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“FabriKeeper”, the solution to Dryer Fabric Deposition, which combines DSP and cleaning technology

Hiroshi Sekiya

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Tomohiko Nagatsuka

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Maintech’s Dryer Section Passivation (or DSP) has been introduced on 99% of paperboard production in Japan, and over 750 units of our chemical spraying equipment, MistRunner® and ShowerRunner® are operating across the world. In the field of recycled papermaking, the use of low-grade wastepaper leads to increased deposits on paper machines, causing defects, sheet breaks and machine speed limitation, therefore more effective measures are needed / need to be taken. In addition, it is dangerous for workers to check the dryer fabric condition inside the dryer hood under high temperature and humidity conditions to take measures against deposits. Thus, we notice the progress of deposits after increasing defects and sheet breaks.

Therefore, we have developed the innovative solution for preventing defects and sheet breaks by combining dryer fabric passivation and cleaning technology, “FabriKeeper®” with deposit monitoring and quantification, “SmartDepo.®”. We have successfully introduced these solutions to paper machines across Japan / across the world.

High-Performance of Non-Stick DryOnyxH coating that can be applied onsite.

- Introduction of achievements at Japanese paper mills -

Kimiaki Iwane

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In 2015, Tocalo Co.,Ltd. started on-site coating applications of DryOnyx H(hereafter called “DOH”), a release coating for dryer cylinders of paper machines licensed from Valmet Corporation, Finland, for Japanese paper manufacturers after closing a license agreement with the company in 2014 August. Valmet’s DOH represents a package of unique technologies for coating formation that is highly recognized and used by paper manufacturers around the globe and is a successor, with improved features, to DryOnyx Z. The number of cylinders coated with DOH tops 600 as of 2020 April. Its functional coating surface has proved excellent releasing and non-stick properties for doctored dryer cylinders, contributing to drastic productivity improvements in papermaking processes.

One of the biggest advantages of DOH is its short time requirement realized by the on-site application, which eliminates the needs for removing large cylinders from the line and transportation to the coating facility as required in conventional release coatings. Low temperature cured paints and polytetrafluoroethylene (PTFE) fluoropolymer sheets are known as conventional on-site solutions for dryer cylinders, however, only few examples of actual use are found due to quality and short service life from their low durability to doctor blades. DOH is on-site coating technology designed to provide solutions for these challenges and now meets customers' expectations for shorter process time and longer service life.

During 5 year period from September 2015 to the June of 2020, Twenty eight cylinders have been applied with DOH, and We are increasing application to canvas rolls that have similar rust and dust problems in the dry part. In this paper, the basic characteristics and coating processes of DOH along with its performance are reported.

Utilization method and practice example of online hygiene education as an alternative to collective education

Risa Kamiya
Sales Promotion Division, Ikari Shodoku Co.,Ltd

In recent years, consumers have become more conscious of foreign substances contamination in foods, and in particular, the contamination caused by pests such as insects and rodents tends to be a big problem due to the concern of hygiene and appearance. In order for companies to thoroughly manage pest control, education of employees is an important issue.

In response to a request from a major food company, we have begun to provide the educational and learning service "Ikari Smart Campus" through online hygiene education. Online hygiene education is a learning management system that can be accessed through the internet by various of devices such as computers, smartphones and tablets. The strength of e-learning is that you can take the courses anytime, anywhere and any number of times. All of the teaching materials provided by us are original, and by using abundant photographs and illustrations, we encourage students to take the course "as many times as possible" and hope that their knowledge will be firmly established.

Education is an indispensable effort for any company. Online hygiene education is an educational tool that is in high demand because it can be carried out easily even at the times when the implementation of group training is difficult, considering the recent situation. We need to regularly add new teaching materials and aim to enhance the service so that "Ikari Smart Campus" can be used by many companies as a new educational method.

ABB's After-Service for Perfect Testing of Pulp & Paper and for Sustainable R&D - Service and Solution for L&W Testing and Analyzing Instruments -

Ryo Yamashita
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The customer often has questions. "Can you trust the result?" "How is the accuracy?" Regarding measurement, many guidelines are given in various measurement standards (JIS, ISO etc), and the measurement device and measurement procedure are specified therein. ABB, we aim to not only comply with the standard, but also share the value beyond that with our users.

For ABB's after-sales service, our specialized engineers share our worldwide knowledgebase, experience of maintenance, inspection, service, calibration and etc. that have been carried out for decades through our own network, and provide high quality service.

Since instrument always deteriorates, regular service and calibration are required to maintain high accuracy of instrument. Our company proposes and provides some service to maintain the accuracy of the instrument by updating the software, such as maintaining the accuracy of the instrument by concluding a Preventive maintenance agreement (PMA). The contracted user not only obtains reliable results, but also expects to budget for maintenance costs, and further extends the life of the instrument.

We propose and provide the upgrade of our instrument, which is updated year by year, to the desired users. The advantages of updating the old model and measuring with new hardware and software are great. As for whether to acquire a new measuring instrument or to extend the life of the old model by maintenance, we would like to consult with the user separately and mutually propose the most rational method.

ABB's products and services are said to be of very high quality, which means that users trust our product and ultimately win-win profits. Our company think that high quality service is not something that can be obtained naturally, and that new expertise and management in various ways suited to the times are always needed.

Remote Service by Valmet

Yoshiyuki Hirano
Valmet K.K.

The main target of Remote services is to continuously improve mill efficiency by improving process performance and by supporting mill operations in their daily tasks.

Valmet offers various solution methods to solve these problems, and we will share innovative ideas with customers and bring them to market. Providing applications that contribute to satisfaction by continuously grasping technological innovations that change with the times.

