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"Gheorghe Asachi" Technical University of Iasi, Romania

PROCESS INTEGRATION IN THE BLEACHING SECTION OF A PAPER MILL FOR MINIMIZATION OF FRESH WATER CONSUMPTION AND WASTEWATER GENERATION

Sudheer Kumar Shukla[1,2*], Deepak Kumar[3], Vivek Kumar[3], Mukesh Pandey[4], Mukesh Chandra Bansal[3]

[1]Sungkyunkwan University, School of Mechanical Engineering, Republic of Korea
[2]Yonsei University, Department of Civil and Environmental Engineering, Seoul, 120-749, Republic of Korea
[3]Indian Institute of Technology Roorkee, Department of Paper Technology, Saharanpur Campus, Saharanpur-247001, India
[4]Rajiv Gandhi Technical University, School of Energy and Environment Management, Bhopal, India

Abstract

Water system integration can minimize both fresh water consumption and wastewater discharge from the paper mills. In the present study, Pinch Technology was used to analyze and optimize the water network of an integrated paper mill. A system was developed and a limiting constraint (COD concentration) was identified based on investigations for water quality, and then minimum fresh water and wastewater targets were determined without considering water losses. The analysis was extended by estimating the additional input of fresh water required to balance the actual water losses. A nearest neighbor algorithm (NNA) was used to distribute the fresh and recycled water in the plant operations. Results showed that the flow rates of fresh water could be decreased up to 20.83 %.

Key words: mass load, process integration, pinch analysis, water conservation, water network

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[*] Author to whom all correspondence should be addressed: E-mail: sudheertejasvee@yahoo.co.in; shuklasudheer@rediffmail.com; Phone: +82-31-299-4194