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## **ADVANCED TREATMENT FOR PULP AND PAPER WASTEWATER RECYCLING BY MEMBRANE PROCESSES**

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### **Abstract**

The pulp and paper industry is confronted with more stringent regulations related to water consumption, wastewater treatment and recycling. The production process and the wastewater treatment process specific conditions are in close connection with the wastewater flows and pollution loads.

This study presents an overview of membrane processes in correlation with the particular aspects and emissions of the pulp and paper industry.

Issues like membrane configurations, materials and modules, operational parameters and problems are presented with a clear focus on pulp and paper wastewater treatment. The particular issues related to the application of ultrafiltration as an advanced treatment stage are discussed in correlation with the pulp and paper wastewater characteristics and removal efficiencies requirements. In this case, ultrafiltration may be used for either completing the conventional wastewater treatment (and thus achieve a recyclable effluent), or for the closed-loop water systems in the pulp and paper industry.

*Keywords:* membrane processes, ultrafiltration, pulp and paper industry, wastewater recycling

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