

**Operating Experience of Boiler Combustion Control Optimization System
"ULTY"**

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In Saga mill, the energy consumption rate for paper production in 2016 is 94.1% compared with in 2011,

and energy saving has progressed steadily. However, energy saving items with cost-effectiveness, such as change of manufacturing process, control of motor rotation number, downsizing of equipment, were almost done, so the number of items tend to decrease year by year. Therefore, countermeasures from new point of view are required to continue activities for energy saving. Under such circumstances, we were introduced from NYK TRADING CORPORATION about boiler combustion control optimization system "ULTY", which can be expected boiler fuel-saving. We introduced the system to NO1 boiler in Saga mill, and we could obtain effect more than we had expected. We report operating experience of the system in this paper.

Proposal of a Spray Type Agent for Interlaminar Strength Improvement

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In recent years, due to increasing electrical conductivity and the amount of anionic trash in paper making system, internal paper strengthen agent cannot show desirable performance. Therefore, spray type paper strengthen agent is required in which the agent will be applied just after wet sheet is formed. In multilayer papers, spray type paper strengthen agents are commonly used to obtain interlaminar strength. It is very common that non-gelatinized starch or chemically modified starch is sprayed in a slurry state between sheet layers. However, due to

suction after papering and water squeezing in the pressing part, the spray-added starch moves from the interlayer to the inside of the layer together with water, and a part of the starch flows out of the paper. It is therefore, not possible to obtain good enough interlaminar strength, and starch flows into wastewater, which leads to deterioration of waste water load(COD, BOD).

As a solution to these problems, it is conceivable to (1) switch traditional starch to PAM type paper strength agent for spraying, and (2) improve sprayed starch retention in between layers. In this report, these two process has been described.

Functional recovery by Coating and Winder survey

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Due to the expansion of digital media, market structure of paper and board have been changed dramatically. To meet market demand, high level of productivity, stable quality and minimized raw material and energy are required. By the other hand, customer have to distribute their resources into various field to correspond to market needs and suffering luck of man power for the maintenance at the paper production mill site. In such a market situation, Voith IHI Paper Technology is recently focusing on P&S (Products & Services) business. Means enforcing the business to realize energy saving, high efficiency, stable operation. Especially for the services, Voith IHI is providing not only the services which asked to correct specific failure by customer but also proposal type of facility audit.

Here we introduce functional recovery by audit focusing on winder which we learning a lot from Japanese customer and their requirement of roll quality.

Recent scale tendency of the kraft pulp process and its solution

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The paper industry is in the process of transformation , not only manufacturing pulp and paper,but also manufacturing value-added products like power generation projects, environmentally friendly closed system operation , use of wood chips containing scales.

The kraft pulp manufacturing process was originally a process that was prone to

scale problems in the cooking process and bleaching process, but with the transition of the use of wood chips containing scale and tendency toward closed system, a large change also appears in the tendency to scale problem.

In this report, focusing on calcium phosphate and calcium oxalate which can be noted as a scale tendency of the kraft pulp process, We will introduce newly developed scale controlling agents for cooking process 「DEPONAX P-78」 and scale controlling agents for bleaching process 「 DEPONAX P-99」 「DEPONAX P-96」 series as solution.

Energy Saving in the Activated Sludge Treatment Process

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In the pulp and paper wastewater treatment, the energy saving of the activated sludge treatment process by the update of a blower and the aeration equipment and cost-saving may be planned, but there are few cases which energy saving is considered for with an operative aspect positively because it tends to be designed with high load in comparison with other types of industry.

However, in late years a load condition of the drainage processing becomes loose, and room planning energy saving occurs because of a decrease in production and integration and abolition of the product line.

In this paper, we describe some points when we plan the energy saving of the activated sludge treatment process based on the energy saving results with other types of industry.

INTRODUCTION OF ARIOSTEA SPIRAL WELDING SILO, HOW THIS NEW TECHNOLOGY REALIZES REDUCTIONS OF BUILDING TIME, COST AND SPACE

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Building a new silo remains big issues for any paper companies no matter what the purposes are, especially for those who are intending to implement by sea side area, in limited space, with too much cost to build. ARIOSTEA is a leading spiral silo designing, engineering, manufacturing company who has established its history

and reputation for over 60 years.

This article describes features of ARIOSTEA silo how it realizes the benefits by showing some of the ARIOSTEA's past references.

