Pulping Conference in Toronto draws over 1300 participants

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TAPPI's 1990 Pulping Conference was attended by 1378 pulp and paper industry professionals October 14-17 in Toronto, Ont., Canada. The 1990 conference, sponsored by TAPPI's Pulp Manufacture Division, had one of the largest turnouts in the meeting's history. The conference included 28 technical sessions and 13 roundtable sessions on such topics as mechanical pulping, alkaline pulping, nonwood plant fibers, and fiber raw material supply. Other sessions addressed pulp bleaching, secondary fibers, solvent pulping, and sulfite and semichemical pulping. Many of the sessions focused on environmental issues, including recycling and dioxins.

Conference comments

Two related topics attracted a very high attendance at the conference, at times overshadowing the usual dominance of kraft pulping improvements and pulp bleaching. Secondary fiber attendance forced the meeting planners to move the sessions to larger rooms to accommodate the crowds. Not all these people work in mills that use secondary fiber, but all see its importance in the future and were there to learn all they could on the latest developments. The plenary technical session presented by the USDA Forest Products Laboratory set the tone for this area. Vance C. Setterholm provided a vision of how municipal governments and industry should form partnerships that provide usable and economic sources of wastepaper from the public refuse system. John H. Klungness provided an overview of modern technology for contaminant removal. Subsequent sessions covered a wide range of technology, products, and worldwide implementations of secondary fiber systems.

Secondary fiber has matured as a stable and economical source of fiber, but this was not always the case. Recovery rates in North America are finally increasing to levels that other countries have achieved for decades. Similarly, use of nonwood fiber has been localized in areas of the world where wood is in short supply. But, as Joseph E. Atchison described in his remarks as he accepted the Division Leadership and Service Award, the importance of nonwood fiber is growing rapidly, and there is still a tremendous volume yet to be utilized. This was further emphasized by the papers and roundtable discussion on the use of kenaf in the southeastern United States. The South is usually regarded as an ideal woodbasket with fast-growing pines and abundant hardwood. But kenaf is able to compete in this market as an annual crop for newsprint. Others are looking at the unique fiber properties of the bark and core fibers to produce specialty grades.

Kraft pulping process improvements and the chlorinated organics issues in pulp bleaching have taken top billing for the last several years at the Pulping Conference. But the recovery and liquor-making area of the mill also are attracting a lot of attention. A technical session on alternative uses of kraft lignin is a logical outcome of the drastically reduced energy consumption by the kraft pulping process. "Excess" lignin is being investigated as an alternative fuel for lime kilns in work at the University of British Columbia and the Pulp and Paper Research Institute of Canada (Paprican). An entire technical session was devoted to this topic and reported very encouraging results for commercial implementation.

Solvent pulping had a premiere session at the conference and a subcommittee on Solvent Pulping was formed at the meeting. The pilot and full-scale implementation of the Organocell and Alcell processes were described after an in-depth review of the chemistry of solvent pulping by well-known lignin and pulping chemist Kyosti Sarkanen. This area of technology has developed from a research curiosity to a serious commercial technology over the last 15 years and will be an active part of future conferences.

Education starts in the home

Zacharie J. Clements, president of the Corporation for Motivation in Education and Enterprise, gave the keynote address at the opening session. In a rollicking talk sprinkled with humorous anecdotes and characterizations, Clements stressed the importance of educating young people in the home. He challenged the audience to stop criticizing today's young people and to start actively taking a role in their education because "the problem is not in the schools, but with the parents." He encouraged individuals, as well as companies, to invest money in the

Proceedings are available from the 1990 Pulping Conference for $202 list and $134 for TAPPI members. The order number is 01050690. Orders may be placed by calling TAPPI's toll-free Service Line at 1-800-332-8686 (U.S.) or 1-800-446-9431 (Canada).

Division Chairman **William S. Fuller** (left) welcomes attendees to the 1990 Pulping Conference. Later, TAPPI Director **Richard G. Elliott** (right) extended greetings from the Board.

Joseph E. Atchison, recipient of the Division Leadership and Service Award, receives the Joseph K. Perkins Prize from **Ian J. Clarke-Pounder**, vice president of the IMPCO Division of Ingersoll-Rand and Pulp Manufacture Division secretary.

schools and students.

Clements also stressed that what people have is more important than what they don't have. "Too few people," he said, "remember to keep their eye on the donut, rather than the hole." He reminded the audience not to get caught up in the details in life and work, but to enjoy life more.

