



UASB-A/O-BAF treatment of high strength wastewater: a case study for soybean protein wastewater

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ABSTRACT

During the soybean protein production process, a large amount of wastewater is being produced. Currently in China, the soybean protein wastewater produced everyday has reached over 60,000 m³. A technology to bring about a better wastewater treatment effect with reasonable cost of the wastewater treatment is expected to be employed. In the present study, with a view to enhancing the discharge water quality, a combined processing method incorporating a pretreatment unit, an upflow anaerobic sludge blanket (UASB) reactor, an anoxic–oxic treatment system, and a biological aerated filter (BAF), was employed. After a steady performance of all the wastewater treatment units, the facilities will have the capacity to can handle 1,000 m³ wastewater with the chemical oxygen demand (COD) of 18,000 mg/L each day. The total COD removal efficiency can reach 99.84%, and the final discharge water will contain a COD of 40 mg/L. The wastewater treatment cost amounts to only about 2 Yuan RMB/m³ wastewater. Additionally, the CH₄ gas produced mainly from the UASB reactor is use to serve as the energy for the soybean protein production plant and thereby bring about a saving in the energy cost to the tune of about 3,500 Yuan RMB each day.

Keywords: UASB; BAF; COD; Soybean protein wastewater

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