Wet End Chemistry
Pira International conference proceedings

Tuesday 11th & Wednesday 12th May 2004
Radisson SAS Hotel, Nice, France
Tuesday 11th May 2004

08.30  Registration & Refreshments  
Location: Les Courants

09.30  Opening remarks from the Chairman:
Dr. Basha Nazir, Head of Paper and Board Group, PIRA INTERNATIONAL, UK

09.40  Impact of trends in papermaking on wet end chemistry
- Trends in papermaking
- Paper quality and runnability
- Importance of stability
- Influence of increased use of fillers
- Importance of pH
- How closed water loop causes faster build up of DCS/anionic trash
- Effect of increased use of recycled fibre on water quality and runnability
- Expected future trends – how best to adjust
Carlos Negro, Associated Professor, UNIVERSIDAD COMPLUTENSE DE MADRID, Spain

Impact of Wet End Chemistry on Paper Properties

10.15  Hemicellulose-pitch balance – essential for pitch deposition and paper strength
- Effect of natural additives on pitch stability and deposition tendency
- Impact of pitch on paper properties
- Impact of different pitch components on paper properties
- Surface coverage of pitch components on fibres
- Use of polysaccharides to combat the negative effects of high contents of pitch
Dr. Anna Sundberg, Associate Professor, ABO AKADEMI UNIVERSITY, Finland
10.50 The successful replacement of wet end cationic potato starch with dent corn starch in a large integrated fine paper mill
- Findings of a laboratory case study evaluating:
  - Quality of ASA emulsion using cationic potato and corn starch
  - Effect of the retention of fibre fines and pigments
  - Dynamic drainage on paper machines
- Detailed evaluation of the wet end for recommendations to ensure production rate and paper quality are unaffected by changes
Richard Gratton, Technology Director, DOMTAR, and, Benoit Doiron, Development Director, NAFTA, CIBA SPECIALITY CHEMICALS, Canada

11.25 Morning Refreshments
Location: Les Courants

11.45 ASA Sizing – An introduction
Frederick Odhe, Sales Manager, SELLUKEM, Sweden

12.20 Characteristics of AKD emulsion prepared by cationic starch with well defined structures
Professor John Roberts, Head of Department of Textiles and Paper, UMIST, UK

12.55 Lunch
Location: Azur Terrace, 7th Floor

Optimising Chemical Performance in the Wet End

14.00 Influence of alkalinity and pH stability on wet end chemistry
- Stability benefits gained from using CO₂ and NaOH
- Increasing productivity through successful pH control
- Cost benefits
- Environmental considerations
Ulrika Molin, R&D Manager, Pulp and Paper, LINDE AG, Sweden, and Pirjo Puutonen, Specialist Paper Team, LINDE GAS, Austria
14.35  Particle management – a way to improve the performance of functional chemicals
• Filtration technology to follow reaction of chemicals in a paper machine environment
• Anionic fibre sites and anionic trash as competitors for the reaction with cationic additives
• Machine system audits with the help of filtration technology
• Determination of chemicals performance
• Options to optimise wet end chemistry
• Paper machine performance – effect of particle management on functional chemicals performance

Dr. Thomas Hättich, Project Application Manager, HERCULES PULP AND PAPER DIVISION, Germany

15.10  Afternoon Refreshments
Location: Les Courants

15.30  Improving the effectiveness of papermaking chemicals by controlling the aggregation mechanisms
• Role of aggregation mechanisms in controlling the wet end process
• Developing complex aggregation mechanisms via multi component additive systems with micro particle
• Effectiveness of the micro particle additive system for brown paper grades
• Effectiveness of the micro particle additive system for fine paper grades

Dr. Elena Bobu, Professor, GH ASACHI, TECHNICAL UNIVERSITY OF IASI, Romania
16.05  Optimising interactivity of chemicals and processes in the wet end
- Control and monitoring of retention systems
- Balance between retention and drainage
- Achieving optimised performance without introducing new chemicals
- Filtration resistance versus freeness
- Achieving a balance between the refining process and wet end chemistry
Georges Joris, Director of R&D, MATECH-EUROPE, France

16.40  Impact of refining on wet end chemistry
- How to check on performance of refining in relation to retention
- Fibre microscopy for improved output
- Impact of good refining on retention
Heidemarie Reiter, Manager of Chemical Technology, NEUSIEDLER, Austria

