Water deoxygenation using hollow fiber membrane module with nitrogen as inert gas

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ABSTRACT

A pilot plant scale fiber membrane system was developed for the removal of dissolved oxygen from water via nitrogen vacuum. Feed water was introduced to the shell side; a nitrogen gas was applied to the lumen side, as an inert gas, of the hollow fiber. Outlet concentrations of oxygen in water depend on membrane module, inlet concentrations of oxygen in water, water flow, and nitrogen concentrations in inert gas and nitrogen flow. The effects of nitrogen purity on removal efficiency of dissolved oxygen were investigated. Equations for oxygen concentrations and efficiency due to nitrogen purity have been given.

Keywords: Water; Membrane module; Deoxygenation; Nitrogen purity

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