IMPROVING YANKEE RUNNABILITY AND EFFICIENCY

Session Chairman: John Holton, Technical Director, Jaeger Inc., USA

Fundamental Approach to Steel Yankee Dryer Service: 15 years of Experience
Ron Clarke, Application Engineer, Toscotec, Italy

How performing daily maintenance and process optimizations of the Steel Yankee Dryer: A guideline presented in an “End-User’s Manual” for inspection and care of the Steel Yankee Dryer. Practical cases of installation and start up procedures for proper operation of a Steel Yankee Dryer will be presented. Field inspection of Steel Yankees and other dry end services offered will be outlined. Some of the dry end services include press, hood and doctoring inspection and optimization.

- Steel Yankee Dryer regular maintenance
- Steel Yankee Dryer inspection and periodical checks
- Inspection practices and methodology
- Steel Yankee Dryer vs Cast Iron Yankee inspections
- Troubleshooting & case studies

The Importance of a Properly Designed and Functioning Condensate System
Jürgen Panzer, Applications Engineer, Jäger Cylinder Services, Germany

It is often said that the Yankee is the heart of the tissue machine. If so, it can further be said that the condensate system is the heart of the Yankee. From the moment after the start-up, the condensate system is beginning to wear. Yes, it takes years to wear-out, but some designs wear out faster than others. This can be due to the original design or how the system is operated, or both. Whilst wearing out takes time, inefficiencies will occur much sooner. In this presentation, key design and operational principles will be discussed. Various means of diagnosing the inefficiencies and optimizing your current condensate system will be addressed, as well as how decide when replacement is a worthwhile investment.

- Condensate systems are often overlooked since you cannot see them function, therefore the function is often misunderstood;
- Condensate systems begin to wear out as soon as the tissue machine starts;
- The rate or wear is most dependent upon the systems original design;
- Whilst the original design is set by the manufacturer, the replacement design can be far more robust than current designs;

- A condensate system which has developed short circuits (leaks, by-passing) increases CD and MD moistures variations, which reduce machine efficiency and increase energy cost. The return on investment which can be realized by upgrading a system is rarely understood by producers.

Yankee Coating Considerations for Structured Sheet Processes
Larry Bonday, Senior Industry Manager - Tissue Towel, Nalco, An Ecolab Company, USA
The growth of products based on structured sheet manufacturing processes has accelerated over the past five to ten years. This growth is especially evident in North America as highlighted by the market share tension between branded and private label products. Underpinning the move toward structured sheets are the observed improvements in sheet properties (bulk, absorbency and softness), all achieved while using less fiber. On the other hand, the inherent high cost of drying with the TAD process has led to the development of so called hybrid TAD processes (i.e. NTT, ATMOS, eTAD), which provide most of the TAD product benefits at greatly reduced energy costs. Structured sheet processes present their own unique challenges with regard to demands on the Yankee coating, first in transferring the sheet to the Yankee dryer and, secondly, in creping the sheet effectively. Some considerations include moisture content of the incoming sheet, transfer and dry crepe adhesion, film durability, coating uniformity and the responsiveness of the Yankee coating package to changing conditions. This paper discusses experiences gained through laboratory, pilot and commercial scale work in developing an improved understanding of these needed coating properties.

- The influence of variable sheet moisture content on adhesion;
- The impact of PVOH on adhesion;
- Improved softness development;
- Transfer mechanism and importance to machine productivity (and quality);
- Modifier impacts on Yankee coating performance.

Life Cycle Management for Yankee Dryers

Erwin Walcher, Sales and Service Manager Yankee Dryer, ANDRITZ AG, Austria

A new test developed can now measure the thickness and profile of the chemical coating on the Yankee dryer. Other measurement advancements include the use of an acoustic test as an alternative to the traditional hydrostatic test. In the area of metalized coatings, the new generation of metallization is optimized for heat transfer and also optimized to have the correct mechanical properties against wear and chemical attacks. Life Cycle Management for Yankee Dryers provides comprehensive service and support for not only the “Yankee itself” but also for “everything around the Yankee” like the press rolls, hood and process air system, doctors, the condensate removal system, chemical coating application and process automation.

- Details about expanding the focus and services around the customer’s Yankee dryer;
- Reviewing mechanical on-site services with focus on new service that measures the thickness and profile of the chemical coating on the Yankee dryer;
- Discussion about advancements in the metalized coating area;
- Overview of the EMS energy management system that monitors and analyzes energy consumption and costs;
- Discussion on safety and risk management testing including acoustic testing and Yankee dryer life time calculations.

Combined Heat & Power Systems and Their Integration into a Tissue Mill

Giordano Fragiacomo, Product Sales Manager, Direct Sales Air Systems, Tissue Business Line, Valmet SpA, Italy

Rising costs of energy make tissue drying a costly process with a huge environmental impact, both from a thermal and electrical point of view. However, the cost of tissue drying can be brought down considerably with the right technology implementation. One of these is the efficient use of exhaust gases from gas turbines. CHP (combined heat and power) systems are becoming more common in the
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paper industry as well as in other industrial applications. This presentation will discuss exhaust gases from the turbine be used in a more efficient way?

- What is CHP (combined heat and power) system?
- How can this be integrated into the tissue drying process?
- Advantages and best uses of the high temperature exhaust gases from a gas turbine;
- How do we evaluate the feasibility of CHP installation?
- How do we make the best use of the high temperature exhaust gases?
- Examples of feasibility studies and successful system installations worldwide.

