

**New Approach for Wet End Operation and Optimization (Step 2)
—First Reference for “iTABLE™” in Japan and Next Step—**

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The global paper market put new challenges into today's paper making. Papermakers are requested to produce paper grade to meet market demand as well as competitive manufacturing cost with each other in order to stay in business.

IBS“iTABLE™” is the perfect solution with advanced drainage technology on a Fourdrinier table to produce consideration in Formation and paper strength improvement as well as remarkable results in energy consumption and chemical cost saving to an extremely short payback period of less than one year.

The over one hundred fifty “iTABLE” are operating in the worldwide and we supplied first reference to the Japanese market in 2018.

This paper introduces the performance results on first reference of “iTABLE™” in Japan and next step for “iTABLE™” with new IBS advanced technology of “Table vision”.

The comprehensive chemical approach to improving productivity by cleaning felts and wires

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The deposit adherent in the papermaking process causes operation trouble with occurrence of web-breaks and the defects and often brings bad influence to the productivity and the quality of the product in a pulp and paper production plant. There are the various factors that cause web-breaks and the defects, therefore the solution to the deposit problem are also different depending on the situations. We think that solving optimally the complicated deposit problem at the wet end will lead to the improvement of the quality and the productivity by analysis from pleiotropic viewpoint.

We investigated the causes of the deposit troubles in the efforts at the wet end, and examined the deposit cleaning agent, wire cleaning agent and felt cleaning agent, which we developed as an application example of the optimum cleaning method for solving the problem. In this report, we will introduce the development concept of the cleaning agents, the mechanism of effect and the example of effect.

The latest development for forming fabric and press fabric

Ulf Bengs

Albany International Forming Eurasia

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Albany International Japan Albany International is a leading developer and manufacturer of Paper Machine Clothes (PMC), supplies engineered fabrics and process belts used in the manufacture of all grades of paper products, including tissue and towel, board, and packaging and publication. The production of paper and board has experienced a dramatic change during the last decade.

The production of graphical papers has reduced significantly wear as the production of packaging grade paper and board as well as sanitary (tissue) products has increased steadily. This development has had a clear impact on the demand for PMC fabric performance.

Today we are going to present Albany's latest products with the latest technology which Albany International has developed.

Performance and effects of thermal spray application to various wire rolls — TS-03112 μ which greatly extends the life of plastic wire —

Kimiaki Iwane

Tocalo Co., Ltd. Sales Division

In the wire part of a papermaking machine, the wire roll (Wire roll, Breast roll, Drive roll) is usually a rubber cover roll.

Recently, ceramic spraying has been increasing. Rubber cover rolls cause uneven wear in 1 to 2 years due to friction with plastic wire. Uneven wear has an adverse effect on the life of the plastic wire, and it is necessary to replace the wire early at the papermaking site. As a remedy, ceramic spraying has been used for more than 20 years and has achieved a certain effect. However, the ceramic sprayed coating has a low coefficient of friction and easily slips with the plastic wire, and cannot be used for a drive roll. Therefore, the effect of improving the life of the plastic wire is limited. We started to develop special ceramic thermal spray coating (TS-03112 μ) with high friction coefficient more than 15 years ago.

After various evaluation tests with the cooperation of a wire manufacturer, the first roll was delivered to the on-top former drive roll in 2005. After undergoing various evaluation tests with the cooperation of a wire manufacturer, the first roll was delivered to the on-top former drive roll in 2005. As a result, it was proved that the slip ratio was equal to or higher than that of a rubber roll for a drive roll. As a result, it was proved that the slip ratio was equal to or higher than that of a rubber roll for a drive roll. Since then, TS-03112 μ has been mainly used only for drive rolls, but its surface performance has also greatly contributed to extending the life of wires by adopting it for normal wire rolls and breast rolls. Many customers who have adopted TS-03112 μ have reported that the wire life has reached 1.5 to 2 times.

Proposal of Mixing Plate

—CD/BW Profile Control Device for Headbox—

Masayuki Nagata

Sales Dept, Kobayashi Engineering Works, Ltd.

Thanks to the partnership with Kadant AES, USA, we have offered several units of "Octopus Stock Approach System" (hereinafter refer as Octopus") and it has been a long time since dilution controls are well known as major methods to control CD/BW Profile from the Headbox.

Today, we would like to introduce you our "Mixing Plate" as a new method to control CD/BW Profile. Needless to mention, uniform CD/BW Profile at certain levels equally are one of the most important key technology in paper production. In order to control these amounts, numerous of equipment has been invented by numerous of suppliers.

Among those equipment, our Mixing Plate features less installation space compared with Octopus with reasonable pricing. Not only to a new build Headbox, but also, it could retrofited to existing Headbox by less modification works too.

Let us start off the explanation of its features and benefits of installation, based on actual cases. In this case, Mixing Plate was introduced to Evener Roll type Headbox and resulted to improve CD/BD Profile.

Innovative System 「PCA-Poly Clean Applicator」 and Latest Canvas Cleaner to keep dryer surface and canvas clean

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Design Department / AIKAWA IRON WORKS CO.,LTD.