-The European Largest in Paper & Pulp Industry - StoraEnso's Lubricant Control, Challenge and Solution

Eiji Suzuki

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Harunori Takeda as Europafilter Asia Representative

The process of pulp and paper production involves the use of various kinds of hydraulically-operated machines and a large amount of lubricating oil. Much of the process has a high degree of automation, but this means that a single malfunction somewhere in the machinery affects the whole process and can result in severe loss. It is known that 85% of malfunctions in hydraulically-operated machinery involve issues with the oil, causing pulp and paper factories to take extra caution in managing their machinery equipment as well as their oil.

I was given the privilege of speaking at the 60th Annual Meeting of Japan TAPPI (Japan Technical Association of the Pulp and Paper Industry) so I decided to visit the Hylte Mill of StoraEnso, the leading European company in pulp and paper manufacturing, and report on the oil management (hydraulic oil and lubricating oil) at that company.

In addition, I will also report on the functions and operations of the "Europafilter" used at Hylte Mill to manage the oil. This filter has a special feature that absorbs the water and any contaminating particles larger than 100 nanos (0.1 micron). It connects a bypass to the oil tank, filtering the oil at low flow and removing the water and the contaminating substances before returning to the oil tank what has now turned into super oil. This keeps also the whole machinery equipment and parts clean.

This filter product is an indispensable part of the equipment for the operation at Hylte Mill. One of the installed oil tanks has a function that constantly monitors the temperature and purity of the oil at key positions. The analysis of the oil every 6 months has yielded such great results that oil change has been unnecessary for unexpectedly long period of time.

Non-destructive qualitative and quantitative measurement of the filler content of paper and board

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Fillers play an increasingly important role in the paper production which is also due to the increased usage of waste paper.

The waste paper leads to an automatic but unknown supply of minerals to the production process.

Typical fillers in the paper industry are for example Clay, Calcium carbonate (CaCO₃), Titanium dioxide (TiO₂) and Talcum.

In paper production, minerals can have a positive influence on the degree of whiteness, opacity or flatness/printability of paper and enable to reduce the costs of the raw material.

Traditionally in the paper industry, the ash content (or the combustion residue) is determined by the combustion method according to ISO 1762 and 2144, DIN 54370, TAPPI T413 or T211.

However, the traditional combustion method has some disadvantages. The ACA Ash Content Analyzer and its new and innovative measuring principle without combustion of the paper samples, meaning without destruction, enable to determine both within seconds, the total filler content as well as the percentage content of typical fillers in the paper industry. This means that the respective percentage content of calcium carbonate, kaolin / talcum, and titanium dioxide as well as further used mineral fillers in the paper industry can be detected.

“ For sound or noise in industrial world Part IX ”

-It thinks about the noise as part of T.F.O from SKF -

Yasuhiko.Yamasaki

RSS RS SKF Japan.

“Confirmation of listening by a person has a lot of tasks and challenge . The topic is how to visualize noise of lubrication condition and propose countermeasures.

This time is a consideration about that "condition of lubrication" and its "countermeasure plan".

Development of new chemical additives applications for wire and press part

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As the recycle pulp in the furnish is increased, the amount and adhesive deposit is also increased in the system. particularly, the adhesive deposits lead to serious problems in paper-making machine which cause sheet breaks or defects in a finished paper.

This report introduces the detail of New applications which is combined with chemical and equipment and knowhow, and examples applied in the paper machines are also presented.

Preparation of Nanofibrillated Cellulose in Powder Form

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Cellulose nanofibers (CNFs) are generally produced in the form of aqueous dispersion at low concentrations, and it would lead to issues including the high cost of transportation and the high risk of decomposition by bacterial contamination. Therefore, manufacturing dried CNFs is essential for expanding the market of CNFs. In the process of drying, CNFs strongly aggregate and the formed hydrogen bonding inhibits re-dispersion of CNFs in water. Consequently, reduced are resulting characteristics of CNFs, such as high transparency and high viscosity. The prevention of the aggregation in a drying process is the key to the preparation of dried CNFs.

In this paper, we report a preparation of dried CNFs that can be easily re-dispersed in water. The key to the preparation of dried CNFs was the selection of chemically modified CNFs and water-soluble polymers for CNF suspensions. The dried CNFs were easily dispersed in water and their transparency and viscosities

were not deteriorated even through the drying process. These CNF materials will be provided in powder form with good handling.