Selected technical sessions

Secondary fiber

The first secondary fiber session provided an overview of the recycling industry and some ideas on tackling this issue. Speakers Vance C. Setterholm and John H. Klungness of the USDA Forest Products Laboratory explained that currently the paper industry cannot produce what the public wants because the industry is still refining the recycling process. The industry does not need recycling, but the public wants it, so mills must play a role. Research is needed on wood fibers, bleaching, uses for waste, and economic factors if mills are to produce recycled paper more efficiently. Setterholm said it is essential for the government to play an active role in supporting the industry's efforts and to finance the research necessary to reduce disposal. Because bleaching and contaminant removal have not been refined, Klungness predicted that demand will be greatest for old corrugated containers, and mills will have less demand for printing and writing papers.

Another secondary fiber session focused on different forms of washing and bleaching of waste paper. T. Joachimides and M. Hache of Morton International, J. E. Angulo of E. I. Dupont de Nemours & Co. Inc., and S. A. Heimburger and S. Tremblay of FMC of Canada Ltd., authored the papers. The speakers discussed the use of different chemicals to increase brightness, flotation vs. the wash process, and environmental and cost factors. Angulo presented several case studies of existing and proposed mills which use different combinations of processes and chemicals to improve the brightness of recycled paper.

Pulp bleaching

The first pulp bleaching session addressed concerns about reducing waste products in the papermaking process. Authors V. J. Dallons, R. C. Whittemore, L. E. LaFleur, and R. Brunk of the National Council for Air and Steam Improvement explained that the chemical content and amounts used in papermaking produce varied products, and that bleaching changes have reduced chemical waste. Comparatively, the oxygen delignification process and the chlorine dioxide substitution process yield the same chemicals in different quantities; however, the total amount of chemicals released is equivalent in the two processes.

K. Sjoblom of Jaakko Poyry AB described the differences in environmental regulations throughout the world. These regulations have helped to reduce emissions, which has prompted increased production. He suggested that further process modifications and biological effluent treatment could further reduce emissions. Another challenge to the industry is the discharge from chemical and mechanical bleaching; often the discharge is not high enough for recovery but is too high for dumping.

Alkaline pulping

It's not often that an area of fast-moving technology can be kept in focus long enough to assess it globally. After several years of intensive studies in North American and Scandinavian kraft mills, just such a perspective now exists on the pulping performance one can expect from batch digester systems.

In the first alkaline pulping session of the conference, Panu Tikka of SciTech Service in Finland synthesized a picture of what conventional and liquor-displacement batch operations can offer in the critical areas of delignification and pulp strength. The report, coauthored by Martin MacLeod of Paprican and Kari Kovasin of Sunds Defibrator Rauma in Finland, showed that full liquor displacement systems can outperform conventional systems in keeping kappa number variability low within every cook. Also, the liquor displacement performed at the

Otto V. Ingruber, Division Technical Award recipient, is awarded the Johan C.F.C. Richter Prize by **Joseph R. Phillips**, vice president, R&D, Kamyr, Inc.

Pulping Conference Technical Program Chairman and Division Vice Chairman **Richard J. Spangenberg** discusses the technical program with **Mark D. Robinson** of the Fiber Raw Material Supply Committee.

end of cooking allows newer discharge techniques (air blowing and pumping, for example) to be used, and the outcome is a substantial improvement in pulp strength at the brownstock washers.

Titled "Chemical and Physical Performance of Kraft Cooking: The Impact of Process Alternatives," Tikka's presentation made it clear that chemistry and physics both play prominent roles in determining the quality of the pulp from any kraft digester operation. But while the relative contributions of chemistry and physics are now fairly well understood in batch digester systems, such is not the case with continuous digesters. Tikka noted that technical information remains sparse as to measurements of uniformity of cooking inside continuous digesters. All that's known with certainty is that continuous systems in general are not vastly better in pulp strength delivery than batch systems. The paper contains speculative reasons why this may be.

Along similar lines, Martin MacLeod talked about a triple hanging basket investigation in a conventional batch mill making bleachable-grade softwood kraft pulp. Basket hanging showed that the digester had a consistent pattern of delignification: cooking was always greatest at the bottom basket position and always least in the middle, with kappa number spans averaging six units. The pulp strength picture was equally clear, but different: all the basket pulps were of very high quality, regardless of position or kappa number. Hot blowing, however, resulted in a 20% drop in pulp strength, demonstrating that fiber degradation during discharge can compromise even a very good pulping operation.