Advanced Yankee Troubleshooting Starts with The Basics
Dan Ludden, Tissue Services Manager, BTG Americas, USA

Advanced diagnostics are available to help the tissue maker identify a range of Yankee issues. Sometimes these can rapidly find the root cause of the problem. However other times, they only confirm what you already know: There is an issue manifested on the Yankee and the root cause is still a mystery. It is at this point that the tissue maker needs to troubleshoot the process, where do you start?

A broad based process troubleshooting exercise is needed to truly find the root cause of an issue. This needs a commitment of time and good understanding of the desired audit deliverables and their value. This paper will review cases where the initial Yankee related issue was found to originate in the process, and the steps which could be taken to solve the problem.

Correct troubleshooting considers all possible inputs into determining the root cause of a Yankee issue. The tissue maker needs to understand that the most immediate solution is not necessarily the long term resolution or the root cause of a problem. You need a methodology which asks the right questions and assigns appropriate value to the solutions.

- Review of advanced diagnostics: not always the whole solution;
- The need for process troubleshooting;
- Case history 1. Fabric Issue;
- Case history 2. Fines management issue;
- Learning the lesson and capturing the value.

Maximizing Yankee Coating Operating Window and Tissue Softness
John Carter, Global Product Director – Crepe / Release, Solenis, USA

The modern tissue producer is challenged with producing premium tissue at the highest production rates and efficiency possible. The goal is complicated by variations in the tissue machine operations, incoming fiber changes and water closure efforts. Variations in fiber and pushing production rates lead to common issues like poor coating uniformity especially on hot edges. Solenis will present an update to a novel methodology for designing Yankee coating platforms. This methodology will describe the R&D processes used to maximize both coating doctorability and tissue softness. Case studies will be included that demonstrate the transference of R&D learnings to commercial application giving tissue makers confidence in recommendations. A novel Yankee Coating Modifier will be highlighted that significantly improves crepe structure and tissue softness.

- Solenis has developed a coating platform that increases coating rigidity while maintaining doctorability of the matrix;
This is performed through coating rheology control, adhesive polymer design and the use of a novel modifier;

The overall result is a coating with a wide window of operation and clean edges;

Case studies will be presented highlighting global commercial applications regarding product use in the past six months demonstrating improved Yankee surface protection and other key benefits.

Innovative Energy Saving Technology for a Complete Plant Solution

Rob Williams, Director, Progressive Energy Services, Mexico

The presentation will outline technologies to save thermal energy and reduce greenhouse gas emissions. The different technologies will save energy in the power house, in the distribution system and directly at the machines. The key to optimizing the success of the technologies is to consider the complete plant energy balance.

Most plants are looking at solutions that will give them a few percent saving. The technologies and the associated approach to implementing them can provide energy savings an order of magnitude greater than would normally be expected.

- A description of the five technologies
- Site variables and how they impact the final solution
- An example of the methodology for applying the technologies
- A typical cost benefit analysis
- Some considerations on the practicality of implanting the solutions
Senior Management Seminar

Theme: Beyond Sustainability – Leading a Culture of Innovation & Responsible Production

Conference Chairperson: Bruce Janda, Founder, InnovaSpec, LLC, USA

Keynote Address: New Directions at Which Companies are Looking at Sustainability Across their Operations
Don Lewis, President, SCA AfH Professional Hygiene, Europe & North America, USA
Tissue industry has achieved great success over the past few years in lowering environmental footprint with managing forests and sourcing of raw materials. While facing an increasingly competitive and resource constrained market environment, how can the industry deliver sustainability improvements in the coming years?

Public Policy Trends Affecting the Tissue Industry
Donna Harman, President and CEO, American Forest & Paper Association (AF&PA), USA
Which are the state and federal public policy trends affecting tissue producers and the industry’s sustainability initiatives? Companies that produce, convert and sell tissue products are facing growing opportunities as well as concerns. Burdensome regulations and legislation have the power to impose millions of dollars of costly requirements on tissue manufacturers and converters. With changing policies and regulations at state, regional and national levels, it is important to stay one step ahead. AF&PA works to provide education and insight on issues specific to tissue policy, including:

- The costly regulatory burden that could create conflicts and cause business uncertainty;
- The importance of paper recycling to ensure a steady stream of recovered fiber for the manufacture of tissue products;
- Dismantling false claims about tissue products;
- Green chemistry issues that could increase tissue producers’ risk of noncompliance and liability;
- The industry’s set of voluntary, quantifiable sustainability goals that continue to drive innovation and progress.

Leading from Within - Keeping the Know-How of a Retiring Generation
Bill Sleeper, former President, Georgia Pacific Professional NA, USA
Leadership has many dimensions and most often is seen as the means to create the greatest value through the successful achievement of key goals and objectives. This can take the form of a charismatic leadership, which both motivates and inspires an organization. Yet another style of leadership may create the greatest opportunity to transfer knowledge, capabilities and values to the next generation of leaders. Instead of the precept of "lead, follow or get out of the way", the technique of "leading from
within” can prove to be a powerful method to best enable emerging managers to continue to move a business forward successfully. This management style will be fully detailed and examples of leaders who have built successful organizations will be presented and discussed.

- The dimensions of leadership;
- Evolution of leadership styles;
- Leading from within;
- Examples of successful leaders;
- Enabling the next generation of leaders.

10:30 New North American Dynamics

Esko Uutela, Principal – Tissue, RISI, Germany

The North American tissue market is in an interesting phase: In principle, it is very well developed and people can find the product they need as the supply side is very broad and can serve for very specific needs of the consumer. But it is amazing how much dynamics the market still shows in many aspects.

TAD products have been in the market for almost 50 years and they continue to be the quality leaders. However, now products based on new technologies (structured/textured tissue) have challenged the traditional quality scale but it is not yet clear how successful these attacks despite the much lower production costs, will be, as at the end the consumer preference will decide.

