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**Research area:**

Environmental technology / water

**Keywords:**

Effluent free production, closed water circuits

**Title:**

**Closed water circuits with particular regard to operating expenditure**

**Background/Problem:**

Closed water circuits of paper mills in the sense of effluent free production were put into practice in some recycling mills to produce packaging grades. At the beginning, more than 20 years ago, they were implemented without water cleaning stages designed to eliminate COD. Later on, the concepts were complemented with integrated biological treatment plants to avoid the problems that arose. In addition, membrane technologies were also being used.

In recent years, technical problems associated with effluent free production have been described in different publications. The resulting expenditure, however, was only cited with regard to the water treatment stages. Whether and under what circumstances a closed circuit can be economically justified over a conventional narrowed circuit remains unanswered. The follow-up costs of system closure in the production sector due to greater amounts of additives used or more corrosion damage have not been evaluated yet.

**Research objective/Research results:**

The aim of the project is to answer the question of the economic justification of closed water circuits. The operating costs of three water circuit concepts are to be compared:

1. Narrowed water circuit without an integrated COD eliminating treatment stage
2. Closed water circuit without an integrated COD eliminating treatment stage
3. Closed water circuit with an integrated COD eliminating treatment stage

Concepts will be compared on the one hand based on a comparison of a single mill before and after a change of concept or on the other hand by comparing different mills representing different concepts. Mills that produce corrugated base paper will be studied in detail. A survey will be performed with regard to a) positive and negative effects and b) related expenditure (resources and personnel needed) in different fields implicated in changes of the water circuit concept. Costs will be assigned in typical scenarios.

**Application/Economic benefits:**

The project results facilitate the economic comparison of water circuit concepts. On the basis of quantified aspects, managers are assisted in taking economically viable decisions on environmental strategies for their mills.

**Project period:** 01.01.2005 - 31.12.2005

**Remarks:**

INFOR project No. 74 is being carried out in co-operation with the Papierfabrikation und Mechanische Verfahrenstechnik (PMV) at the TU Darmstadt and is being sponsored by the German Pulp and Paper Association (VDP).

**Are you interested? Then send us this short description with your name and address via fax. The project manager will contact you afterwards.**

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I want to participate in the project

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