Other avenues of research in kraft pulping and control were also described. Rick Gustafson *et al.* of the University of Washington pointed out that even when white liquor impregnation of chips is performed exceptionally well, overthick chips (e.g., 10 mm) fail to cook uniformly all the way through, resulting in excessive rejects and nonuniform pulp. Raimo Alaan *et al.* of the Helsinki University of Technology agree that some lignin degradation products of low molecular weight are "markers" for the progress of delignification; that is, they can be extracted easily from the cooking liquor and analyzed rapidly by gas chromatography. This was proposed as the basis of a process control scheme. The messier chemistry of delignification in batch digesters in mills must first be sorted out, as the initial work was done in relatively clean lab cooks.

Halfway through the conference, kraft cooking was in the limelight again at a roundtable session on batch digester operations and control. This was less oriented to the leading edge of kraft pulping, more a "nuts and bolts" gathering.

Surprise! New conventional batch plants are still being built. Georgia-Pacific and Mead have both built such facilities in recent years in the South. So today's choice in digester systems is not strictly limited to liquor-displacement batch versus continuous.

As always, reasonable control of delignification remains problematic and requires attention on every front imaginable: chip quality, liquor quality, the intricate process details of each digester cook, and a philosophy of continuous improvement. Still, lots of things don't go right. Two of the panelists criticized their chip moisture meters for unreliability and excessive maintenance. How can the sensing of such a key process variable—wood moisture—still lack a full-time, workable, ubiquitous solution? One might dare to say the same of another critical factor, temperature control, where sensing is usually insufficient, in the wrong place (i.e., digester walls), and often inaccurate. No wonder kraft pulping still has so much room for improvement. At this rate, the conference won't run out of subject matter for quite a few years to come.

Honors and awards

The Pulp Manufacture Division awards were presented at the opening session on Monday, October 15.

Technical Award

Otto V. Ingruber, consultant in Vankleek Hill, Ont., Canada, and retired senior research associate for CIP Research, was honored with the Division Technical Award. In addition to the award, Ingruber received the

1990 Pulping Conference 5K Fun Run results

Finish no.	Time	Name	Finish no.	Time	Name
1	18:57	Jim Patterson	21	23:02	George M. Fears
2	19:31	Marco Solinas	22	23:26	Don Eadie
3	19:41	Lance Doeniek	23	23:35	Bill Maisel
4	20:24	Mike Rushton	24	24:05	Phil Williams
5	20:28	Stegan Högman	25	24:15	Mike Haas
6	20:30	Kevin Burkett	26	24:24	Tim Cartwright
7	20:39	Greg Landry	27	24:25	Mike Forde
8	20:51	Henry Peters	28	24:32	Vendy Tomko
9	20:58	Kurt Kobelt	29	24:48	Glenn Olson
10	21:10	Hans U. Suess	30	24:59	Hugh Scnall
11	21:18	Paul A. Roux	31	25:03	Dan Connors
12	21:26	Tony Johnson	32	25:24	Steve Patrick
13	21:30	Joun Howard	33	26:11	Matthew Coleman
14	21:45	Shaun Lemieux	34	26:28	Robert Johns
15	21:47	Clarence Chaplin	35	27:01	Denise Galante
16	21:53	Eric Muchmore	36	27:30	Louis Pedneault
17	21:54	Kevin Brannstrom	37	27:41	Bill Austin
18	22:03	Mark Gilkey	38	30:01	Jim Wood
19	22:28	Danny Warren	39	33:22	Barbara Burns
20	22:30	Mike Wilcox			

NLK-Celpap sponsors fun run

A 5K "fun" run along the shores of Lake Ontario in the predawn darkness of October doesn't sound like that much fun, but 39 runners showed up anyway to help raise money for pulp and paper scholarships. A total of 58 people registered, raising $870 for six scholarship funds.

Sponsored by NLK-Celpap, the race was the second annual such event. The first race was held at the 1989 Pulping Conference in Seattle.