Another sign of dynamics is the industry structure and changes in it. We have recently seen many acquisitions and also some new companies are entering the market. Raw material issue is also interesting: will there be a chance that "tree-free" fibers or non-wood pulp will replace part of the current fiber supply such as recycled fiber in products? Will straw pulp-based products be accepted by consumers if not bleached? New investments are also oversized compared to market growth, will overcapacity threaten?

Panel Discussion:

What will Sustainability look like in next 5-10 years?

Which are the Challenges and Opportunities and what are the Impediments to Expedite the Initiatives?

Panel Moderator:

Suhas Apte, Partner, Blue Earth Network, USA

Panelists:

Jim Bath, Director, Global Environmental Team, Kimberly-Clark, USA
Hugh O’ Brian, Director, TissueStory, Sweden
Rolf Skar, Forest Campaign Director, Greenpeace, USA

Stakeholder Sustainability – A Competitive Advantage and Business Strategy
Suhas Apte, Partner, Blue Earth Network, USA

Tissue businesses around the globe are at a critical crossroad. While on one hand the businesses have real opportunity to improve health and hygiene for many around the world, on the other hand the scope and magnitude of the challenges the businesses face are unprecedented. The finite resources required for continued business growth are becoming costlier and scarcer. Any innovations businesses deploy are copied and adopted by competition within a short time span. Customers and consumers are less trusting and more skeptical than ever before. These challenges are among the many, which are resulting in strong headwinds that encumber businesses’ efforts to achieve continued prosperity and ultimately threaten their very survival.

What are needed in today’s resource intensive tissue world are complete transformational changes in business practices, strategies and tactics in order to create and galvanize sustainable competitive advantages. Our proposed Sustainability 3-Sixty Roadmap, provides business leaders with a means to identify and affect those innovative changes required to deliver this transformation. The proprietary “Sustainability 3 Sixty” framework, from which the roadmap is derived, is based on the logic that today’s and tomorrow’s business leaders must think about and embrace sustainability in a holistic 360 degree way. Furthermore, the “3” serves to remind leaders that they need to maintain a triple-bottom-line, balanced approach to Sustainability and business, while the "Sixty" emphasizes the need to maintain a constant and consistent focus on Sustainability; engaging and energizing key stakeholders to bring sustainable prosperity to life, Sixty seconds every minute.

Key Concepts:
- Business Challenges & Opportunities
- Sustainability 3-Sixty Framework
- Key stakeholders
- Direct – Consumers, Customers & Employees
- Indirect – Suppliers, Investors & Community
- Influencers – Government, Media & NGO’s
- Sustainability Audit Tool

The Role of Automation in Moving Tissue Producers’ Fortunes Forward

Seyhan Nuyan, Director, Pulp, Paper & Tissue Applications, Valmet, USA

Although automation has been employed at many different levels in tissue production, the recent technological developments have significantly broadened the scope, reshaped the role and increased the impact of automation to the profitability of tissue lines. The modern automation concept is a response to global trends and continues to expand and excel in its mandate. In particular it is a response to the demands for reducing the industry’s environmental footprint, sustainability, reducing waste, keeping the know-how of retiring generation and energy efficiency.

Some of the contributing developments that will be discussed are:
- Eliminating the need for nuclear measurement from tissue lines
- Capability of online softness measurement
- Increasing the energy efficiency with a novel design for steam profiling and energy management applications
- Measuring and managing fiber properties, predicting tissue properties
Tissue Retailing and Distribution: Market Trends and Consumer Perspectives  
**Lydia Work, CEO, American Paper Converting, USA**  
**Mark Stanland, VP Client Services, Green Seal, Inc., USA**

This presentation will address the dynamics in taking Green Seal™-certified towel and tissue products to market, from both a consumer and AFH (away-from-home) point of view. Co-presenting will be a manufacturer of Green Seal-certified towel and tissue products, along with a Green Seal staff member. The discussion will include industry trends and innovations, and consumer preferences.

- Analyzing industry trends in the demand for Green Seal-certified towel and tissue products
- Reviewing current marketplace drivers for Green Seal-certified towel and tissue products
- Discussion of innovations in the industry that are affecting consumer demand
- Discussion of external factors in path to market with Green Seal-certified towel and tissue products
- General market outlook for the future of Green Seal-certified towel and tissue products

Eco-Friendly Products: Challenges and Opportunities in Global Consumer Tissue Market  
**Svetlana Uduslivaia, Head of Tissue & Hygiene Research, Euromonitor International**

Global demand for consumer tissue products remains fairly healthy, with developing markets as key growth areas for the industry. At the same time, questions of sustainable forest management and environmental impact, the lack of forest resources in some countries, and concerns over a projected decline in supply of recycled fibre continue to encourage product development and innovation in sustainable consumer tissue. However, consumer attitudes and purchases of “green” tissue products show significant variations across markets and across various age groups. Euromonitor presentation will look at the current state and future growth of the global consumer tissue marketplace. The presentation will specifically address trends in eco-friendly tissue products, contrasting markets in terms of household penetration and growth projections, and will review strategies in product development and marketing aimed at meeting current and future challenges in eco-friendly consumer tissue.

- Driving revenue by overcoming challenge of consumer acceptance for eco-friendly products;
- Is high retail price of eco-friendly tissue products a deterrent to wider consumer adoption?
- Survey results of millennials as consumers when it comes to environmental practices;
- How the industry is tackling the challenge of lack of resources and projected decline in supply of recycled fibre in their search for alternative sources in tissue production
- Strategies to address consumer concerns and build a platform for stronger growth ahead

The Role of Sustainability with Today’s Consumer  
**Carolina Gomes, Director, Category Solutions, Daymon Worldwide, USA**

Gain a better understanding of the role of Sustainability for businesses and consumers today. The key drivers and motivations for purchasing Sustainable products for consumers across several demographics and life stages. What trends are impacting Tissue, and how retailers and the industry are responding to the Sustainable consumer? Is it necessary to play in the Sustainable space and what the implications would be?

