

**Power Market Potential of the Paper Industry and Its Evaluation**  
**—The Business Opportunities in the Power System Reform—**

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Electric power system reform is pushed forward in the government. The perspective of the reform is comprised of three phases of the next. It is full-scale liberalization of expansion, retail of the wide area system use and the generation, securing of neutrality by the legal separation of the power transmission and distribution section. Revised work of Electricity Enterprises Law is pushed forward along this policy in the Diet. I organized an investigation committee composed of main papermaker and Japan Paper Association in Ministry of Economy, Trade and Industry. I arranged contents and positioning of the energy business to advance in paper manufacture industry in the investigation committee and examined a paper manufacture industry common problem and measures policy. In addition, I performed an investigation, analysis and, parallel to trend analysis in the paper manufacture industry, gathered an example as a report about compound energy business in other industry. This report summarized a part of the examination result of the report concerned.

**Innovation of Inspection Technology with the Color Camera**

Masahiro Nakata

Inspection Systems Business Div., Omron Corporation

In 1992, OMRON put color printed web inspection system on the market. After that in 2000, "Color Age" was developed for plain web inspection. since those inspection systems had different architecture construction, it was difficult to become widely used in those days. However, in 2009, we finally developed "Super NASP Color" in order to meet inspection needs as follows.

- The integration of architecture construction of inspection system
- Reasonable price to introduce for paper production

- Improvement of the usability and the processing capacity for quantity of color data
- Function to distinguish a harmful red-colored defect that reminds consumers of human blood

Our color inspection technology has led to an innovative inspection method to make practical use of the difference in wavelength of Red, Green, Blue and Infra-Red. Today, we would like to show you the basic technology of color inspection, and also indicate an application possibility to the inspection system based on the difference in wavelength.

### **Development of SE Rotor Vane**

Yujiro Deguchi

Rotor Industry Co., Ltd.

Due to the steep rise in the cost of generator fuel and the need for measures against greenhouse gas emissions, pulpers, which have traditionally used more electricity than other devices, are also required as a part of energy conservation measures. In addition, it is known that more efficient defibration by pulpers can decrease the amount of electricity required by screen devices used after the material-creating process. The need for a rotor vane capable of stronger defibration than existing devices has become evident. While the potential for energy saving has existed in currently available rotor vanes, such energy savings come at the sacrifice of processing quantity. We developed the SE Rotor Vane to address this issue.

### **Operating Experiences of SE Rotor**

Yasuyuki Yamada

Gifu Mill, Oji Materia Co., Ltd.

We have pulper, screen, a process of manufacture, it is the facilities that pulper, screen and refainer use a lot of energy.

We simplified pulp process equipment , and have implemented various energy-saving measures, such as concentration of equipment.

This time we focused on the rotor in the pulp process that consume the most power at Nakatsugawa mill and Ena mill, introduced 90 Type SE rotor is made of six blades by Rotor-Kogyo Co., Ltd..

I will introduce the operating experience and energy saving about the Rotor in the case of

Nakatsugawa mill, that was introduced in June 2011.

### **Expansion of the Biomass Generation Business with the Paper Production Decrease**

Takashi Fukuzako

Fuji Mill, Nippon Paper Industries Co., Ltd.

Due to a reduction in paper production, we have launched initiatives for utilizing surplus electricity, by realizing stable electricity generation and by further increasing the amount of electricity. As a result, Nippon Paper Fuji Mill has been able to achieve significant outcomes for its electricity business.

In this paper, we report introduce the action that was able to utilize the biomass electricity that became the surplus energy effectively.

### **Operating Experience of Wash Press in D<sub>0</sub>-stage in the E-line Bleaching Process**

Ken Nozaki

Niigata Mill, Hokuetsu Kishu Paper Co., Ltd.

There are three bleaching lines (D, E and F-lines) in Niigata mill, Hokuetsu Kishu Paper Co., Ltd. The E-line started to be operated in 1998 at 1200 T/D production capacity with a D<sub>0</sub>-Eop-DnD bleaching sequence, which was the first operational ECF bleaching large-scale plant in Japan. In 2001, the productivity increased to 1300 T/D by remodeling E-line, a bleaching sequence was changed to D<sub>0</sub>-Ep-D<sub>1</sub>. E-line has still been operated at 1300 T/D productivity, which is about a half of a total production of three lines, because of remodeling digester, new construction of the F-line and others.