17.15  Summary from the Chairman and close of day one

17.20 – 18.30  Drinks reception sponsored by CIBA SPECIALITY CHEMICALS in the Azur Terrace, 7th Floor

19.30  Buses depart for the Pierrot 1er restaurant in Cannes for our evening social programme.

22.30  Coaches return to the hotel

23.00  One final coach will return to the hotel
Wednesday 12th May 2004

08.30 Refreshments
Location: Les Courants

09.00 Opening remarks from the Chairman:
Professor John Roberts, Head of Department of Textiles and Paper, UMIST, UK

Process Control in the Wet End

09.05 Wet end chemistry – why control?
- Purpose of measurement and control
- What can be measured and controlled?
- Available technology and implementation
- Chemical selection
- Control concepts and what can be achieved
- Example of an advanced control strategy
- Benefits
Dr. Raj Gill, Technical Manager, BUCKMAN LABORATORIES, Belgium

09.40 Quality and efficiency improvements through online analysis
- Refining monitoring and control
- Charge control
- Retention management
- Gas and air control
Thomas Ott, Technology and Development Manager, M-REAL, and, Martin Grundmann, Analyser Application Division, METSO AUTOMATION, Germany
10.15  **Online charge control at Stora Enso Grycksbo**
- Project target, plans and activities
- Results from a cost saving perspective:
  - The effect of charge control on retention polymer and fixative addition
  - The effect of charge control on the product and productivity
- Results concerning:
  - Which position is most suitable for charge control?
  - The choice between charge and turbidity control
**Bjorn Legnerfalt, Research Manager, and Daniel Hammar, Development Engineer, STORA ENSO, Sweden**

10.50  **Afternoon Refreshments**  
**Location: Les Courants**

11.10  **Adding value to the papermaking process by automating control of wet end chemicals**
- Assessing interactions to find the origins of problems in stock preparation ad the wet end
- Estimating possible process and quality benefits with a combination of wet end survey results and application know-how
- Starting a tailor-made project with online devices
- Monitoring process and quality parameters in combination with online measurement results
- Closing control loops of certain chemicals with online instruments
- Proving and maintaining process, costs and quality benefits
**Rainer Rauch, Wet Online Product Manager, BTG MUETEK, Germany**

11.45  **Control of wet end chemistry with multi-phase models**
- Multi-phase, ion-exchange models for stock suspensions
- Control of pH, alkalinity and calcium hardness
- Flowsheet process models with simulated chemistry
- Improved runnability and process optimisation
- Examples from mill case studies
**Dr. Pertti Koukkari, Group Manager, VTT PROCESSES RESEARCH GROUP OF CHEMICAL PROCESSING, Finland**
A mill's approach to control of stickies
- G.P. Stubbins' mill history
- Practical issues and a mill-wide approach
- Focus on mechanical improvements
- Focus on chemical control methods
- Focus on online control and measurement
- Sustained improvements
- Safety, environmental, quality and cost

Mark Jackson, Technical Manager, GEORGIA PACIFIC, STUBBINS PAPER MILL, UK

Lunch
Locationa: Azur Terrace, 7th Floor

Water and Retention Systems Management

Water management and wet end chemistry of newsprint mills
- Simple ways for benchmarking newsprint mills in relation to water management and wet end chemistry
- Novel methods for analysis of microstickies
- Establishing key parameters from different wet end chemistry values
- Searching the link between water management and chemistry vs paper machine runnability

Timo Ylonen, Laboratory Engineer, HELSINKI UNIVERSITY OF TECHNOLOGY, LABORATORY OF PAPER TECHNOLOGY, Finland

Latest developments in retention and drainage programmes
- Benefits of decoupling retention, drainage and formation
- Opportunities for improved quality
- Productivity enhancements using new retention programmes

Howard Johnston, Global Market Solutions, CIBA SPECIALITY CHEMICALS, UK
15.10 Optimising the running conditions of several wet end retention systems

- Comparing fibre flocculation increase caused by five different retention systems:
  ATC + CS, ATC + CS + ASI, ATC + ASI + CS, ATC + CS + APAM,
  ATC + CS + CPAM
- Variety in fibre flocculation behaviour of different systems
- Using models to optimise the flocculation/retention performance of individual systems
- Comparing operating costs and flocculation of the five retention systems at given filler levels

Patrick Huber, Research Engineer, with Christian Pierre, Christian Bermond and Bruno Carre, CENTRE TECHNIQUE DU PAPIER, France

15.45 Summary from the Chairman and close of conference