



Paper Pulp Pre-Processor

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WiSys: T05055US

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OVERVIEW

Wisconsin papermakers recycle approximately 2.5 million tons of paper each year, producing over \$12.4 billion worth of paper annually. Paper production is a leading industry in Wisconsin, and the state leads the nation in paper production. Although waste, or recycled paper is significantly cheaper than virgin pulp, it can be difficult to produce consistent, high quality paper from waste paper composed of variable pulp fiber lengths. There is a need to develop a process or technology to change the formulation ratios of recycled to virgin pulp fiber to ensure the highest quality product at the lowest price to producer.

THE INVENTION

A researcher at the University of Wisconsin – Stevens Point has developed a mathematical technique for producing a final pulp of consistent fiber-length distribution from two or more original pulps of varying fiber-length.

A pulp fiber length distribution is a mathematical representation of the total number of fibers with specified lengths. This is important in papermaking because long fibers have a greater tendency to tangle into undesirable tufts—flocs—than short fibers. Normally, fiber length distributions are ignored because newly produced pulp sources are derived from a constant wood source and a single pulping process—factors that make create a uniform pulp length. However, paper production is becoming more reliant on the incorporation of waste paper that has an uncontrolled fiber length distribution because it has been recycled from many sources.

The technique described in this invention allows a source of short fiber (hardwood), a source of long fiber (softwood) and a source of variable length, recycled pulp to mix together in such a way that the fiber length distribution of the mixture flowing onto the paper machine remains constant. Each source stream flows into a single mixing hold. The analyzer controls the valve positions for each stream. When the recycled pulp's fiber distribution becomes shorter in length, the analyzer compensates by balancing with an increase in longer pulp fibers. In this way, the fiber lengths of the recycled pulp are continuously analyzed, and the amount of hardwood and softwood pulps added to the mixture is adjusted to prevents flocs and maintain a constant, even distribution.

THE WISYS ADVANTAGE

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APPLICATIONS

- Optimizes incorporation of variable length pulp fibers during paper making process

KEY BENEFITS

- Optimizes the amount of cheaper recycled paper used in paper making
- Allows papermakers to manufacture high-quality paper from less expensive waste paper
- Using higher levels of recycled paper increases the profitability of paper manufacturers while decreasing the environmental impact of papermaking

STAGE OF DEVELOPMENT

Functional Prototype

ADDITIONAL INFORMATION

Tech Fields

Clean Technology - Energy & resource efficiencies

Materials & Chemicals - Paper

CONTACT INFORMATION

For current licensing status, please contact Jennifer Souter at jennifer@wisys.org or (608) 316-4131.