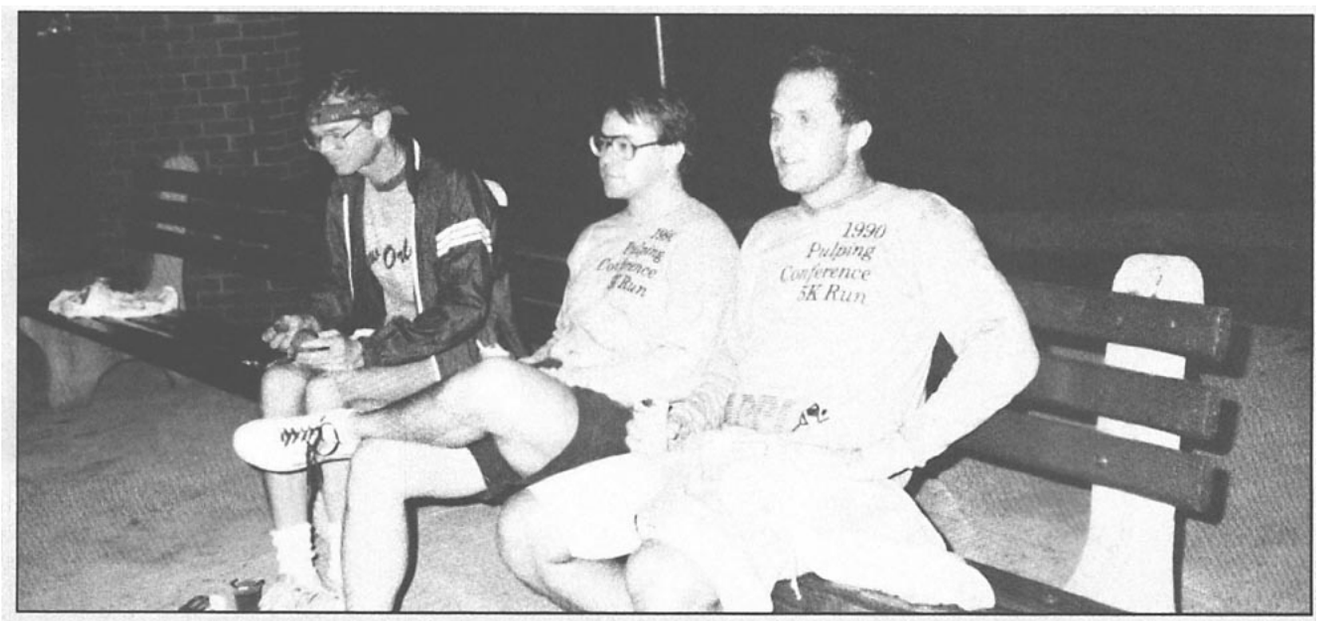
NLK-Celpap has five engineering divisions which share their expertise with pulp and paper companies the world over, from offices in Sweden, British Columbia, the Province of Quebec, Alberta, Washington, Oregon, South Carolina, Georgia, Norway, Japan, Venezuela, Brazil, Australia, France, and London. The first U.S. office was opened in Seattle in 1987. Since then, the U.S. operation has blossomed into three engineering offices and a marketing strategy office.

Johan C.F.C. Richter Prize, which carries a $1000 honorarium made possible by a gift to TAPPI from Kamyr and Sandy Hill Corp.

Ingruber has been recognized worldwide for his extensive research and development work in sulfite pulping technology. He has helped advance the industry's understanding of the chemistry of pulping. His most significant contribution was the development of a reference electrode for measuring the true pH during sulfite pulping over the entire range of practical value. This enabled him to develop a better understanding of the chemical reactions occurring during sulfite pulping, an understanding which has led to improved control of the process. He also conducted research in the area of alkaline sulfite-anthraquinone pulping. He holds nine patents in various countries.

A TAPPI member since 1957, Ingruber was honored as a TAPPI Fellow in 1986. He has been an active member of the Sulfite and Semichemical Pulping Committee since 1981. In addition to publishing over 20 papers in pulp and paper journals worldwide, Ingruber is the coauthor of Volume 4, *Sulfite Science and Technology*, of the Pulp and Paper Manufacture Textbooks of the TAPPI/CPPA Joint Textbook Committee. His knowledge helped to make this text the definitive source on sulfite pulping because it covers all aspects of sulfite science and pulping technology. Ingruber also has made several presentations at TAPPI and Canadian Pulp and Paper Association conferences.

Participants in the Pulping Conference 5K Fun Run relax and enjoy refreshments following the event, which was sponsored by NLK-Celpap.



Leadership and Service Award

Joseph E. Atchison, president of Joseph E. Atchison Consultants in Larchmont, N.Y., was awarded the Division Leadership and Service Award. Atchison also received the Joseph K. Perkins Prize, which includes a $1000 honorarium made possible by a gift to TAPPI from the IMPCO Division of Ingersoll-Rand. The $1000 Prize will be donated to an educational institution of Atchison's choice.

