

Proposal to Present

Cross Flow Filtration Hydrocyclones:
Novel Technology for Cleaning Produced Water

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Annual 2010 Conference
American Filtration and Separations Society
Grand Hyatt Hotel
San Antonio, TX
March 22-25, 2010

The proposed presentation could make a contribution under one of the following meeting tracks: Track: Energy and the Environment, Symposium topic: Water Treatment and Recycle; Track: Biotechnology, Symposium topic: membrane separations and novel technology; Track: Fundamentals and Applications, Symposium topic: Modeling Centrifugations

Abstract

A cross flow filtration hydrocyclone (CFFH) combines the desirable attributes of a vortex separator and a filter barrier. By selecting an appropriate hydrophilic filter medium, a CFFH clarifier has the potential to produce a filtrate phase with a low concentration of a dispersed organic phase in a single stage. The CFFH concept may provide a practical means to mitigate three traditional problems associated with current hydrocyclone separators for oil/water separation: 1) the loss of separation performance due to core flow reversal; 2) the loss of separation performance due to entrained oil in the sidewall boundary layer; and, 3) the loss of separation performance due to hydraulic turndown. The paper will discuss the efficacy of using a forward-flow CFFH for clarifying produced water on offshore platforms and elsewhere. Computational fluid dynamic (CFD-) methods are used to identify practical prototype designs and operating characteristics.