

Research Institute:

PTS München
Heßstr. 134
80797 München

Head of research institute:

Dr. P.W. Rizzi, Dr. A.-B. Kerkhoff

Project leader:

J. STRAUSS (PTS)
Dr.-Ing. H.-J. PUTZ (PMV)
Tel: 089 / 12146-491
Fax: 089 / 12146-36
E-Mail: johann.strauss@ptspaper.de

Internet: www.ptspaper.de

Research area: Process aims

Pulp production // Recovered paper treatment

Key words:

Deinking, stickies, fragmentation, deformation

Title:**Evaluation of the stability and deformation behaviour of different adhesives under various mechanical forces and temperatures in DIP lines****Background/Problem area**

A significant increase in stickies and deposits has been observed in the past few years. This has made the technology devoted to separating such components increasingly expensive and cost-intensive. This increase in stickies in the raw material can only be partially compensated by the stock preparation process, thus leading to higher stickies levels at the paper machine.

Macro stickies are separated mainly by screening. Screens, however, are only capable of separating stickies down to a maximum macro stickies magnitude. Hence, reducing the size of macro stickies prior to screening plays a major role in the total efficiency of the screening operation. It is known as well that the particles can be deformed more easily at elevated temperatures and thus can pass through the screening unit.

There are many different adhesives, each with different rheological properties, that are currently being used in the converting industry and returned to stock preparation via the raw material recovered paper. Macro stickies thus contain many different substances. However, neither the quantities in which they exist nor their behaviour with respect to temperature and mechanical forces that prevail during the screening process are known.

Objectives/Research results

The project is aimed to evaluate the stability and deformation behaviour of different adhesive applications under various physico-chemical and thermal process conditions and the influence on separation.

As a first step adhesive applications for the study should be selected, whereby the basis for selection should be a market study regarding adhesives used in graphic paper converting. These selected adhesive applications should be studied regarding the fragmentation behaviour during treatment under different process conditions. The specific behaviour of adhesive applications is to be studied in pilot trials.

The results of the market study revealed no new information for the selection of adhesive applications. The selection made for these studies was based on the existing knowledge and experience. Product groups to be investigated are bookbinding backs, glued inserts and labels. Based on laboratory testing (testing of fragmentation behaviour) some adhesive applications were selected for the pilot trials. First pilot scale trials were conducted with respect to defibration and screening.

Application/Economic benefits

- Acquiring knowledge and know-how concerning the problematical limits of temperature in stock preparation and its impact on the size reduction of adhesives in the pulper and separation of adhesives by screening.
- Ensuring the functionality and estimating possible performance losses of the most important process steps for stickies reduction in stock preparation (fine screening).
- Based on the results it will possible to evaluate existing processes and to determine which optimization measures are reasonable.

Project period: 01.07.2006 – 30.09.2007

Remarks

The research project INGEDE 113 is being funded by the International Association of the Deinking Industry INGEDE e.V. and is being carried out in co-operation with PMV, Germany.