

CONTENTS

Automation Technology

- 2 A Report of the 49th Automation Technology Seminar
.....Automation Committee, JAPAN TAPPI
- 7 Next-Generation TMEIC System for Plant Optimization
— Utilization of Field Data —.....Yoshiki Ideta
- 15 SKF Automation Technology Solutions.....Makoto Usami and Keisuke Aoyama
- 18 Operation Management System MillONE.....Kanato Mizukoshi
- 23 Remote Monitoring of Industrial Wastewater Quality by Utilizing 920 MHz
Wireless Band multi-hop Transmission System.....Taku Akagawa
- 29 Visualizing Non-Standard Tasks and Moving Toward a Penless Workflow
.....Yusuke Nishida

Topics & Information

- 36 Powerful Tools for Real Time Process Monitoring for Wet End and Machine
Optimization.....Hiromichi Yoda
- 43 The SmartPapyrus[®] Realizes a Comprehensive Digital Transformation Solution
for the Papermaking Process.....Takayuki Shimo
- 52 Satron's Advanced Optical Measuring Method Could Contribute to Optimizing
Process Control.....Keita Nakagaki

Research Report

- 58 Changes in Chemical Composition and Prediction Method for Washing
Wastewater Volume during Sodium Hydroxide Treatment of Japanese Cedar
and Magnolia Woods to Improve Flexibility
.....Keishi Tanifuji, Yuka Miyoshi, Satoshi Konabe, Yosihiko Imai and Hironari Ohki

03 Committee report

85 Papyrus

90 Industry News (Domestic and International)

94 List of Patents issued and Laid-open Publication

104 Price list of Domestic Logs and Wood Chips by District

105 Other Monthly Statistics

107 News from the Association

Next-Generation TMEIC System for Plant Optimization -Utilization of Field Data-

Yoshiki Ideta
Application Engineering Section
Paper & Material Handling Engineering Department
Industrial & Energy Systems Division 2, TMEIC Corporation
English Affiliation

TMODG (TMEIC Online Data Gathering) is designed as a high-speed, multi-point data acquisition and analysis platform for utilizing field data in pulp and paper plants. With sampling down to 1 ms and time-aligned visualization across multiple signals, it may help capture short-duration events that can be missed by conventional trends and support evidence-based troubleshooting. Open interfaces such as ONS and OPC-DA can be used in some cases to connect to existing instrumentation or third-party systems with limited changes to legacy controls. In practice, these capabilities may contribute to faster investigation and cross-functional sharing of consistent evidence, which can support stable operation, reduced loss, and improved energy efficiency.

SKF Automation Technology Solutions

Makoto Usami
SKF Japan Ltd. Lubrication & Seal Development, Industrial Sales
Keisuke Aoyama
SKF Japan Ltd. Channel and Distribution Development, Industrial Sales

SKF is a unique, full-scope tribology manufacturer, providing an integrated platform that includes bearings, seals, lubrication systems, condition monitoring devices, and remote monitoring and data-analytics services. Few companies can cover all aspects of tribology—friction, wear, lubrication, sealing, diagnostics, and data integration—and SKF's strength lies in optimizing entire tribology systems rather than individual components.

This paper introduces SKF's automation solutions—the wireless lubrication system TLDD, the Condition Assisted Lubrication (CAL) system, and the condition monitoring systems—in relation to key challenges and application cases in the pulp and paper industry.

Operation Management System MillONE

Kanato Mizukoshi
Control System Eng. department, Voith IHI Paper Technology Co., Ltd.

The paper industry is undergoing a transformative shift driven by digitalization, automation, and workforce evolution. Amid challenges such as the aging workforce, fragmented operational knowledge, and complex control systems, Voith introduces MillONE, an integrated operational support system designed to address these issues comprehensively.

MillONE consolidates key modules including:

- Operations Center: Real-time machine and process monitoring
- KPI-Based Management: Threshold-driven decision-making
- Smart Task Management: Workflow automation and task allocation
- Knowledge Database: Structured troubleshooting and solution archiving

Through field demonstrations and case studies, MillONE has shown measurable improvements in productivity and cost efficiency. The system enables transparent operations, preserves expert knowledge, and supports strategic decision-making through data-driven insights. MillONE not only enhances operational efficiency but also lays the foundation for fully automated and intelligent paper manufacturing environments.

This paper presents the theoretical framework, experimental validation, and practical implications of MillONE, concluding that its adoption is a pivotal step toward the future of smart paper mills.

Remote Monitoring of Industrial Wastewater Quality by Utilizing 920 MHz Wireless Band multi-hop Transmission System

Taku Akagawa
Customer Center, MG Co., Ltd.

Conventional process/factory instrumentation systems are based on transmitting measurement signals via wired communication, but they have issues such as the initial and maintenance costs associated with wiring work, as well as restrictions imposed by the installation environment.

Meanwhile, the reliability and security of wireless communication have improved in recent years, and wireless is becoming a powerful means of promoting smart factories and the adoption of IoT.

MG has developed a wireless remote I/O system that utilizes the 920 MHz wireless band, which has recently become available to domestic industries.

This system consists of a parent station and multiple child stations, is capable of wireless communication up to 1 km, and is easy to install.

The use of wireless communication overcomes the issues associated with wired communication methods, making it easy to achieve remote monitoring and maintenance of factories and equipment.

