CONTENTS

PLENARY LECTURES
From traditional forest industry to consumer oriented business ........................................ 10
Sverker Martin-Löf, SCA, Sweden

The forest industry and sustainable development: Opportunities and challenges ......... 14
Björn Stigson, WBCSD, World Business Council for Sustainable Development, Switzerland

Our industry in the knowledges society ........................................ 15
Thomas Johannesson, STFI, Swedish Pulp and Paper Research Institute, Sweden

NEW COOKING APPLICATIONS

Keynote
Fiber property development...................................................... 16
Björn Dillner, Södra Cell Tofte, Norway

Chip leaching before cooking ................................................... 17
Harald Breid, Chalmers University of Technology, CTH, Sweden

Superbatch-K – A new tool to control the behaviour of calcium in displacement
kraft batch cooking ................................................................. 22
Lari Lammi, Mikael Svedman, Päivi Uusitalo, and Jukka Vaistomaa, Metso Paper and Asko Paakki,
UPM-Kymmene, Finland

Progress in alkaline sulfite-AQ pulping (AS-AQ) ........................................ 26
Rudolf Patt, Othar Kordsachia and Björn Rose,
University of Hamburg, Germany

OXGEN DELIGNIFICATION, WASHING AND BLEACHING
A compact way to extend oxygen delignification ........................................ 31
Martin Ragnar, Kvaerner Pulping, Sweden

Some practical aspects of the metal ion chemistry in pulp processes .................. 36
Christin Norberg, MoRe Research, Jan Lidén, Kappa Kraftliner, Johan Lindgren, Igggesund Paperboard and
Lars-Olof Öhman, Umeå University, Sweden

The Donnan theory applied to washing .......................................... 42
Rickard Andersson, Jan Lidén and Lars-Olof Öhman,
Umeå University, Sweden

Process models for the bleach plant ............................................ 47
Fredrik Lundqvist, Niklas Berglin, Karin Lindgren, Åsa Samuelsson, Sten Sarman and Per Ulmgren,
STFI, Sweden

LIQUID PACKAGING BOARD

Keynote
The future of liquid packaging board – The point of view of the converter .................. 63
Lars Söcker, Tetra Pak R&D, Sweden

New manufacturing method for coated board based on OptiDwell shoe nip calender .......... 65
Aleksandar Todorovic, Metso Paper Calenders, Finland

Productivity increase from a better understanding of dynamic processes
and control of the paper dryer .................................................. 70
Stig Stenström and Magnus Karlsson, LTH, Department of
Chemical Engineering,Öla Slätteke and Björn Wittenmark,
LTH, Department of Automatic Control and Kristor Forsman,
ABB Process Industries, Sweden

CHEMICAL RECOVERY
Reduction of air emmissions at kraft pulp mills – Overview of a multidisciplinary EU project .. 78
Klaus Niemilä and Risto Järvinen, KCL, Finland, Åsa Samuelsson and Per Ulmgren, STFI, Sweden, Mikael
Forssen, Nikolai Delmartine, Mikko Hupa, Åbo Akademi
University, Finland, Kari Savilharju, Andritz-Ahlstrom,
Finland, Pinho Ferreira and João Rebola, Celbi, Portugal

Operation of an on-line dust monitoring system in a recovery boiler .................... 82
Jukka Kuopanpää, Dekati, Jorma Keskinen, Tampere
University of Technology, Tarja Tamminen and Mikko
Hupa, Åbo Akademi University, Finland

Overcoming recausticizing limitations, mill experiences with Borate Autocausticizing ........................ 87
Saied Kochestahani and Charles Bair, US Borax, USA

MILL CLOSURE
Optimized management of the non-process elements ........................................ 91
Maria Björk and Ingrid Engström, Stora Enso, Sweden

Spill – A significant discharge that can be reduced ........................................ 96
Anders Lundström and Niklas Berglin, STFI, Göran Annergren, JAG Consulting and
Jörgen Agebjörn, Södra Cell, Sweden