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- Manufacturers and Corporations in the Race for Sustainability
- The Sustainable Consumer
- Trends in Sustainable Paper
- Retailers’ Response to the Sustainable Tissue Consumer
- Winning the Sustainable Consumer
TECHNICAL SESSIONS:
Technological Innovation and Energy Efficiency in Tissue Production

PANEL DISCUSSION
Panel Moderator: Bruce Janda, Founder, InnovaSpec LLC, USA
Panelists:
Peter Shipp, President and Founder, InnGage Solutions LLC, USA
Steve Edwards, Founder, Edventures LLC, USA

SESSION 1 : ENERGY EFFICIENCY & SAVINGS
Energy Optimization of the Yankee Dryer Hood
Alfredo Sarli, Sales Manager, Voith Paper Air Systems, USA

With energy consumption being of prime importance in keeping operating costs optimized, there are a number of design considerations at the Yankee Dryer Hood which can have a significant impact. Optimized nozzle geometry is an important consideration along with insuring uniform air flow. The use of edge control not only contributes to energy optimization but also helps resolve operational problems such as hot edges. Field audits also show that maximizing exhaust humidity can have the largest impact on natural gas consumption at the burners and therefore directly impact bottom line savings.

Hood design considerations include optimum nozzle spacing along with the use of peripheral exhaust and dynamic seals such as air knives. In addition, recovering heat from the hood exhaust flow stream can have an important impact on energy savings with the use of the newly developed Heat Recovery Steam Generator systems. Finally the debate over parallel versus cascading air systems will be addressed with regards to the most economical way to operate the hood’s process air system. Each of these points above will be explained with supporting calculations and case study examples.

- Energy optimization of prime concern in tissue making as the Yankee Drying system is the biggest consumer.
- There are a number of design considerations at the Yankee Dryer Hood which can have a significant impact.
- Combined with new, novel developments in uses for heat recovery can directly impact bottom line savings in terms of natural gas and electrical power.
- Some of these solutions can also have a secondary benefit of resolving operational issues such as hot edges.
- Pros and cons of the debate over parallel versus cascading air systems will be presented.
Case Study: L.C. Paper PM2 Rebuild – More Production vs Less Consumption
Luca Linari, General Manager of Milltech Division, Toscotec SpA, Italy

The scope of supply of the rebuild included a new TT SYD-15FT, new press section, new doctor blades provided by Toscotec and new Milltech hood and air system. With this application the maximum production has been implemented and the consumptions reduced for different tissue grades (mainly One ply®) but for also MG paper that are both produced on the machine.

The particular feature of the project is that, following the expansion of L.C. Paper cogeneration plant in 2013 the Milltech Hood, Multigen eMT type, uses the exhaust gases from a cogeneration motor to dry the paper (instead of burner heating system) and to generate steam (two stages, low and high pressure). The technical solution has been developed by Mr. Vila in cooperation with the Toscotec team. Another additional, substantial, benefit is the reduction of CO2 emission on PM2 that has been recognized by the award to Mr. Vila from Government of Catalunya which includes the company in the public program of CO2 emissions reduction. The expected yearly production of PM2 in 2015 will be 20000 tons of tissue and 20.000 tons of MG paper.

This paper will show how the results in terms of energy and production has been obtained from a practical point of view

- More production vs less consumption;
- Team job - LC Paper & Toscotec;
- PM2 rebuilt TT SYD+ Multigen eMT Hood;
- Multigeneration Dyness, Steam and Electric Energy;
- CO2 emission reduction.

Optimizing tissue properties and production efficiencies using high quality softwood pulp
Paul Bicho, Ph.D., Scientist, Canfor Pulp Innovation, Canada

As hardwood pulp production keeps growing, softwood kraft pulp production will increase modestly. Therefore more hardwood pulp will be available to tissue producers suggesting that the cost differential between softwood and hardwood pulps will either be maintained or increase. Fibre for softwood kraft pulps can be sourced sustainably from either plantations or natural forests. In Canada, emphasis is placed on managing natural forests to preserve biodiversity, water quality and other environmental values while ensuring that the highest quality fibre is available for industrial use. A harvested tree is used in its entirety for lumber, pulp, energy and chemicals. The use of residual wood chips as a furnish for Northern softwood pulps enhances the inherent quality advantages in particular from trees in Western Canada.

Hardwood pulps, in particular Eucalyptus pulps, have a positive impact on tissue softness and bulk. However only using short fibres compromises tissue strength, adversely affects strength degradation during converting and lowers production efficiencies. Using a high quality pulp with long fibers, low fines content and low coarseness allows the tissue maker to achieve superior tissue quality, better production efficiencies and lower energy usage during refining and drying. Collectively, these benefits can justify the higher cost of the long fiber component.

Examples of how superior quality northern bleached softwood kraft pulps can improve the quality of tissue and improve cost performance are given. These examples are based on tissue pilot PM and tissue mill trials and will be detailed.
The price differential between softwood and hardwood pulps is expected to continue and may even increase.

Selection of pulp by the tissue manufacturer depends on the local cost and sources of pulp as well as on the maturity and quality level of the tissue market that is served.

A high quality long fiber, low coarseness pulp can positively affect tissue quality while increasing production efficiencies and lowering energy use.

We give recommendations for obtaining the optimum benefit from the use of softwood pulp in tissue, based on experience in pilot PM facilities and tissue mills.