This paper introduces the functions and features of a wireless monitoring system as well as implementation examples and demonstrates the system's effectiveness.

Visualizing Non-standard tasks and Moving Toward a Penless Workflow

Yusuke NISHIDA
HONEYWELL CYBER AND CONNECTED INDUSTRIAL, JAPAN HONEYWELL GK

Introduces approaches for visualizing un-planned activity and transforming toward to pen-less workflows in manufacturing.

With highlights the Baldrige Performance Excellence Program's workforce and operations categories, introduce Honeywell's digital solutions for frontline improvement, and emphasizes the importance of employee engagement, process optimization, and continuous improvement for sustainable organizational success.

Powerful tools for real time process monitoring for Wet end and Machine optimization

Hiromichi Yoda
Local business manager, Process Industry Division, ABB K.K.

Currently, industry got strong pressure from the market because Japan government announced carbon neutral industry by 2050. In Japanese industry, especially material industry, there are several serious potential issues like lack of human resource due to less attractiveness for young people, retirement of baby boomer and the technical transfer. On the other hand, there are bright future in paper industry because paper is excellent material for plastic reduction and new functional material, Cellulose Nano Fiber.

ABB started following four approaches to cooperate with customer to solve facing issues.

- 1) Reliable and high-performance online measurement for Refiner, Wet end control
- 2) Cutting-edge fiber analyzer for new material development
- 3) Speedy, Safety and high precise paper testing machine
- 4) High speed, high precise and reliable automated paper testing machine

The Author introduced all 4 items from 2022 to 2024 in Japan Tappi. In 2025, all topics are reviewed by 2 sessions and summarized again from point of importance of real time process monitoring. In the session, powerful tools for wet end and machine are described. Product features, measurement principles and usage of pulp consistency meter (microwave, optical) and freeness online device will be presented.

The SmartPapyrus® realizes a Comprehensive Digital Transformation Solution for the Papermaking Process

Takayuki Shimo

Technology Development Team, MAINTECH CO., LTD Fuji Technology Development Center

Japan's working population is declining significantly due to aging and a declining birthrate. This labor shortage issue endangers the sustainability of papermaking. Consequently, the automation of operations through DX initiatives, such as IoT, has become an urgent necessity.

Maintech has addressed these challenges by collaborating with customers to present a comprehensive solution for labor-saving and operational optimization centered on "SmartPapyrus®" through DX, thereby achieving a "workstyle reform" that goes beyond the reduction of defects and paper breaks through chemicals, equipment, and maintenance.

Currently, we are expanding to SmartPapyrus® 2.0, which integrates data from all processes from furnish to reel winders to optimize operating conditions, aiming to achieve labor savings and standardization/leveling of operational decisions.

In this report, we introduce the SmartPapyrus® product lineup developed to date, present case studies of actual machine applications, and explain how SmartPapyrus® will drive the digital transformation of paper manufacturing processes in the future.

Satron's advanced optical measuring method could contribute to optimizing process control.

Keita Nakagaki

MI Keisou System Co., Ltd.

For quality stability and production efficiency, optical methods for measuring pulp properties by inline such as consistency, ash and brightness have been used in Japanese major pulp & paper mills for many years. The ordinary optical technology most used in the mills has had the limitation of measuring range and also its application. As an example, low pulp consistency less than 2% can be often measured accurately using optical method, but not more high consistency range due to loss linearity by light attenuation characteristics.

The company of Satron introduced in this report originally founded in 1921 as the governmental aircraft instruments factory in Finland has been developing most suitable and advanced optical measuring instruments for pulp & paper industry, for example, which can give more accurate values over the entire pulp consistency range from low to high. Their advanced optical technology has been also applicable to measure other pulp properties never used using optical method such as freeness. This report shows a summary of their technology and applications.

Changes in chemical composition and prediction method for washing wastewater volume during sodium hydroxide treatment of Japanese cedar and magnolia woods to improve flexibility

Keishi Tanifuji, Yuka Miyoshi

Forestry and Forest Products Research Institute*¹, Forest Research and Management Organization.

Satoshi Konabe, Yosihiko Imai and Hironari Ohki

Gen Gen Corporation

In this study, sodium hydroxide (NaOH) treatments were applied to Japanese cedar (*Cryptomeria japonica*) and magnolia (*Magnolia obovata*) woods to impart flexibility. Wood boards larger than the chips typically used in cooking treatments were employed; however, the yield decreased linearly with increasing active alkali charge under identical temperature and time conditions. In both species, the readily degradable hemicellulose fraction (e.g., glucomannan) was removed at an active alkali charge of approximately 35%, whereas hemicellulose less susceptible to alkaline degradation (e.g., xylan) remained even at higher active alkali charges. In addition, the lignin content decreased gradually with increasing active alkali charge. For Japanese cedar and magnolia, the yield could be predicted based on the active alkali charge. The required amount of washing water depended primarily on the residual NaOH in the wood after treatment regardless of the washing method (ultrasonic or displacement), indicating that the removal of inorganic components (e.g., NaOH) occurred mainly through diffusion driven by water dilution. Furthermore, the NaOH index—defined as the product of the untreated wood weight, yield, and NaOH concentration during treatment—proved to be an effective predictor of wastewater generation during washing of wood after the softening treatment.