Tuesday 22 October 2013

08h00 - 09h00 Registration

09h00 - 09h10 Welcome & Opening · Iain Kerr, TAPPSA Chairman

09h10 - 09h40 Keynote Address · Bruce Strong, CEO, Mpact

09h40 - 10h05 Active and intelligent paper and packaging · Nkuli Khanyeza, Paper Sciences Manager, SAPPi

The Sappi Technology Centre has been investigating a variety of active and intelligent paper and packaging solutions. Prototypes have been produced with anti-bacterial, anti-fungal and temperature control properties.

10h05 - 10h30 Security packaging · Banisile Mokieena, Technologist, Pretoria Technology Centre, SAPPi

Counterfeiting at a global level has necessitated packaging mediums that can be authenticated through overt, covert, forensic and track and trace technologies. This presentation discusses Sappi’s development of their own security fibres, for use in mass production security paper.

10h30 - 11h00 Tea in exhibition area

11h00 - 11h25 How important is paper machine building hall ventilation? A case study.

· Dr Ajit Ghosh, Principal, AKG Process Consulting

The ventilation of paper machine buildings is often considered a lower priority by many mills, despite poor ventilation resulting in condensation, building corrosion and structural failures. This presentation provides an interesting case study to point out that, just like steam and water, ventilation air should be viewed as another utility needed to produce paper.

11h25 - 11h50 Recent developments in industrial grade lines · Peter Clewes, Vice President, Andritz Pulping and Fibre Division

Over the past several years, the development of packaging grades paper production has been aimed at increased PM sizes, higher operational speeds and lower basis weights. However, new innovations in pulping and screening show that the ability to reduce energy consumption, increase quality and enable a much higher flexibility for raw material quality fluctuations are the developments that truly determine the overall mill profitability.

11h50 - 12h15 Mill experience with an energy saving laminar design screen basket in the paper machine approach flow · Oudi Kukamaki, Product Manager, Metsa Paper

The introduction of the fine-slotted wedge wire screen basket has been a significant advance in increasing screening efficiency while enhancing screened pulp properties. A new laminar design wedge wire has been developed to reduce the pressure drop over the screen, providing high screening efficiency, reducedstringing and excellent runnability. This presentation describes how Computational Fluid Dynamics simulations have been used to optimise flow at the screen boundary layer and reduce flow resistance in the accept channel, lessening thickening and thereby the load on the screen.

12h15 - 12h45 Poster session · See below for further details

12h45 - 13h45 Lunch in exhibition area

13h45 - 14h10 Environmental legislation impacting on the pulp and paper sector · Gladys Naylor, Environmental Manager, Mondi

The effect of hemicelluloses pre-extraction on the lignin-carbohydrate complex structure of biomass materials · Sinazo Njuelma, Student in Training at Sappi Saircor, SAPPi

Covalent lignin-carbohydrate linkages between lignin and carbohydrates have been suggested to be a major obstacle to complete delignification of biomass feedstocks during chemical processing e.g. pulping or enzymatic hydrolysis of the biomass to release sugars for ethanol production. The current study is aimed at developing an understanding for the structural composition and the behaviour of lignin carbohydrate complexes (LCCs) in sugarcane bagasse, a potential raw material for bio-ethanol production.

14h10 - 14h35 The ventilation of paper machine buildings is often considered a lower priority by many mills, despite poor ventilation resulting in condensation, building corrosion and structural failures. This presentation provides an interesting case study to point out that, just like steam and water, ventilation air should be viewed as another utility needed to produce paper.

14h35 - 15h00 Chemical and physical modification of wood based hemicelluloses for use in the pulp and paper industry · Dirk Postma, Engineer in Training, Pretoria Technology Centre, SAPPi

The extraction of hemicelluloses prior to pulping in the papermaking process, and re-introducing them as a wet-end additive, has been shown to improve paper strength properties. This presentation discusses the feasibility of using a modified South African hemicellulose as wet-end strength additive to the papermaking process.

Continued on the following page
15h00 – 15h25  Smart energy solution for paper manufacturing business in South Africa  - Jin'ichiro Gotoh, Hitachi Power Systems

This presentation provides examples of energy solutions for the South African paper manufacturing industry, using gas turbine Combined Heat and Power (CHP) systems and the Smart Advanced Humid Air Turbine. The presentation is based on a technical feasibility study of a 30-MW class gas turbine - Hitachi H 25 - CHP system for a paper manufacturing plant in South Africa, funded by the Japan External Trade Organisation in partnership with the Paper Manufacturing Association of South Africa. The feasibility study shows approximately 20% improvement in plant efficiency and a possible reduction of plant operational costs and CO2 emissions.

