

The Activity of Energy-Saving Produced Results in a Short Term

Ryosuke Kotani

Nakatsu Mill, Oji F-TEX Co., Ltd.

Amid rising interests over renewable energy, Oji group has been positively progressing the utilization of biomass and hydroelectric power generation. Since paper manufacturing is an energy-intensive industry, the amount of purchasing energy such as LNG is still large. As recent rise in energy prices influencing severely over the profits of the industry, searching and practicing energy-saving matters that can be realized in short term are desired. Since setting up an aim of reducing 1.5% of energy consumption from the previous year and progressing energy - saving activities in every Oji FTEX mills, Nakatsu mill has limitedly settled a small team and worked on energy-saving during the second half of 2013 in order to produce results in a short term. As a result, 19 actions have progressed in six months and succeeded in reducing 122 kL of energy per year measured in terms of crude oil. (corresponding to 0.45% reduction compared to the previous year)

This paper presents the activity of the “Energy-saving team” , two energy-saving acts (“Improvement of steam traps” and ”Halting single compressor”) and “System of visualizing energy consumption rate” which was a practical tool to progress energy-saving activity in manufacturing sites.

The Announcement by #1 Stock Preparation Energy Saving Screen Introduction

Teppei Tomokuni

Ashikaga Mill, Nippon Paper Industries Co., Ltd.

Ashikaga mill have changed the fuel to city gas in 2006. However, LNG prices have been increased by the recent depreciation of the yen. As a result, energy costs are increasing.

Revised Stock preparation #1 process in August 2014 to perform efficiency line that was operating in that integrated into one system in the conventional two systems were further introduced energy-saving screen.

As a result, was able to reduce the total amount of energy costs the entire approximately 23%.

Introduction of Energy Saving Application Case Study

Yoshiaki Akahori

Advanced Automation Company, Azbil Corporation

Minehiro Nishida

Building Automation System Company, Azbil Corporation

<Energy Saving application for Factory >

1) Utility air optimization

- Compressed air supply integrated optimization by ‘Compressor group control’
- Compressed air demand integrated optimization by ‘Demand air pressure control’

2) Boiler Turbine Generator Optimization

- The economic benefit that can be gained by applying online optimization system for steam turbine generator (STG) load allocation
- Not only BTG optimization but also claim the subsidy for energy saving promotions.

<Energy Saving application for Building >

- Not only energy-saving control in hospitals, equipment (Co-generation) also performed , including, to award-winning case study of the "Energy Conservation Center Chairman's Award" in the energy-saving award of Y2013.

Energy Saving in Mishima Mill Power Plant, Daio Paper Co., Ltd.

Koji Konya

Mishima Mill, Daio Paper Corporation

Daio Paper Mishima Mill is the nation's largest coastal Mill with 500 thousand square meters which is located in Shikokuchuo city. It is the Company's core factory, which celebrated its 70th anniversary last year. From the fact that is located a lot of equipment in extensive grounds, raw materials and water, steam, the system, such as power has become very complex. Furthermore, in the 70 year history, it has been repeated expansion and is a factor to be further complicated.

In this paper, I will describe energy saving of steam-power of the entire plant with a focus on power generation equipment.

With the goal of improving 2% of generation output, I tried by decompressing the steam

pressure that I sent to the factory. As a result, 2.4% of generation output improved. I used surface condenser of V/E and a turbine cooling tower coolant to raise temperature of the water. As a result, I was able to reduce steam consumption last year.

It is difficult to cooperate because a factory scale is big. However, I think that I was able to get big result by cooperating.

Energy Saving in The Steam & Condensate System

Hitoshi Terashima

Motoyama Shinkoh Co., Ltd.

Compared to the original operating conditions for a paper machine, almost all current operating conditions, such as paper weight and speed, have changed.

Saving energy may be possible by investigating and examining whether or not the drainage system has kept up with these changes.

By changing the drainage system to match the paper being made, there should be many cases that can expect improvements in quality and efficiency as well as realizing steam savings.

Here we report on what can be done from now on for the possibility of saving energy considering the drainage system, within recent significant improvements in drying efficiency through sealed hoods, air supply and exhaust, heat recovery system, etc.

Electric Power Saving for Acticontact Aeration Blower

Kenichiro Fukushima

Sendai Mill, Chuetsu Pulp & Paper Co., Ltd.

Aeration Blower which is used for wastewater treatment equipment used to be adopted roots vacuum pump system, but now changed to turbo-pump system. Then we achieved noise reduction and electric power saving.

