Economical process of combined sludge disposal and volatile fatty acids production from gravity pressure reactor via wet air oxidation

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Wastewater treatment is important from increasing volume of sewage sludge and strict environmental regulations. Sludge treatment accounts 50% of operating cost of wastewater treatment plants, hence, method for economical sludge destruction is key of this process. Wastewater containing organic pollutants can be efficiently treated by wet air oxidation(WAO). It can be used for not only sludge destruction but also useful by-product production. One of byproduct, VFAs, is considered as an important precursor of biofuel and chemical materials. The reaction condition range of WAO was normally 150-320oC for temperature, 2-15 MPa for pressure and 15-120 min for residence time. Because of its high reaction condition, gravity pressure reactor(GPR) has been researched for an economical process type of WAO for reduction of operating cost. In this study, WAO with GPR showed disposal sludge and volatile fatty acids production economically.