The Changing Recovered Paper Supply for Tissue Manufacturing

Bill Moore, President, Moore & Associates, USA

There are a number of changes occurring in the available supply of recovered paper, a key raw material for the tissue sector for manufacturing tissue and towel products throughout the world.

- Worldwide and Americas supply and demand of recovered office papers, the primary recovered paper grades used in tissue production
- The major issue of the declining use of printing and writing papers by the world’s developed economies producing constraints on the supply of recovered fibers for deinking. This includes the use of paper in offices, the document destruction business, and printing scrap production.
- Contaminant issues in the recovered paper grades used for tissue production
- An outlook of on future pricing of the primary tissue/towelling grades, Sorted Office Papers, White Ledgers, and Coated Book Stock
- Alternative recovered paper sources for use in tissue making

Liquid Ring Vacuum Pump Energy Consumption

Andy Smiltneek, Technical Director, Somarakis, Inc., USA

The second biggest consumer of energy in a paper mill is the vacuum pump. The most commonly used vacuum pump is the liquid ring pump. Liquid ring pumps usually sit in the basement of the mill and run with little or no maintenance for years. They typically lose 1% of performance per year in terms of air flow because of pump wear, but will continue to use the same energy. Many were installed when electrical energy cost were low and the vacuum pump sales mantra was “you can never have too much vacuum.” This presentation will explain the basic thermodynamic principles at work in vacuum pump operation concentrating on the liquid ring pump. It will also present an energy saving framework which can be used to analyze the vacuum system on the tissue machine.

- Basic operating principles of the liquid ring pump;
- The condensation effect to increase the capacity of the vacuum pump;
- The effect of wear on the vacuum pump;
- Vacuum systems with multiple pumps;
- Energy savings framework – where to look.

Fuel Fired Yankee Hoods: A Patented Green Innovation for Clean and Efficient Combustion

Stefano Pecchia, Technical Manager, Novimpianti Drying Technology Srl, Italy

In conventional installations on Yankee hoods, combustion air is totally supplied by an external blower; to guarantee a complete combustion it is commonly accepted to work with a strong excess of
combustion air compared to stoichiometric values. Lambda index is usually not less than 1.4 up to 2 or 3. This means too much combustion air, low efficiency, high emissions. With the new patented concept of clean combustion, the amount of external air is reduced drastically, and its flow is regulated by an automatic damper driven by a temperature control loop. This presentation will introduce an innovative patented combustion system and discuss its advantages and results.

- Analyzing actual combustion systems in Yankee hoods;
- Overview of the newly invented combustion system and its patent details;
- Application on tissue machines and its results on reduction of pollution and energy consumption; Reduce pollution (CO and NOx < 10-20ppm); Reduce electric consumption of combustion air fans (e.g. -10% of overall air system electric consumption);
- Possibility of use of alternative fuels, e.g. syngas, liquid fuels, etc.
Disruptive Technology Marking New Industrial Revolution in Tissue Converting

Pete Augustine, President, Fabio Perini North America, USA

Industry experts predict a dynamic and fiercely competitive North American tissue market for years to come. Tissue converters must explore every opportunity to retain product margins or increase their share of the market.

The Constellation rewinder is the solution to the most pressing needs of tissue converters today. This new technology utilizes 4 mobile winding rolls, differing greatly from the traditional 3 roll rewinding process. Logs are formed with 3 or 4 points of contact during the entire winding phase. This results in a visibly higher level of finished product quality while significantly reducing the frequency of costly equipment stoppages due to rewinding failures.

This presentation will provide an overview of the technology, explore the results of initial product trials and outline the major benefits including:

- Options for product differentiation
- Raw materials cost savings opportunities
- Increased operational efficiency

Winning the Battle for Shelf Space: Considerations in Converting Structured Webs

Jill Thiede, Strategic Account Manager, Paper Converting Machine Company, USA

With many new variations of structured webs entering the tissue and towel marketplace, understanding the interactions between the substrate and converting process is critical to getting the right product on the shelves. As competition remains fierce, product design continues to win the ongoing battle for shelf space. New substrate options can play a major role in attracting attention from the trade, but the converting process can either destroy or enhance their strengths. With experience across a wide variety of webs – from TAD to ATMOS to NTT to conventional – PCMC brings decades of experience in quantifying and analyzing how the converting process impacts a substrate’s attributes.

- Evaluating considerations when running structured sheets;
- Retaining bulk and stretch through each equipment operation in the converting line;
- Understanding the impact of equipment design on developing effective operational strategies;
- Minimizing broke in converting;
- Harnessing the value of pilot line product evaluation and validation.

Modular Design for Flexibility in Rapidly Evolving Markets

R. Joseph Gotshall, Business Development Director, Mtorres, USA
Enrico Rugioni, Business Development Manager Tissue – Europe, MTorres

UTS or Universal Tissue Splicer technology is a design born of several engineers and industrial designers. The goal – to have both the highest performance and the greatest flexibility. UTS is a beltless, center-driven unwind architecture which auto splices with no stops in production and at speeds as high as 1000 mpm without any slowing and at a constant web tension. This means no disruption in the process and a
minimization of waste material. UTS can run 1 ply, 2 ply, 3 ply or 4 ply products. Due to its’ center drive system, the sheet is not contacted by any belts and therefore there is no destruction of caliper and a great reduction of dust which results in greater base sheet bulk retention. UTS is capable of running DCT, TAD, NTT, Atmos, Non-wovens and any nearly other base sheet material that is formed in a continuous web.