Zero effluent pulp and paper mill – Myth or reality ........................................ 101
Keijo Salminen, Kvaerner Pulping, Finland and Marie Berglund, Kvaerner Pulping, Sweden

ENERGY
Spent liquor gasification – Ever promising or breaking new paths? ................. 106
Björn Warnqvist and Lennart Delin, AF-IPK, Sweden

Energy efficient evaporation ...................................................... 112
Jessica Algehed, Chalmers University of Technology, CTH, Sweden
## CONTENTS

### FUTURE OF MEDIA AND NEW SURFACE TREATMENT

**OptiSpray – A new generation low impact coating technology** ........................................... 117
*Vilho Nissinen* and Martti Tyrväinen, Metso Paper, Finland

**A new coating color application systems for blade coating with three different application modes** ................................................................. 122
*Per Emilsson*, Ulf Söderlund and Suzanne Ohman, BTG Coating Systems, Sweden

### PAPER AND BOARD MANUFACTURE

**Keynote**

**The paper maker and challenges in printing technologies** .................................................. 126
*Per Jonsson*, Stora Enso, Sweden

**The influence of press felt micro-scale stress variations on the dewatering in a press section** ................................................................................. 131
*Jörgen Gullbrand*, Albany International and Hannes Vomhoff, STFI, Sweden

**Forming fabrics: New forming fabrics concepts matching the latest requirements of the paper quality and papermaking technology** ....................................... 136
*Bernard Fester*, Albany International Europe Forming Fabrics, France

**Board and packaging headbox technology for the 21th century** ......................................... 152
*Robert Hutterer*, Voith Paper, Austria and Klaus Lehleiter, Voith Paper, Germany

### MECHANICAL PULPING

**Keynote**

**Mechanical pulp fibers for new and improved grades** ....................................................... 158
*Hans Höglin*, Mid-Sweden University, Sweden

**Improved fiber bonding ability of PGW and TMP and its effect on LWC print quality** .......... 164
*Sari Liukkonen* and Ilkka Nurminen, KCL, Finland

**Wood containing multiply paper – Improved properties** .................................................... 169
*Anna Tubek-Lindblom* and Lennart Salmén, STFI, Sweden

### ENVIRONMENTAL ISSUES

**Multibioplant – A new technology for waste water treatment** ........................................ 173
*Anders Ullman* and Göran Mårtensson, VA-Ingenjörerna, Sweden

**An industry common methodology for environmental data management** ......................... 177

**The IPPC-Directive – Implications for the pulp and paper industry** .................................. 182
*Marja Persson Ternström* and Hans Norrström, ÅF-IPK, Sweden

### COATING AND FINISHING

**Future applications for the metering size press** ................................................................. 186
*Rolf Åkesson*, ÅF-IPK Karlstad, Sweden

**Engineering coating clay for future needs** ................................................................. 191
*John C. Husband* and A.V. Lyons, IMERYS Minerals, United Kingdom

**Advanced thermo rolls for modern high speed calenders** ............................................. 196
*Wolfgang Wiertz*, Walzen Irle GmbH, Germany

### PAPER CHEMICALS

**More effective retention system through new mixing technology and optimized residence time of the chemicals** ......................................................... 201
*Ron Lai* and *Erik Sanne*, Eka Chemicals, Sweden, Matti Hietaniemi, Metso Paper and Perttu Lamminen, Valmet Mechanical Pulping, Finland

**Dryer section passivation: A new method for improving paper machine productivity and paper quality** ................................................................. 206
*George Thomas*, Hercules, USA

**A new early warning system for slime formation in paper machines** ................................ 211
*Ewa Lie*, Christl Johnsrud, Britta Samuelsson and Lars Sjöström, STFI, Sweden and Mattias Rudh, Q-sense, Sweden

**Process water cleaning and slime control in tissue and food grade mills** ......................... 216
*Mariana Björklund*, BIM Kemi, Sweden