Desalination and Water Treatment
www.deswater.com

doi: 10.1080/19443994.2014.987827

57 (2016) 2996–3001
February

Taylor & Francis
Taylor & Francis Group

A multihydrocyclone water pretreatment system to reduce suspended solids and the chemical oxygen demand

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Received 14 March 2014; Accepted 24 October 2014

ABSTRACT

We experimentally demonstrated that a multihydrocyclone water pretreatment system consisting of three serially connected hydrocyclones reduced suspended solids, the chemical oxygen demand (COD), and the biological oxygen demand (BOD) in muddy seawater and sewage samples. The separation efficiency of the hydrocyclones asymptotically decreased in accordance with the number of hydrocyclone treatment steps. The difference in the variation in the separation efficiency of the samples was caused by variations in the particle density and the radius of the mud and sludge particles. The multihydrocyclone pretreatment system purified the muddy seawater and sewage at a uniform purification speed of about 500 ton/d. The results suggest that the multihydrocyclone system provides an effective environmentally friendly method water pretreatment system, without any chemical processes.

Keywords: Hydrocyclone; Water pretreatment; Suspended solids; Chemical oxygen demand

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