A well-known leader worldwide, Atchison's efforts in founding, developing, and guiding the Nonwood Plant Fibers Committee have ensured its strength and effectiveness. He served as chairman of the committee for 12 years. During that time, he encouraged industry personnel from all over the world to become active in the committee, enhancing the international structure of the Division and TAPPI. Of the current 80 committee members, more than half are non-U.S. members, and almost half are overseas members.

A TAPPI member since 1941, Atchison was elected a Fellow in 1978. He was also the recipient of the 1974 Pulp Manufacture Division Award. In addition to presenting numerous papers at TAPPI conferences, Atchison delivered the keynote address at the 1949 TAPPI Annual Meeting.

Atchison is an internationally recognized authority on papermaking with nonwood fibers. He also has done work using tropical hardwoods and recycled waste paper in the papermaking process. He has developed and implemented pulp and paper projects in a number of developing countries.

Atchison served as a member of the U.S. Delegation to the Pulp and Paper Committee of the International Materials Conference, and as chairman of the International Conference on the Utilization of Agricultural Residues. He has chaired numerous meetings on nonwood plant fibers sponsored by FAO, UNIDO, and other United Nations organizations in the United States, Latin America, Europe, Africa, and the Near and Far East.

Atchison is the author of more than 120 technical and nontechnical articles concerning the pulp and paper industries of various countries. His contributions have appeared in more than 40 publications.

Dave Wetherhorn Award

Martin E. Cyr, technical manager of Irving Pulp & Paper Ltd., D. F. Embley, senior process engineer for Irving Pulp & Paper Ltd., and J. Martin MacLeod, supervisor of chemical pulping for Paprican, received the Dave Wetherhorn Award. Sponsored by the Alkaline Pulping Committee, the Award was created with a trust fund donated by Jackie Wetherhorn in memory of her husband, Dave, a distinguished Pulp Manufacture Division chairman and Alkaline Pulping Committee chairman. The Award recognizes the author(s) of the best paper presented during the Alkaline Pulping sessions of the TAPPI Pulping Conference each year. Papers are judged on technical significance and value to the conference attendees.

The winning paper from the 1989 conference by Cyr, Embley, and MacLeod is entitled "Stronger kraft softwood pulp—achieved." It was published in the October 1989 issue of *Tappi Journal* (p. 157). The article focuses on ways to strengthen unbleached softwood pulps through revision to the digester.

Special Certificates

Joseph A. Kurdin, director of business development at ABB Lummus Canada Inc. in Vancouver, B.C., Canada, was honored with a Special Certificate of Appreciation by the Mechanical Pulping Committee. For nearly four decades, Kurdin has been a pioneer in the development, application, and marketing of refiner mechanical pulp. He has reported on his work in nearly 70 technical papers and has presented numerous lectures on refiner mechanical pulping technology throughout the world. He has been invited to lecture at several college pulping seminars to

prepare students for technical careers in the pulp and paper industry. In 1983, he was named program chairman for the International Mechanical Pulping Conference in Toronto, Ont., Canada.

A TAPPI member since 1968, Kurdin has been active in TAPPI's Mechanical Pulping Committee, as well as in the CPPA Technical Section. He has also been an officer in the Pulp and Paper Machinery Manufacturers Association and a member of the American Paper Institute/TAPPI Advisory Committee to the U.S. Forest Products Laboratory in Madison, Wis.

William G. Strunk, consultant for FMC Corp. in Princeton, N.J., was honored with a Special Certificate of Appreciation by the Mechanical Pulping Committee at a special awards ceremony during the Committee's summer meeting in Nanaimo, B.C., Canada. Strunk is one of the industry's foremost authorities on the technology of peroxide bleaching of wood pulp. He has written numerous papers on this subject and has lectured on it at universities, TAPPI conferences, and other organizations' meetings for over four decades. He also wrote a chapter on "Peroxide Bleaching" for Vol. 2 of the *Pulp and Paper Manufacture* series published by the TAPPI/CPPA Joint Textbook Committee.

Since graduating with a B.S. degree in chemistry from the University of South Dakota in 1942 (and during later studies at Columbia University and New York University), he has been a pioneer in the development of peroxide bleaching in the pulp and paper industry. He has also played a key role in advancing wastewater treatment technology. Similarly, he has distinguished himself in plastics and resins applications for paper coatings, adhesives, and laminates.

Strunk has worked for FMC Corp. since 1942 in the research, market development, sales development, and technical service departments.

Next time

Planning has already begun for the 1991 TAPPI Pulping Conference to be held November 3-6 in Orlando, Fla.