

Examining the Mode of PAC Application with Submerged Hollow Fiber Membrane for Wastewater Treatment

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The use of low- pressure-driven membranes with powdered activated carbon (PAC) is gaining greater importance for the wastewater reuse. Submerged hollow fiber membrane allows PACs to be added directly into the tank containing the immersed membrane. However, this study highlights the importance of the method of application of PAC, which determines the organic removability and the permeate flux pattern by the hybrid system. Three different scenarios, namely, PAC addition in the tank, PAC in the presence of calcium chloride and a novel method of PAC coating as a secondary membrane, were evaluated. The results indicated that, when PAC was used along with CaCl₂, the amount of PAC requirement could be reduced up to 70 %, depending on the type of PAC used. However, the PAC coated membrane proved to be far more superior to adding PAC in the tank, in terms of organic removal efficiency and preventing membrane fouling. This study is significant in order to understand and carefully select the method of using PAC for membrane hybrid system, so that PAC dose can be minimized and achieve enhanced performance.