials used and the importance of making accurate process assumptions, subjective judgments and hazard estimates. Closely related to the LCA session was a session on recycling, which reviewed what decisions are being made and what recycling is being done in the textile and automotive textile industry and the building products industry.



Incoming Division Chairman Paul Kochar (L) and outgoing Chairman Norm Scheffel

A Suppliers Showcase had four different presentations that dealt with flame-retardant acrylic latex binders, a chemical- and solvent-resistant binder with thermal stability and another having improved formaldehyde and VOC emission. One of the presentations dealt with forming fabrics and the importance and capability of keeping the fabrics clean and permeable using showers, air knives, vacuum boxes, exhausters, separators and filtration.

The building and industrial mat session had a mix of papers. The measurement of zeta-potential has for some time been used to determine conditions of pigments, fillers, ceramics and wet-end conditions for furnishes. However, because of the existing difficulty of measuring zeta-potential directly, an alternate method of measurement using instrumentation based on streaming potential principles was developed and used successfully. Other topics featured include latex modification of urea formaldehyde; the effect of binder solids, resin mole ratio, and cure time on formaldehyde and ammonia release; and mat properties. A red dye test was found satisfactory for a quick on-line method for determining the degree of cure of glass-mat resins, providing the ingredients in the furnish remain constant.

A panel discussion provided a forum to discuss the merits of using tensile, tear and total energy absorbed (TEA) tests to assess product and process variables on ultimate wet-laid mat performance characteristics.

The Filtration Committee had four papers in its session. It was found that improper use of nonwoven filter media can cause excessive filter media usage and waste. A review of the equipment and process should be made and deliberate action taken to minimize the waste. In air filter media used for the semiconductor industry, it was found that blending glass fibers with large differences in diameter will raise the performance factor of the filters.



Bruce Lyne (R) awards a plaque for distinguished service to Norm Scheffel

In addition, it was recommended that the surface tension of the binder liquids be adjusted to prevent the formation of binder membranes. Laboratory tests on air filters for ventilating systems can give misleading results. Therefore, to improve the test, the particles should be analyzed for their shape, type and risk factor. It was suggested that the ISO 4572 test procedure be modified in different ways to provide the user or engineer with contaminant removal information so that the proper media for a given application can be obtained.

The binders and additives session presented several topics, including reviewed resins for lube oil filters. It indicated that resins should be used for maximum performance. The results of a round-robin investigation of methods for determining formaldehyde of binders and stack emission also was presented.

Starch graft polymers that are non-formaldehyde self-crosslinked latex dispersions—useful as binders for fiberglass, polyester and cellulosic materials where high temperature resistance and water resistance are a prerequisite—were discussed. The advantages of other low-formaldehyde binders were also described. Waterborne epoxy resin dispersions were found to enhance adhesive strength, mechanical properties and chemical resistance when blended or formulated with latex systems.

The Process Technology Committee session included a paper on using mathematical modeling as a practical and objective method for evaluating the quality of nonwovens. Another paper featured information on measuring melt-blown fiber-cone dimensions by either high-speed photography or laser Doppler velocimetry. This, along with fiber oscillation, which can be measured by Doppler velocimetry, can be used to predict laydown pattern, fiber-to-fiber contact and entanglement.

Research on spinning speeds varying between 1000–6000 m/min for both polypropylene and polyester resins was presented. Finer and stronger filaments can be



Douglas Klauber (L) receives the Leadership and Service Award from Bruce Lyne

produced and fabrics with superior properties will result as spinning speed is increased.

Another presentation offered information on the use of infrared energy, shown to strengthen polyester needle-punched nonwovens having low density. Variables consisting of binder fiber percentage, basis weight, air flow through the fabric and emitter temperature were investigated in one paper. Another presentation described a step-by-step approach for troubleshooting and reducing down time in the production of cotton swabs.

The last session emphasized the production of hydroentangled nonwovens. A new-generation random card was described that can produce a range of products having high-quality demands by varying card speeds and settings. Also presented was a study on using fourier transform infrared spectroscopy to determine the distribution and amount of finish applied to the cotton web and relating the results obtained to processability. The principles, advantages and equipment of hydroentanglement were described. Web weight up to 400 g/m² can be bonded and production speed up to 250 m/min were quoted. The use of through-air drying was described as giving rapid heat transfer, higher speeds with low exhaust heat loss and possibly 30% less energy. The final paper presented a model for predicting the bonding behavior of ultrasonic bonding processes and webs produced.

All of the sessions were well attended and, from the numerous questions raised by attendees, there was obvious interest in the papers presented. The 1998 Nonwovens Conference and Trade Fair, March 9–11 in St. Petersburg, FL, promises to be just as great. **TJ**

Wagner is the TAPPI JOURNAL nonwovens technical editor and editor of the Nonwovens Division newsletter.