- Major Technical Components and their purposes;
- Process Steps – Acceleration, Tension measurement, Tension control (micro and macro), Splicing;
- Data – How UTS tension control compares to standard belted unwinding technology and the benefits to web management, embossing, lamination, out of round reel management.;
- Case Study – Retrofit of an existing line / overall converting line performance improvements;
- Case Study 2 – New process with high bulk structured tissue sheet / bulk preservation benefits.

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**Tissue Converting Lines Integrated with Machine Vision Achieve New Levels of Efficiency & Product Quality**  
*Kari K. Hilden, President, Papertech Inc., Canada*

Tissue breaks and various defects are an efficiency & tissue quality robbing reality on all types of converting lines. Papertech has developed many powerful machine vision solutions to specifically improve the efficiency of various converting lines. New advanced machine vision based solutions are now available to allow converting lines to reach previously unobtainable levels of OEE with less operator involvement.

Converting operations have long struggled with various efficiency robbing issues ranging from poor incoming product quality, to machinery issues that are not operator or maintenance controllable. With a range of cameras tailored to specific applications to analyze product quality, equipment operation and overall final product quality, a significant increase in efficiency can be achieved typically ranging from 5% to 15%. Now with new advanced feed forward control generated by the cameras, converting lines can automatically take preventive steps to stop process interruptions.

The new imaging technology is based on fully digital high speed & resolution cameras, combined into a single inspection and web monitoring platform with a single user interface, is able to automatically pinpoint and analyze all types of process disturbances. The latest GigE--Vision® based digital cameras are utilized together with GigE digital video transmission and intuitive digital image processing software, to see at any machine speed the event/defect/disturbance and find its origin. Furthermore the cameras can now take the required control action to prevent the process interruption from ever happening.

- Machine vision automation of various types of tissue converting lines;
- Overall Equipment Efficiency (OEE) improvement by reducing and preventing breaks and other process upsets;
- Camera based web inspection (WIS) at unwind to determine overall tissue quality;
- Camera based automated log diameter measurement after the re-winder;
- Camera based embossing and print quality measurement.
SESSION 3: PRODUCTIVITY INCREASE AND TISSUE PROPERTIES

Robotic Automation for the Tissue Products Packing and Collating

Luc Vanden-Abeelee, Marketing Research Advisor, Axium, Canada

This presentation will introduce the various options for robotic automation in case packing and collating applicable for tissue product manufacturers. More specifically, the different alternatives, their benefits and the potential production speeds will be reviewed (for example, we will introduce a unique robotic technology enabling the collating of tissue product boxes up to a rate of 300 per minute). Those technologies will be illustrated with videos of real life examples. To conclude, recommendations for tissue products manufacturers about the best practices to choose the appropriate case packing and collating technology will be presented.

- Reviewing the robotic automation technologies for case packing and collating;
- Understanding the benefits of those technologies, like zero setup time for pattern and format changes;
- Evaluating which technology is more appropriate;
- Presenting real life examples;
- Helping tissue product manufacturers choosing the best approach using various criteria.

An Update on Consistency Transmitter Measurement Technology & Process Considerations

Mike Hendricks, Application Manager BTG Americas Inc. USA

Consistency control is the foundation of the papermaking process, however it is often taken for granted. Without good consistency control it is difficult to optimize the rest of the process. This presentation will review the fundamentals of consistency control and measurement in the paper making process. The following questions will be addressed in this paper: What are the benefits of good consistency control? How do we know if our consistency program is where it should be? What are the differences between various consistency technologies? How do we justify and implement a sound consistency program? How do we insure that the benefits of a sound consistency control program are recognized year after year?

- Consistency measurement and control overview;
- Rules for good consistency control;
- Dilution and how to ensure it works properly;
- The consistency control loop;
- An update on available consistency transmitter technology;
- The importance of properly calibrating consistency transmitters.

Taking Fiber Cleaning to a New Level

Andreas Ritter, Managing Director, RITHCO Papertec GmbH, Germany

As raw materials get more contaminated tissue-makers require better removal of impurities to maintain runnability and quality. The RV-System offers upgrading of existing stock preparation to achieve cleaner stock at lower energy consumption.
The technology employs a new concept in stock cleaning – soft friction between a fast moving air/water mixture and the feed-stock materials - which very effectively separate fibres from contaminants. The air is then used to float off the unwanted material.

Advantages of the RV-System

Highly effective in separation of low density, conformable contaminants which gives:

- Less down-time for cleaning
- Fewer breaks
- Improved tissue quality
- Reduction of chemicals such as fixing agents, biocides, felt and wire cleaners
- Reduced loading on the water treatment plant

Designing Tissue Press Felts to Maximize Water Removal in the Nip

Tom Heazel, Applications Engineer, Xerium Technologies, Inc., USA

Optimum performance on modern high-speed tissue machines is achieved by maximizing water removal at the suction press roll. This requires a press felt that readily discharges water in the nip, adequate roll venting to accept water that is pressed out of the felt and effective roll doctoring and pan capacity to remove water from the press roll. Key tissue press felt attributes are rapid saturation, pressing uniformity, engineered void volume for rapid dewatering, shortened drainage path and minimized rewet.

A new design concept incorporating these attributes has been developed and has been providing fast start-ups and exceptional water removal on a wide range of tissue applications. The key component of this design is uniquely developed hydrophilic yarns that readily trap water and release it under load in the nip. Positioning these yarns in the lower layer of the base fabric promotes rapid dewatering into the roll venting and reduces rewet by drawing water away from the felt surface as the felt exits the nip. The result is faster start-ups, reduced energy consumption and improved runnability. To achieve maximum benefit, this design must be run with roll cover venting that can remove the water discharged by the felt. The benefits of utilizing real time nip pressure and nip width monitoring with SMART™ Roll technology (which now includes suction pressure rolls) to improve tissue production and quality will also be presented.