Benefits of implementing Advance Process Control technology using MACS in Pulp & Paper Making Processes

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An optimum process control requires manipulation of multiple MV's (manipulated variables), FF's (Feed Forward variables) and constraints matrix to achieve multiple CV (control variables) to remain in desired operating limits. It is extremely challenging to optimize each of the controlled variables to maintain the process close to required quality targets. While it is of utmost importance to have the field instruments, sensors and regulatory controls functioning accurately it is practically impossible for operators to manually optimize the process. For example, in a bleach plant, it is challenging to achieve final pulp brightness at minimal cost continuously using regulatory controls due to the complex multivariant nature of the process and the lengthy time delays introduced by dead times from Bleach towers. To overcome this challenge, Multivariable Advanced Control System (MACS), a proven advanced nonlinear control platform, has successfully been implemented resulting in large savings to mills. MACS uses dynamic process models to account for the effect of process disturbances on downstream pulp or paper properties and manipulates the chemical charges for instance to compensate for these disturbances. MACS corrects for unmeasured disturbances via feedback control, and accounts for varying process delays and non-linear process response curves via real time model adaptation.

Utilizing a model predictive control solution coupled with an optimizer allows for optimization of the individual unit operations as well as a coordinated optimization between different departments. This is especially critical when considering the changing objectives from a facility which can range from production maximization requiring the minimization of bottlenecks to an objective of minimizing overall production costs. In most facilities there will be a balance between these two objectives that will continuously be changing based on the current market demands and operational costs.

We are now seeing the adaptation of these solutions by the P&P industry as single unit optimizations as well as entire process optimizations. MACS can be implemented in all unit operations from wood handling through to paper finishing as well as the utility areas.

This paper highlights some industrial case studies of implementing MACS solution to key unit operations in a Kraft process – Digester, Bleach Plant, Evaporators, Recovery Boiler, Recast and Lime Kiln. The objective and the control strategies could be different for different unit operations, but the basic concept of developing mathematical correlations between MV's, CV's, FF's and constraints are developed to predict the future behavior of the process. MACS Models provide new process setpoints to remain within target process conditions. MACS can manage 100's of variables at the same time respecting all the operating targets while maintaining the process at the lowest cost point.

New Type Turbo Blower Saves Energy & Stable Operation With IoT —Air foil bearing Variable speed Single stage Turbo blower TurboMAX—

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In this paper I would like to introduce the advantages and technologies of TurboMAX turbo blower. TurboMAX turbo blower consists of superior technologies like air-foil bearing, permanent magnet synchronous motor, high efficiency impeller, high speed control technique and so on. As for the overall structure, blower, motor, inverter, touch panel controller and blow off valve are installed in one enclosure. This is a new style turbo blower called “air foil bearing-variable speed-single stage turbo blower”. Compare to the conventional blowers, TurboMAX turbo blower has many advantages in “Saving energy” “Low noise and vibration” “Saving maintenance cost” “Space-saving and lightweight”. Especially, compare to the conventional root blowers, TurboMAX turbo blower can reduce power consumption by 20% on average.

As global warming is serious issue around the world now, reducing the power consumption is required to all industries regardless of its type and scale. Especially for paper industry which uses and disposes a large amount of water, reducing the cost for waste water treatment is a big challenge. In the process of waste water treatment, aeration blower's power consumption makes up the large proportion, and aeration blower usually runs for 24 hours every day. So, high efficiency aeration blower can contribute to

the cost reduction of waste water treatment significantly.

In the latter half of this paper, I introduce an actual case of replacing 2 root blowers with 1 turbo blower (MAX100) at municipal sewage-treatment plant for the field trial. As the result, we could confirm 25% energy saving, 16dB noise reduction, 25 μ m vibration reduction, and 6°C blower room's temperature reduction.

ShinMaywa Industries, Ltd. launched TurboMAX turbo blower since 2012 in Japan, and some blowers have been delivered to paper factories. As for paper factory, we have delivered blowers to 8 paper factories so far and 12 blowers are in operation now. Especially, one of these blowers are used for flotator which is used in the deinking process during manufacturing recycled paper from used paper, and we confirmed TurboMAX turbo blower can reduce power consumption in non-aeration use too. I expect TurboMAX turbo blower can reduce the power consumption in many other uses too. I hope TurboMAX turbo blower contributes to the energy saving in many fields and it leads to the reduction of environmental burden of the globe.

An Essay on Methodology for Innovating “JAPAN TAPPI JOURNAL”

Part 9: A New Normal State in the Post-Corona Age and “JAPAN TAPPI JOURNAL”

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Abstract

Pandemic coronavirus Covid-19 has immense amount of potential energies to change from a daily normal state to a newly emerged “New Normal State” through human societies and business worlds. To cope with these crises, a variety of countermeasures are proposed so far.

The ninth article of this series is intended to foresee the structural change of human society and business world with particular attentions on paper-related areas: i.e. Japanese paper industry, Japan TAPPI, and Japan TAPPI journal. The overall contents are described as below.

1. Introduction
2. Corona disaster as stressor on human being
3. Normal State and New Normal State
4. New Normal State : reversible or irreversible
5. Normal and New Normal States for paper industry
6. Normal and New Normal States for the Japan Tappi
7. Personal experiences from the attendance of the Online-type Annual Meeting of Japan Tappi
8. Information gathering and human five senses
9. A cognitive science viewpoint on the comparison between on-site attendance and online attendance
10. Problems proposed through corona disasters to the Japan TAPPI JOURNAL
11. Epiloguen