15h25 – 15h45  Tea in exhibition area

15h45 – 16h10  The recovery of lignosulphonates from spent sulphite liquors  - Berdine Coetzee, Senior Scientist, Pretoria Technology Centre, Sappi

As the by-product of the pulp and paper industry, lignin was until recently regarded as waste. The amount of lignin in acid sulphite spent liquors ranges between 42-55% by weight, and this has been predominantly used for providing fuel to fire pulping boilers and to produce electricity. Less than 2% of lignins are currently extracted for use as specialty chemicals. Recently, there has been renewed interest in using lignin from spent liquors as a renewable source to be applied as components of new green materials and chemicals.

16h10 – 16h35  The A to Z in upgrading of Eucalyptus pulp bleaching  - Brendan van Wyk, Business Development Manager Pulp & Paper, Xylem Water Solutions South Africa

Ozone bleaching has successfully proven to be an economical and sustainable technology and can be widely implemented to treat the high HexA content found in eucalyptus pulp. This presentation describes a new way of using ozone: the combination of a hot acid stage A in front of an ozone stage Z. There is clear industrial evidence that maximum efficiency from the chemical cost viewpoint is achieved through an A-Z combination, since the acidic extraction of HexA is intelligently complemented with a selective delignification with ozone.

16h35 – 17h00  Assessment of pulping additives in Sappi R&D  - Robin Fischer, Senior Scientist, Pretoria Technology Centre, Sappi

By improving the wettability of the wood surface and thus enabling a more efficient cooking liquor penetration into the wood chip, surfactant based digester additives have the potential to improve pulping uniformity. This leads to reduced reject rates, higher pulp yield and more uniform pulp properties with an increased stability of both process and pulp quality. This presentation discusses the benefits of using a sound experimental design together with specialised equipment to accurately screen and assess the relative performance of pulping additives for various chemical pulping processes.

17h00 – 17h15  TAPPSA AGM

17h15  Metso sponsored cocktail party in exhibition area

**Wednesday 23 October 2013**

08h30 - 08h55  The role of PAMSA in ensuring a sustainable local industry  - Jane Molony, Executive Director, Pamsa

08h55 – 09h20  Optimisation of fully closed hood and pocket ventilation system of paper machine dryer section: Case studies  - Dr Ajit Ghosh, Principal, AWS Process Consulting

Paper drying is an energy sensitive process and air plays a major role as both the medium for absorbing water vapour evaporated from the sheet and also the vehicle to transport water vapour out of the process. The importance of pocket air ventilation and hood balance is quite often ignored during operation of the dryer section of a paper machine, potentially resulting in excessive energy consumption in the dryer section and/or reduction in drying efficiency with consequential loss in productivity. This presentation shows the importance of optimal operation of such hoods.

09h20 – 09h45  The effect of printing ink and adhesive resins on the recycling of paper  - Dr Jimmy Pauck, Durban University of Technology

The increased use of mailing campaigns, magazine supplements and glued inserts has led to increased levels of sizing, coating and other finishes, while the advent of computers has led to an increase in the use of digital printing processes. These trends have compromised both the recyclability of paper and in difficulties in the processing and use of recycled papers. Paper, printing inks and adhesives are all part of the same value chain, and environmental issues and recycling concerns everybody. There should be greater co-operation between the resin industry and the paper recycling industry, to ensure sustainability for the value chain.

09h45 – 10h10  Multifunctionality in Wet-End chemistry  - Dr Jos Philippaerts, Technical Sales Expert Paper Industry, BASF

10h10 – 10h35  Preflocculation of filler of different particle sizes for improving paper properties  - Vipul Chauhan, Indian Institute of Technology Roorkee

Inorganic fillers added into paper through the conventional route enhance the functional and optical properties, while reducing the cost of papermaking. But they also have some negative effects, such as decreasing paper strength and increasing sizing chemicals demand. These negative effects are further intensified when decreasing the filler particle size. This presentation explains how preflocculating talc fillers using a varied dose of cationic starch increases the size of the talc particles and may protect paper against these negative effects.

