

A NOVEL TECHNOLOGY FOR THE PREVENTION OF FOULING IN MEMBRANE FILTRATION

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Membrane fouling is one of the most significant factor affecting the performance of membrane filtration. Membrane fouling is the result of insoluble materials coating the membrane surface and causing a reduction in product water quality and/or flow rate. The major causes of fouling are because of the resulting increased concentration of the contaminants, which increases the chances of them coating the membrane surface. As the contaminants coat the membrane surface, they tend to plug the pores, thereby reducing the flow, as well as the quality of the product water through the membrane. A patented novel technology for scale and fouling control is developed to dealing with such conditions. This new antiscaling antifouling technology relies on an innovative antiscaling mechanism for preventing scale formation on membrane. The new adsorption /dispersion mechanism for fouling control uses a diatomaceous earth derived synthetic silicate powder as both an adsorbent to adsorb nucleating inorganic scale microcrystals and proteinoous or biological substances that could lead to biofouling. The growing scale microcrystals are adsorbed and dispersed onto the adsorbent surfaces, so that the membrane surfaces are protected. This technology is very effective in treating waters with ultra-high hardness and high dissolved solid contents. This technology has been evaluated for preventing fouling and scale formation in a RO membrane system with an ultra-high hardness water. The unique features and advantages of this new technology will be discussed.