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Research area: Process aims

Paper and paperboard production // Stock preparation

Key words:

Stock preparation, Energy savings, process time

Title:**Reduction of the specific energy consumption by an improved control of process time****Background/Problem area**

Especially in stock preparation processes the change of properties are asymptotic, that means that the maximal reachable value is reached theoretical after infinitely time. The consequence is that an improvement of property value during a certain time interval will be decreasing with increasing process time, while the energy consumption is increasing approximately linear. This is the reason why industrial processes are mostly stopped at a certain time, while the theoretical optimum is not yet reached.

The development of the energy costs during the last years has shift the optimal relation between reachable property value and specific energy consumption. Therefore it could be reasonable to end processes at an earlier stage and shift the resulting property change to another process stage.

Due to this background, the usual process times (residence times) will be systematically investigated during this project. Additionally the effects on the subsequent process stages will be examined critically.

Objectives

In this project recommendations will be worked out, for the reduction of the energy consumption during paper making process by reducing the process times and improving the process control. This will be reached by an analysis of the minimal technological required process times, the evaluation of common process times, the comparison of both and the energy and technological consequences of the now higher process times. The available potential to improve energy efficiency will be investigated.

Application/Economic benefits

During the last decade the use of thermal energy during papermaking could be successfully reduced. This is not true in the same way for the use of electric energy. Therefore effort should concentrate on the optimization of the use of electric energy in stock preparation as well as at the paper machine.

Potentials for the saving of energy are expected by the reduction of process volumes in pulp and watersystem:

- Optimal adjustment of residence times regarding technological needs
- Flexibility of the system due to minimal volumes (fast grade changes)
- Reduction of unit sizes and the resulting investments
- Reduction of chest volumes, which has to be mixed
- Reduction of dynamic variation in process and the resulting negative effects on paper machine and waste water treatment plant
- Reduction of the risk of anaerob processes in pulp and water chests (odour!)

Project period: 01.01.2007 – 31.12.2009

Remarks

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