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New development of waste paper handling technologies
- Introduction of latest stock preparation equipment -

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In 2017, there was a trade conflict between the United States and China, in addition to a change in China's wastepaper procurement policy. This had a major impact on Japanese wastepaper procurement in 2018, and surpluses and shortages occurred in a short time. As a result, in the paper mills in Japan, the price of waste paper has risen, sometimes forcing the use of some grades of waste paper that are not regularly used, and affecting product quality and operations.

China announced a policy to target zero solid waste imports by 2020. It will limit the import of unsorted waste paper from Japan. There will be a shortage of high quality waste paper, an excess of unsorted waste paper, and frequent use of low grade waste paper. If inexpensive waste paper can be used to maintain product quality, the production cost can be reduced.

Solutions for handling low grade waste paper measures are important for the stock preparation system. The latest waste paper processing technology will be introduced along with successful examples in domestic and overseas mills.

Intelligent Refining to Contribute Minimized Operating Costs,
Optimal Quality and Increased Stability – Solutions and Results

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The refining stage in stock preparation plays an important role in developing the properties of stock for paper and board production. In the refiner, appropriate fiber treatment greatly affects the runnability of the paper machine and quality of the end products. Based on years of experience of several types of refiners, customer cases and pilot machinery testing, Valmet has developed the refining process where the stock treatment efficiency has been raised to a new level.

The key target of the solution development is to save operating costs and increase profit while keeping the end-product quality at the target level for the customers. There are three cornerstones for achieving these targets: refining, high capacity OptiFiner Pro, itself e.g. how fibers are treated and at which amount of refining energy. The second cornerstone is automation and how stock properties can be measured automatically without human interference and how to utilize models to predict the quality of the stock after the machine chest. The third cornerstone covers Industrial Internet applications, which provide possibility to a meaningful dialogue with data. The dialogue with online data further improves the ability to have stability in the process, and remarkably shortens the reaction times to solve problems. There is also possibility to have a connection to a performance center, with a whole team of experts to speed-up troubleshooting and give support for process optimization.

Pilot facilities for stock preparation processes provides the complete testing environment for mechanical pulping, recycled fiber, stock preparation and pulp drying. This enables an individual testing of customer’s own processes as well as provides a comprehensive basis for

the product development.

Many commercial installations show that refining solutions improve end-product properties and increase energy efficiency. The electricity savings potential is considerable. In one case, only one new refiner replaced two traditional refiners and still delivered 40% electrical energy savings.

This paper will present a more detailed description of the refining solutions, automation platforms and Industrial Internet applications. It will also present mill experiences and results under production conditions.

Operating Experience of vertical washer and fiver recovery "Vertical Z"

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In Oita mill, there are three paper machines, #1 ,#3 and #5, which produce various types of products such as paperboard, gypsum liner board, white paperboard, color board, and core board paper.
White water put out from these three machines was treated directly at AST (activated sludge treatment) in our mill, therefore, SS (suspended solids) concentration in waste water was higher than other mills in our company. It was one of the factors which made total production yield lower in Oita mill.

In this report, we will introduce the case that we installed vertical washer (Vertical Z TAIZEN Co., Ltd) which recovered fiber from white water and we have confirmed improvement of total production yield.

Technological Trends of Internal Sizing Agents

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This paper presents a review of technological trends and developments of internal sizing agent. In recent years, papermaking conditions have changed by greater use of recycled pulp and closed water system in paper mill and the performance of internal sizing agent has been declined. Under these circumstances, formulations have been proposed that emphasize the use of surface sizing agents rather than internal sizing agents, but have not been much advanced and the internal sizing agent still have an important role in paper making.

The Operating Experience of the Canvas Cleaner Equipped with a Roots Blower for Vacuum at PM N2 in Yatsushiro Mill

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Yatsushiro Mill, Nippon Paper Industries Co., Ltd is located in Yatsushiro city having rich nature, "Kuma River" which is one of the Japan's three biggest fast flowing river, also "Kyushu mountain range" and "Yatsushiro Sea". Yatsushiro Mill is the integrated mill, mainly produces newsprint, printing paper, information paper. Yatsushiro Mill has four paper machines and produces 500,000 tons annually.

In order to reduce paper loss due to pitch, PM N2 installed the latest canvas cleaner in 2016, and it is the first printing paper machine in Japan to have this cleaner.

This report describes the outline of PM N2 and the operating experience of this cleaner.