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### **BTG high performance creping blade with Yankee coating visualization system**

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Sanitary tissue market has changed since COVID-19 pandemic in Japan. It has not been easy to go to public space and people are staying in home. Demand of toilet roll for public facilities has declined. On the other hand, demand of Household paper is increasing and toilet roll become longer because of reducing environmental impact. Even though product specification has changed for home use, Improving productivity and stabilizing quality are the most important challenge for Sanitary tissue manufacturer.

Coating layer condition on the Yankee surface is one of the most important factor of crepe quality and productivity. Almost all operators depend on experiences and intuitions of yankee master, because there was no way to measure and check it. Steel blade tends to change crepe quality and bulkiness because of low wear resistance. Then frequent blade change prevents rising productivity.

BTG developed and optimized Vigilance(Yankee coating visualization system) and Duroblade(High performance creping blade) for Japanese Sanitary tissue manufacturer. Vigilance is not just a vibration monitoring system, but it can analyze and classify a cause of vibration. Finally, it visualizes the coating layer condition and make the machine stable. Duroblade is not only high wear resistance creping blade, but also making high quality crepe & stable bulkiness products, Reducing edge build up & paper dust, Making Stable bulkiness products and coating layer condition.

Specification and Solution of Vigilance and Duroblade are reported in this article.

### **Energy savings by newly developed conical refiner for stock preparation**

Masaharu Menjo  
Valmet K. K.

In this paper, a newly developed conical refiner is briefly described. The electricity consumed by refining is considered as about 20 % of all electricity for one paper machine. Therefore, effective ideas to reduce energy consumption by refining would be attractive. In Japan, double disc refiners are mainly used as a refiner for stock preparation. To reduce energy consumed by double disc refiners, refiner plates with function of energy savings are widely adopted. The refiner plates with smaller diameter of refining zone enables to reduce no-load power of refiners. In terms of no-load power, conical refiners are superior from double disc refiners, because rotating refiner plates have smaller diameters which can lead to lower no-load power. Valmet has been selling conical refiners (product name : OptiFiner RF) to all over the world since 1983. While refining pulp, some of pulp remain in grooves of refiner plates all the way up to the outlet of refiners and these pulp result in unrefined pulp. This phenomenon happens to double disc refiners as well as conventional conical refiners and it is clear that the refining efficiency for these 2 refiners is not high. To improve the refining efficiency, Valmet has developed a new type of conical refiner with brand-new refining mechanism and the first product was commercialized in 2010. The new conical refiner (product name : OptiFiner Pro) is excellent regarding energy savings and has been sold more than 100 refiners worldwide. In Japan, 4 refiners were sold so far. In this paper, the new conical refiner with new refining mechanism and the first reference in Japan are briefly explained.

## **Analysis of phase transfer of thermal chemicals in linerless thermal labels**

Masahiro Morie

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Thermal paper is made by applying a coating layer containing a colorless leuco dye and a color developer dispersed in fine particles on a paper base material, and when heat is partially applied to the coated surface, it becomes a leuco dye at that location. The color developer melts and comes into contact with each other, causing a chemical reaction to develop color. In addition, a sensitizer or an ultraviolet absorber that accelerates color development is used according to the specifications.

Normally, the thermal label is attached to the release paper after applying an adhesive to the back surface of the thermal paper, but the linerless thermal label is directly attached by providing a release layer on the thermal surface side of the adhesive-processed top paper for the thermal label. Since they are combined, there are merits such as no need for release paper, reduction of waste, and the length of the label roll can be increased with the same diameter.

During the development of this linerless thermal label, when an acrylic emulsion-based adhesive, which is also used in ordinary thermal labels, was used, a case of desensitization (decrease in print density) occurred. Since there were no cases of occurrence with ordinary thermal labels, the direction of improvement could not be determined. Therefore, it was decided to analyze whether or not the thermal chemical components had changed before and after desensitization.

## **Thickness Reduction Control System on RB, Using Immersion UT Inspection Technology**

Yoshihiro Kondo

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Hokuetsu Corp. has been engaged in the “Minimum Impact” that reduces the burdens on the environment through the company growth. With biomass energy and the latest technology available, we will take on the challenge of achieving zero CO2 emissions by 2050. In June 2021, we took the ISO45001 certification that manages the occupational safety and health, with our company being the first to do so in the paper industry. We target to achieve SDGs by fulfilling safe and reliable work environment. To fulfill the target we set, running the large-scale Recovery Boiler (RB) safely and securely at the central key plant, Niigata Mill, is essential. In this paper, we will introduce the mill standards in managing and maintaining the soundness of boiler tubes on RB.