- Tissue press felt design concepts;
- New pressing technology;
- Productivity improvement and energy savings;
- Felt – roll synergy in the press nip;
- Advanced press nip monitoring technology.

Seamed Press Fabric Development Enhances Tissue Press Fabric Installation Safety and Performance

Jim Bell, Global Director, Tissue Pressing, Albany International, USA

This presentation will examine the technical advancements made in seam technology for Tissue press fabric applications and how these advances have led to a wider operating window allowing seam press fabrics to be used on a broader range of Tissue Pickup positions than previously possible. Specifically, this presentation will cover the contributions that advances in loop geometry, loop size, loop uniformity,
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and pressure uniformity have made to safer press fabric installation and improved performance on Tissue machines. Case histories will be reviewed to demonstrate the scope of seamed press fabric applications on Tissue machines today.

- Review of seam loop development work, bench top testing results and pilot machine results;
- Performance benefits achieved with seamed press fabric technology;
- Tissue Machine configurations capable of running seamed press fabrics and growth of seamed press fabrics in Tissue over the last 3 years;
- Case histories.

Ultra-Premium Products Changing the North America Competitive Landscape:
How Entry Producers can Succeed in the Ultra-Premium Market
Soren Eriksson, Director of Sales, Valmet Inc. Tissue Mills Business Unit, USA

To enter the Ultra-Premium market is a substantial step for many Tissue producers. There are several obstacles, perceptions and real business considerations that can hamper this development for the entry producer. The recently developed half width Advantage ThruAir® (TAD) tissue machine can help entry producers overcome the obstacles and enter the Ultra-Premium Market. The combination of proven technology, new features and the possibility of product testing in pilot trials means that production of products with absolute highest quality, today is in reach for any committed producer.

This presentation has the entry producer in mind. We will show how the obstacles can be overcome or explained in such manner that the producer can make their own specific business decision to reach Ultra-Premium quality. Considerations will be made to overall cost structure of finished products, price opportunities and product initiatives. We will discuss what size production capacities can be offered. All elements that are vital for the entry producers to achieve a feasible investment cost and rate of return.

- Overview of Advantage ThruAir (TAD) technology
- Comparison of Product attributes between TAD - NTT and DCT technology
- Impact in Converting with TAD base sheet
- Price opportunities and cost structure
- Review of production capacities Advantage TAD 100 and TAD 200

New Manufacturing Technology for Steel Yankees
Clive Butler, Product Manager for Yankee Dryers, A. Celli Paper SpA, Italy

Current technology for producing a steel Yankee shell is to fabricate it by rolling and welding flat steel plates. The larger the Yankee diameter and width the more the plates and the more welds. Welds create a discontinuity of thermal and mechanical properties and therefore can cause un-uniform drying and, more importantly, can be a weak point in endurance to fatigue and corrosion. This is an area of concern during the life of the vessel and therefore a stringent and costly inspection procedure is enforced.

A new manufacturing technology that allows the entire shell to be forged from a single piece of steel solves the problems of the weld discontinuities. Providing a seamless solution overcomes the limitations
of fabricating, increasing the vessels safety & drying uniformity and reducing the amount of inspections during the shell lifetime.

**Tissue & Converting Machine Efficiency Improvement System**  
*Pete Angle, Account Manager – Paper and Tissue, ISRA Surface Vision, USA*

A significant opportunity in tissue production is to increase machine speeds and reduce downtime due to sheet breaks and improve production efficiency in converting. The solution is comprised of 3 parts and each part provides a limited value to improve tissue production capability. The sum of the parts results in a compelling and synergistic approach to considerably improve and benchmark a mill’s performance.

The three components of the system are integrated into a single solution. The solution drives the implementation of each system component within the mill for improved machine efficiency. Having only one component of the solution reduces the value and significance of the other components, allowing the possibility of not realizing the full value of the complete solution.

The complete production improvement solution is about improving tissue machine and tissue converting run-ability, including off machine tissue quality. The complete solution enables accurate transfer of knowledge across tissue mill production of how specific process adjustments improve quality with objective and quantifiable data. The complete tissue production improvement system cultivates corporate understanding of where investments and resources can be directed for final product quality and overall equipment efficiency.

- Increasing converting efficiency by reducing sheet breaks at converting with unwind control system (UCS)
- Reducing defects on the tissue machine with a web inspection system (WIS)
- Improving tissue machine run-ability by reducing sheet breaks on the tissue machine with web break monitoring (WBM)
SESSION 4: REVOLUTIONARY TESTING METHODS

Utilizing a Sheet Analyzer in Optimizing Crepe Control Technology
Clayton Campbell, Global Tissue Business Development Senior Manager, Kemira, USA
Lucyna Palowska, Tissue Process Application Specialist, Kemira, USA

The KemView Sheet Analyzer, based on an image analysis technology, is being introduced to the tissue market as a lab and portable field support tool that provides a unique and comprehensive view into the sheet structure of tissue and towel products. Its diverse features allow for effective benchmarking and comparison of multiple base and finished tissue sheets. KemView Sheet Analyzer can be combined with a Tissue Softness Analysis (TSA) for more comprehensive quality sheet evaluation and as a tool for optimization of crepe process conditions. This paper will discuss KemView Sheet Analyzer features and information that could be obtained with this instrument such as crepe bar count, crepe bar length, height, skewness, irregularity of crepe bars distribution, pin holes count, surface roughness and free fiber ends count that can be correlated to tissue surface softness. Case studies will be presented using the KemView Sheet Analyzer as a tool to document crepe chemistry that is effective in both low sheet moisture and low pH manufacturing conditions.