The bleaching agents consumption rate of E-line is the worth of the three. The D<sub>0</sub>-stage washer has recently been changed an atmospheric diffusers with a wash press to improve bleaching agents consumption rate. In this paper, changes of operating conditions by changing D<sub>0</sub>-stage washer were reported.

### **Iwaki/PM3 Operating Experience of Product Change by Machine Relocation and Remodeling**

Yutaka Wada

Linerboard Dept., Iwaki Daio Paper Corporation

A machine stopped N3 machine for Daio Paper Kani Mill (the product kind: Paper) in February, 2014 number 3, and Iwaki Daio Paper completed remodeling and relocation by 6 months and did an equipment test run in August, 2014.

2 months are to manufacture a sampler by 6 factories of related corrugated cardboard company, establish the quality and begin commercial operation as planned in October from equipment operation, and I'm producing 12,000 tons of monthly production at present, existing, I'm producing 40,000 tons of machine and ply metal paper main stencil monthly production by Iwaki Daio PM 1.

### **Operation Experience of New Liner Machine**

Yoshikatu Monma

Marusan Paper Mfg. Co., Ltd.

Marusan Paper PM8 started the trial operation from December 26, 2014, and has produced commercial paper since January 26, 2015. In February of the year, we achieve 500 t/day. Currently extracts various problem towards the stable operation, it is the stage which is carried out operation while solved.

PM8, corresponding to the thin of containerboard growing from the environmental aspects of the needs was built the quality, productivity and cost competitiveness in the concept, was built as a round paper machine PM6 of S&B.

In this paper, we describe operating experience of the up to the present from the start of paper machine equipment overview of the PM8, and commercial operations.

### **Analysis of the Bleedable Compounds at Pulp's Top-Surface by ESCA and TOF-SIMS**

**Hiroto Higashi, Tohko Nakamura and Keijiro Soma**

**Material Analysis Center, Oji Holdings Corporation**

It was commonly found that the aging and the manufacturing conditions were influenced on the surface properties of the paper. We assumed that the change of the surface properties was caused by the bleeding of the low-molecular-mass compounds to pulp fiber surface. In order to confirm this assumption we carried out the surface analysis of hand sheets using ESCA and

TOF-SIMS.

A handsheet was prepared from a hardwood pulp. ESCA and TOF-SIMS analysis showed that the bleedable compounds, such as C-C chemical bonds increase on the surface of the sheet at high temperature.

### **Functional Analysis of Japanese Green Tea Cultivar “Sunrouge”**

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**Agri-Biotechnology Research Laboratory, Nippon Paper Industries Co., Ltd.**

**Hirofumi Tachibana**

**Department of Bioscience and Biotechnology, Kyushu University**

Sunrouge is a Japanese green tea cultivar containing anthocyanin, developed by Nippon Paper Industrie's original “In-container rooting technology” based on a photo-autotrophic culture system, jointly with the National Agriculture and Food Research Organization and the National Institute of Vegetable and Tea Science. In this study, we evaluated suppressive effect of Sunrouge on metabolic syndrome and found that Sunrouge has the highest inhibitory effect of amylase and  $\alpha$ -glucosidase activity, a digestive enzyme that hydrolyses polysaccharides into glucose, among the 51 major Japanese green tea cultivars. In addition, we verified that Sunrouge has a suppressive effect on the elevation of the postprandial blood glucose level by oral starch tolerance test in mice and humans, and on the elevation of HOMA-IR by diet-induced obese model test in mice.

### **Report on 2015 TAPPI International Conference on Nanotechnology for Renewable Materials**

**Takeshi Nakatani**

**Nippon Paper Industries Co., Ltd.**

The 2015 TAPPI International Conference on Nanotechnology for Renewable Materials was held at Hyatt Regency in Atlanta, Georgia, the U.S.A. from June 22nd to 25th. Approximately 250 delegates attended the conference and most of them were from the US and Canada. Reported at the conference were 110 oral presentations and 45 poster presentations. Summaries of the conference are reported.