Technical Update of Advanced Energy Saving in the Stock Preparation Process

—Energy Saving Studies for Pulper, Screen, Refiner —

Jiro Urata

Technical & Engineering Department / AIKAWA IRON WORKS CO.,LTD..

In Japan, stopping of all nuclear power plants operation, and unstable situation of Middle East countries are imposing the continual electric power saving to all paper manufacturing mills. Aikawa Iron Works has been continuously working to develop the products that contribute to the energy savings, and would like to introduce our recent outcomes from our research and development in the following three themes.

1) The 3rd generation Helix Rotor (L.C Pulper Rotor) that reduces more than 20% energy comparing with traditional rotor. (It have been developed based on the advanced fluid analysis)

2) The “GHC2” Rotor that has possibility to surpasses more than 30% of specific power consumption from the existing GHC rotor.

3) Very narrow Finebar refining fillings and spline shaft modification on the refiners that saves energy consumptions.

Also we would like to introduce the solutions to remove fine metal impurities that is the cause of problems to detecting metals from food or medical goods packages.

Report of 2014 International Bioenergy & Bioproducts Conference

Michihiko Tamaki and Naoto Umeguchi
Daio Paper Corporation.

2014 International Bioenergy & Bioproducts Conference (IBBC) was held in Tacoma WA, USA on September 17-19 2014. There were 25 exhibitions and 30 oral presentations in the conference. The number of participants was 420, mainly from North America.

The History of Technological Developments in Pulp and Paper Industry: From Ts'ai Lun's Invention to the Birth of Modern Pulp and Paper Industry

Part 4: Paper Making in Europe and Its Adaptation to Printing Need

Kiyoaki Iida

Paper making process which landed in Spain spread in Europe. Linen rag was well pounded, from which wet sheet was formed on a mold. Sheets were stacked with a layer of felt between them, and pressed for dewatering. Then, they were dried in a room, being hung on a rope. They were further impregnated with gelatin and polished with stone. The process was improved in

cost with refined use of water wheel, flow operation in a mill and standardized product size, which were prerequisites for the coming industrial revolution.

Paper was sized in each land with its own method. In Europe, paper was impregnated with gelatin as an after-treatment. Its surface had to be strong against scribing by pen to be a substitute to parchment. As printing became common in the fifteenth century, less sizing was required. Then, paper machine was invented and became prevalent in the nineteenth century. Internal sizing was invented and rosin sizing was developed. Further technical developments like tub sizing and modifications in printing press made gelatin sizing dispensable.

Corporate Profile & Products Information (22)

Mushugen Industries Co.,Ltd.

Mushugen Industries Co.,Ltd. was established in 1960 as a manufacturer of microbial products and deodorants for wastewater-treatment. In various fields: sewage treatment, disposal of human waste, industrial wastewater-treatment, and other special wastewater-treatment in a ship, submarine, train and aircraft, we have cultivated the technology of these products and the maintenance management know-how, taking account of each situation and needs. In recent years, we have also made efforts to develop energy-saving technology in same fields, and have provided operating technique with original products.

Since eight years ago, we have promoted the application in the field of pulp and paper wastewater treatment. In this article, we would like to introduce an overview of our company and recent approach and products applied there.

—Peer Reviewed—

Pyrolysis of Wood Meals with Different Lignin Content Altered by Delignification or De-Carbohydrate Treatment

Kaoru Nishikiori, Kyoko Katsumata, Takuya Akiyama, Tomoya Yokoyama and Yuji Matsumoto

The University of Tokyo

In order to examine the effect of lignin and carbohydrates on the pyrolysis products of wood, wood meals (Douglas fir) with different lignin and carbohydrate contents were prepared. By

sodium chlorite delignification of Douglas fir wood meal (lignin content 26.5%), wood meals with lignin content 1.8 to 21.3% were prepared. By periodate oxidation of carbohydrates, wood meals with lignin content 45.1 to 67.6% were prepared. These wood meals were subjected to pyrolysis by the use of tube type kiln. With the decrease of lignin content from 67.6 to 1.8%, the yield of pyrolysis residue (char) decreased from 48.6 to 27.7%. Interestingly, not only lignin-basis yield but also sample-basis yield of eugenol, guaiacol and vanillin increased with the decrease of lignin content when wood meals delignified with sodium chlorite were subjected to pyrolysis. These products were most presumably derived from lignin. Contrarily, sample-basis yield of 4-methylguaiacol, 4-ethylguaiacol and isoeugenol decreased corresponding to the decrease of the lignin content of the sample. These results indicate that yields of lignin-derived pyrolysis products do not always depend on lignin content. Similarly, there was not clear relationship between carbohydrates-derived pyrolysis products and carbohydrate content.