Crepe Structure Measurement – New Visibility on Tissue Making Process
Ben Blanchette, Director Product Marketing, Honeywell, USA

Just recently, Honeywell has introduced a unique imaging-based sensor on Experion MX QCS platform to measure and characterize crepe topography structure online. New Crepe Structure Measurement leverages high-speed camera technology and real-time image processing utilizing specially engineered proprietary algorithms to provide unprecedented visibility for the papermaker on crepe operation. Additionally, sensor provides stream of high resolution snapshot surface images on operator definable locations across the sheet while scanning for visual analysis and troubleshooting. This presentation introduces the sensor technology and its operation principal as well as values reported by the sensor characterizing the crepe properties. In addition, actual results and benefits achieved in some of the most recent commissioning of this new measurement are discussed.

• Introduction to a new imaging-based measurement of crepe structure;
• Characterization of crepe topography structure by high-speed imaging;
• Special arrangements to ensure sensor operation in challenging tissue environment;
• Case study on measurement findings and results;
• Key benefits of the Crepe Structure Measurement for a tissue maker.

New Line of Instrumentation will Reduce Costs and Tighten Process Parameters
Frank Cunnane, Product Specialist, Cristini GC, USA

A novel type of microwave instrumentation providing real time feedback to operators about the condition of tissue felts is presented here. Along with a description of the methodology and operational principles of the units, practical mill case studies will document the reduction in process variation and potential energy savings available with these instruments. Until now, either portable or traversing sensors were required to obtain felt water content measurements. New units, however, can provide
much of the same information at a much reduced price and without any of the safety issues associated with “breaking the plane” of the machine.

Connectivity to the machine’s DCS allows the sensors to accommodate speed and grade changes and to categorize data. Software with Fast Fourier Transform (FFT) capabilities is provided with the package to allow for detailed vibration and pulsation analysis.

Recommendations on the location and use of these non-traversing sensors are an integral part of the paper. Detailed descriptions of reduced vacuum consumption, reduced steam and gas usage, and reduction in drive loads are used to provide potential justification for the installation of these units.

- A brief explanation of the principles of microwave moisture measurement and why these units are unique;
- Recommendations on the location of the sensing heads and why this is important;
- A discussion on FFT analysis and its powerful problem solving capabilities;
- Case Studies on tissue machines that demonstrate both the savings accrued and the reduction in process variation;
- A concise set of Conclusions and a Summary of areas of potential savings is included.

**Revolutionary Method to Measure Compressibility of Tissue Products**

*Hannes Vomhoff, Research Manager, Innventia AB, Sweden*

The out-of-plane compression properties of kitchen towel products are very important in order to achieve a high absorption capacity. A method for the measurement of the compressibility of tissue products was therefore developed. It allows the compression of a tissue sample by a defined stress between 0 and 30 kPa. The thickness of the sample is measured. Both single-ply base paper samples and fully converted multi-ply products can be evaluated. The measurement can be performed on both dry and wet samples. Multiple compressions of the samples can also be performed in order to evaluate the difference in plastic deformation as a result of the consecutive compressions. Under normal conditions, the applied stress is gradually increased from 0 to 30 kPa and then decreased back to 0kPa. This procedure was repeated and the compressibility of the sample was evaluated in terms of a bulk versus applied stress relationship.

In the presentation, the method will be explained and the compressibility of different kitchen towel products will be presented and discussed. The effect of sheet structure, wetting of the samples, and multiple compressions will be illustrated.

- Background on the importance of the compressibility for the absorption properties of kitchen towels;
- Introduction of the main features of the new method;
- Explanation of the evaluation of the measurement results;
- Show the influence of sheet structure for different kitchen towel paper grades;
- Show the difference in compressibility between wet and dry samples.
SESSION 5: DEVELOPMENTS IN EFFECTIVE DUST CONTROL

Dust Control Considerations in Tissue Converting Plant

*Rick J. Klaus, Technical Sales, Osprey Corporation, USA*

This presentation will discuss dust control in tissue converting operations, methods of control, regulatory compliance, state of the art dust control, and energy savings. After the explosion at the Imperial Sugar mill in 2008 in Wentworth, Georgia the world took notice on the need to control combustible dust in manufacturing plants. The resulting regulatory directives such as NFPA 654, ATEX, and OSHA have left companies scrambling for combustible dust control solutions. This coupled with structured tissue developments and higher dust levels associated with forming technologies; are making plant engineers search for economical solutions to dust control.

As a result, a number of different solutions have been making their way into the converting operations here in North America as well as global locations. An overview of the solutions that have been employed to address these needs will be discussed along with the effectiveness of the solutions. The attendee will walk away with a better understanding of the considerations that need to be made when looking at dust control in their plant environment.

- Dust build up in Converting Operations;
- Current methods of control being employed;
- Regulatory compliance discussion;
- State of the art dust control options;
- Energy savings.

Dust Control Hood Development & Placement in Manufacturing Processes

*Robert J Mayne, Jr, Solutions Manager, ATMOS360, Inc, USA*

Implementing effective dust control in manufacturing processes requires teamwork working to understand each other’s needs so hoods are properly engineered, manufactured and installed to maximize dust removal at minimal cost. Dust capture when hoods are placed far away from the source, can lead to increased energy consumption and waste. It is important to position hoods as close to the source points as possible and not upset the manufacturing process. It may cost a little more on the front end to take a conventional static (fixed) hood and make it dynamic (movable) either manually or electromechanically, but it will pay dividends if connected to a robust offline filtration system.

- Understand characteristics of the dust to be captured;
- Understand owner goals;
- Determine actual dust generation source points;
- Understand process operational needs around potential hood locations, and review with operations to obtain mutual agreements;
- Determine volume, shape, static pressure, and accessibility requirements.