We have been manufacturing and promoting doctor equipment, surface cleaners and canvas cleaners for the solutions of removing dirt on the dryer surface and cleaning the canvas. There is a high demand for improvement of product quality, as there are more and more contaminants on the dryer and the canvas due to the deterioration of raw material quality in recent years. We have now an innovative solution to prevent dirt from adhering to the dryer and canvas on top of our conventional equipment. We have now started promoting the system called "PCA Poly Clean Applicator" that we hope will play an important role in solving the problems that have not been able to eliminate so far. This article covers the introductions of the "PCA-Poly Clean Applicator" and the latest canvas cleaner.

New Sizing Agent 「SIZEPINE CA-956」

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In the paperboard manufacturing, it has become difficult for internal chemical additives to function properly since the increase of calcium carbonate-containing waste paper and more closed papermaking system. Rosin sizing agent, known as a main force of internal sizing agent, is considered to perform poorly under the trend of pH rising in papermaking system. For general sizing agents other than rosin, AKD and ASA are well known. However, even though they have excellent performance, various disadvantages such as slow progressive development of sizing effect and concern for their stability. In such situation, we have newly developed "SIZEPINE CA-956". It is the fourth general sizing agent, following rosin, AKD and ASA, which is able to adapt to wide range of pH.

SIZEPINE CA-956 has long alkyl chains as hydrophobic group, and special polar groups. It also needs Alum to function as traditional rosin sizing agent does. However, compared to rosin size, SIZEPINE CA-956 has a different coordination system, and shows predominance under low Alum dosage, even only with the Alum derived from waste paper material. Furthermore, the performance of SIZEPINE CA-956 is not susceptible to pH and temperature of wet-end as well as drying temperature in papermaking process. Besides, it has no problems such as slow progressive development of sizing effect of AKD and over-time deterioration of ASA.

In preparation for future changes in papermaking environment and market, we are promoting development for further application possibilities of this novel sizing agent.

Enhanced Biocontrol Performance through DNA Technology in the Paper Making Industry

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This study uses high-throughput sequencing technology and metagenomics to identify the biofilm forming bacteria in the paper-making process. Taxonomic classification of bacteria that led to biofilm formation were assessed. Problematic bacteria were grouped and quantified using real-time polymerase chain reaction (qPCR). This technology of identification and detection of causative bacteria in the paper-making process, based on metagenomics and qPCR, was developed by Nalco Water as Metagenomics Analysis Protocol (MAP). One case study using MAP demonstrated that targeted biocontrol treatment resulted in improved paper quality and production performance.

TURBAIR® - The Energy Saving Vacuum Blower-

Mokume Misawa
MAN Energy Solutions Japan Ltd.

TURBAIR's green technology offers an incredible saving potential and helps to cut the consumption of energy and process water in paper production. In doing so, it slashes related costs and reduces the environmental CO₂ footprint tremendously. The environmental and economic advantages of MAN vacuum blowers allow customers from the wood-fiber and paper industry to stay competitive and especially in case of higher production output.

The amount of vacuum and air volume required during paper production varies depending on the type of paper manufactured. The TURBAIR® system, which is a state of the art technology, adapts dynamically to the changing conditions to provide the exact volume and vacuum needed for a perfect result. This, combined with a fully controlled vacuum system helps to increase the visibility of the production and quality.

- Suction flow rates of up to 3,000 m³/min per blower
- Vacuum level of up to 65 kPa with our single stage blower and up to 75 kPa with our multi-stage blower
- Efficiencies of up to 85%
- Constant vacuum levels at varying flow rates over the entire working range
- Heat recuperation equivalent of up to 75% of absorbed blower power
- No sealing water consumption
- No wearing parts
- Long lasting device

Activities for Energy Saving at PM6 in Nagaoka Mill

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Hokuetsu Corporation Co.,Ltd.

Key products at PM6 in Nagaoka Mill is industrial paper. Recently received order of industrial paper is increasing. We have to increase production volume. We have tried increasing production volume and reduction of steam intensity. In this paper we report two cases "Reduction of steam intensity by increasing of Double Disk Refiner" and "Reduction of steam intensity by addition of Finesteam" at PM6 in Nagaoka Mill.

Effect of Cooking Method on Wet Tensile Strength of *Kozo* Paper

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Usu mino-gami (a kind of thin *kozo* paper) is frequently used as the first back lining paper of hanging scrolls in order to support the main paper with a painting or a work of calligraphy on it. For dyeing appropriate color, the paper is often treated with alkali mordant solution. However, current *usu-mino-gami* product received such comments from conservators that wet tensile strength is weak, and hard to handle. Therefore, improving wet tensile strength of *kozo* paper have to be required. In our previous paper, the effect of sheet forming method on wet tensile strength of *usu-mino-gami* has been investigated. In this paper the effect of cooking method on wet tensile strength of *kozo* paper was subsequently investigated. Wet tensile strength of *kozo* paper which made with different cooking conditions, was evaluated by wet tensile strength using finch device. *Kozo* paper with different amount of parenchyma cell was also be made. The amount of parenchyma cell in pulp was measured with ratio of parenchyma cell film area between fibers on *kozo* sheet by using scanning electron microscope (SEM) images. According to the results, the increase of wet tensile strength and higher amount of parenchyma cell were observed with shorter cooking time, and lower concentration of cooking agent (alkaline). Furthermore, wet tensile strength of *kozo* paper increased when amount of parenchyma cell in pulp was higher.