

# FLUX RECOVERY DURING INFRASONIC FREQUENCY BACKPULSING OF MICRO AND ULTRA FILTRATION MEMBRANES, FOULED WITH ALUMINA AND YEAST

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Although membrane fouling is well studied. Membrane fouling is universally considered as one of the most critical problem in the wider application of membrane in filtration separation, Fouling is caused by the deposition of particles not only on the surface of the membrane but also inside the membrane pores, which reduces permeate flux and leads to a reduction of the efficiency and the life time of the membrane. The backpulsing cleaning method, which has been shown to remove deposited foulants from the surface of the membrane, which does not necessarily have to shut down the plant, has been previously described in the literature. In this research microfiltration and ultrafiltration membranes were fouled during a cross-flow filtration processes using Dextrin or Yeast or Alumina, with a feed pressure 100 kPa and feed flow rate .045 liter/minute, in a flat cell. After this infrasound backpulsing, directly into the permeate space, was used to clean the membrane. The back pulsing was done using the permeate water. The peak amplitude of the pulses which are used to clean the membrane is 140 kPa, the pulsing was applied at a frequency of 6.7 Hz. UTDR is nondestructive technique, which is used to detect and measure the growth of fouling on the membrane surface during microfiltration and ultrafiltration processes. The objective of this work is to examine the efficiency of backpulsing cleaning using different combinations of membrane materials and foulants, in flat cells, where changes can easily be effected. The results show that a flux value of between 60 and 95% of the clean water value can be achieved by backpulsing.

Keywords: fouling; microfiltration; ultrafiltration; backpulsing; ultrasonic; membrane cleaning.