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Adaptability of membrane filtration systems under different treatment options for textile wastewater management in an industrial cluster

Manikavasagam Karthik*, Pravin Manekar, Tapas Nandy

Wastewater Technology Division, National Environmental Engineering Research Institute (An Institute under C.S.I.R, New Delhi), Nagpur 440 020, India
Tel. +917122249885; Fax +917122249900; email: m_karthik@neeri.res.in

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ABSTRACT

Textile manufacturing requires extensive quantity of raw materials such as dyes, salts and water in the process with resultant discharge of these in the wastewaters generated. Indiscriminate disposal of textile effluents in a town located in South of India has severely damaged the ground and surface waters in the area. Current emphasis on protecting the water bodies in the town through tough regulatory compliances following zero discharge has laid the industries as well as regulatory agencies in dilemma. This has resulted in implementation of various treatment options to meet the regulatory norms and water recovery. Recent developments in membrane and advanced oxidation techniques have resulted in having alternatives for the treatment of textile effluent in the cluster. The paper addresses to the case study undertaken in the textile cluster to study operational textile effluent treatment plants employing a combination of unit operations and processes (UO&P) technologies to comply with zero effluent liquid discharge norms. The paper discusses various costs involved in different UO&P options of different technologies are presented here to highlight a sustainable wastewater management with resource recovery.

Keywords: Textile effluents; Water recovery; Advanced oxidation; Membrane filtration; Cost analysis

*Corresponding author