## **Introduction of Toscotec S.p.A**

Masahiro Yamaguchi

Sales department, Voith IHI Paper Technology Co.,Ltd.

VOITH Group in December 2019, with the aim of strength the competitive position of both Companies and increase the products and services of VOITH portfolio, in line with the growing demand of paper and tissue products of high quality. TOSCOTEC, thanks to its experience in tissue, is the VOITH global platform for the new tissue plants and machines rebuilding. The TOSCOTEC wide range of machines portfolio, the high level of technical solutions and the support that can be provided to the Customers for the consumption and quality optimization is an additional value for the Customer that is not looking only to a simple Supplier, but to a Partner for its new business investment.

## **Key points for creating and operating a pest management strategy**

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Earth Environmental Service Co., Ltd

For effective pest control, it is important to thoroughly consider the problems of your own factory and create an original management strategy for each factory. Since the purpose of pest control is to prevent insect contamination in products, management strategies need to be developed based on insect contamination scenarios and risk assessments. Risk-based strategies help explain the need for costs to management and enable effective cost allocation.

For effective operation of pest management strategies, it is necessary for employees to understand and cooperate with pest management. Therefore, education and improvement activities are required. ESCO WEB learning and ESCOEVO are services that support education, information sharing, and communication, and are tools that support the operation of pest management strategies.

Management strategies should be regularly reviewed from the perspective of prevention of insect contamination on products. If the expected effect is not obtained, it is necessary to review the insect contamination scenario and risk assessment.

## **Safety monitoring solution for factory workers "Anzen Mimamori kun" and introduction to smart factories**

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In this paper I introduce safety monitoring system for factory workers provided by NS Solutions Corporation, use cases in each industry, and our concept of smart factory centered on safety management system.

## **Revolutions in the history of civilization induced by paper Part 12: The birth of paperboard and fading trail**

Kiyoaki Iida

In the 1800s, Japan was fairly literate and they enjoyed many kinds of publications, printed by wood block, of which topics ranged from history and pharmacy to entertainment. Paper was also used in many ways like paper clothes, fittings of a house, household goods and amour, and was in the age of its maturity. China was also in the matured stage of publishing, and used paper in many ways like in Japan. Their social innovativeness, however, was rather stagnant.

Europe, on the other hand, was changing itself by experiencing successive movements such as the Reformation, Enlightenment and the Industrial Revolution, to which paper and movable type printing it had invented played a significant role. In the 19th century, their economy (GDP) started to increase at the rate triple to quadruple of the earlier age. Rail way was invented of which mileage was expanding at the rate more than 10 % a year, and people moved around and goods were transported more than ever.

The demand for paper was also growing which stimulated technical developments. Paper machine was invented, which was growing to larger and faster running one (at the increasing rate of 3 % a year), and straw pulp became available. Finally, wood could be pulped in the 1850s. As paper became common, Europe that had used paper mostly for printing, started to apply it for many ways. One of them was packaging of goods for transport, which were wrapping paper and paper boxes.

Then, the 1900s began, and America that became rich built a society of mass-production and mass-consumption. For better marketing, they used wrapping paper and paper boxes printed by lithography that afforded free design of images. To transport goods efficiently, they invented corrugated boxes. Their system spread in the world and a new application of paper, paperboard, arose and its volume became as large as that of conventional paper.

The technological progresses after the Industrial Revolution invented new kinds of media for handling information based on digital technology and the volume of information on them is increasing exponentially, at far greater rate than that of paper. The consumption of paper as a carrier of information started to decline for the first time in its history, and its ratio in the whole information is drastically decreasing.

How to secure the maintenance and persistence of the new digital system is the subject of our present civilization.

**An Essay on Methodology for Innovating “*JAPAN TAPPI JOURNAL*”**

**Part 18 (final issue) : A Short Thesis on Comparative Analysis of Journals for Relative Evaluation of the Japan TAPPI Journal**

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With a view to relative evaluation of the Japan TAPPI Journal from global perspectives, the characteristics of the Japan TAPPI Journal was compared with US's TAPPI Journal in a variety of ways. The significant difference is the medium for communication, i.e., paper-based Japan TAPPI Journal and digital-based TAPPI Journal.

The eighteenth article will conclude this series in terms of “comparison with overseas journals”. The overall contents are described as below.

1. Introduction
2. Author's experiences of subscribing overseas journals
3. The organization of US's TAPPI
4. The organization of Japan TAPPI
5. The differences between US's TAPPI Journal and the Japan TAPPI Journal
6. The ways to extend the domain of the Japan TAPPI
7. Expectations for the future developments of the Japan TAPPI Journal
8. Epilogue