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Short communication

The removal of phosphate from wastewater using anoxic reduction of iron ore in the rotating reactor

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ABSTRACT

The removal of phosphorus from reject water, which is the liquid fraction produced after dewatering of anaerobically digested activated sludge on the municipal wastewater treatment plants (MWWTPs), can significantly reduce the phosphorus load to the main stream of the MWWTPs. Ferric or ferrous reagents can be used forthis removal but the significantly cheaper option could be the production of ferrous reagent using bioreduction of iron ore. The removal of phosphorus from reject water using anoxic bioreduction of iron ore was studied in the rotating reactor, which was selected to avoid the clogging of the pores between iron ore particles. The highest phosphorus removal rate from reject water in the rotating reactor, i.e. the parameter which can be used in the design of the continuous process, was 25 mg P/L day. Significant role in the iron ore bioreduction is playing the formation of the fine particles from initially loaded coarse particles of iron ore during rotation of the reactor.

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