10h35 – 11h05  Tea in exhibition area
11h05 – 11h30 The value of pilot studies for optimal enzymatic refining
  - Stephen Swart, Engineer in Training, Pretoria Technology Centre, SAPPI
Different enzymatic treatments are often evaluated though lab refiner experiments. Therefore, it is often unknown how different key refining conditions, such as refining intensity, refining energy and refiner plate designs affect the enzymatic treatment of pulp. We look at how Sappi Technology has characterised a sulphite pulp, which was composed of 80% Spruce and 20% Beech, under both normal conditions and when an endoglucanase enzyme had been added to the pulp before refining, in order to identify the differences that exist in the optimal refining configurations that were required for the enzymatic refining of the pulp.

11h30 – 11h55 How to improve paper strength properties, surface and machine runnability
  - Paolo Momo, Deputy Sales Director, PMT
A discussion on the role a size press plays in improving strength, printing, as well as dimensional properties.

11h55 – 12h20 Mill experience with a new refining concept
  - Markku Partanen, Global Product Manager, Refiner Segments, Metso
A new high capacity OptiFiner Pro refiner, recently started up at Mondi Neusiedler’s Teresienthal mill in Austria, has been delivering astounding results both in terms of quality and energy savings. This new refiner replaced 3 conventional refiners and resulted in a 24% decrease in energy consumption when compared to old refining system. This presentation provides a more detailed description of the concept and mill experiences under production conditions.

12h20 – 12h45 Pulp and paper cogeneration: the opportunities and challenges
  - Mark Miller, Head of Energy and Electrical Engineering, Mondi SA
This presentation will review the CoGeneration opportunities and the challenges in making these work, as well as answer the questions: What is CoGeneration? Why is it Energy and Carbon efficient? What are the options from a willing buyer willing seller perspective, and National procurement.? Where are the key challenges: Wheeling, Embedded customers, and other aspects?

12h45 – 13h45 Lunch in exhibition area

13h45 – 14h10 Carbon footprinting in the South African pulp and paper industry
  - Henry Coppens, Pamsa
The realisation that the SA pulp and paper industry together with its purpose developed plantations may be a nett absorber of GHGs generated an initiative to quantitatively establish if this was fact. The methodology described in this presentation indicates quite strongly that this indeed might be the case. The benefits of this are significant for our industry as it could be one of the very carbon positive ones around.

14h10 – 14h35 Integration of xylan extraction from Eucalyptus grandis prior to pulping, into an existing Kraft mills
  - Andre Joubert, Masters student, Stellenbosch University
Pulp and paper mills are under increasing pressure to maximise the use of the biomass being processed for pulp, and move towards integrated biorefineries (IFBRs) where numerous products can be produced. Extracting hemicelluloses prior to the pulping process could increase the profitability of the mill as the hemicellulose could be used to produce a number of additional products. In order for this concept to be realised, a method needs to be found where the hemicelluloses can be extracted without compromising the quality of the pulp and subsequent paper. This presentation discusses various methods of hemicellulose pre-extraction and the efficiency they exhibit in terms of hemicellulose extractions and the effect the extraction methods have on the eventual pulp and paper quality.

14h35 – 15h00 Scalable dual fluidised bed reactor for fast pyrolysis of biomass
  - Lofte Grobler, Engineer in Training, Pretoria Technology Centre, SAPPI
Fast pyrolysis has been identified as a viable technology for renewable and sustainable energy production from under-utilized biomass. This presentation introduces a novel scalable dual fluidised bed reactor system for converting woody biomass into crude bio-oil, bio-char and producer gas. These fast pyrolysis products have unique applications, which allows this technology to be integrated into the pulp & paper and forestry industry.

15h00 – 15h25 Evaluating the feasibility of converting crude tall oil and tall oil fatty acids into biofuel
  - Dr Nathi Ngcobo, Vice President, Process Automation, ABB
Following the global recession and the subsequent slump in operating profit margins for South African pulp and paper manufacturers, the generation of additional income through by-products from the papermaking process is gaining momentum. This presentation discusses crude tall oil as one such possible income opportunity - currently sold as a by-product to a third party where it is fractionated into free fatty acids, rosin and pitch. Is it feasible to convert both crude tall oil and tall oil fatty acid into biodiesel as well?

15h25 Closure of conference
  - Iain Kerr, TAPPSA Chairman