

Dewayanti, A.P., 2014. Pengaruh *Organic Loading Rate* (OLR) terhadap Efisiensi Penyisihan *Chemical Oxygen Demand* (COD) dan *Total Suspended Solids* (TSS) pada *Anaerobic Filter*. Skripsi ini di bawah bimbingan Dr.Sucipto Hariyanto, DEA dan Nur Indradewi Oktavitri, S.T., M.T. Program Studi S-1 Ilmu dan Teknologi Lingkungan, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Tujuan dari penelitian ini adalah mengetahui pengaruh variasi OLR terhadap penyisihan COD dan TSS pada *anaerobic filter*. Reaktor *anaerobic filter* terbuat dari plastik *polypropylene* 10 liter bermedia sarang tawon sebagai media filter. Air limbah sintetik yang mengandung glukosa digunakan dalam penelitian ini. Penelitian meliputi *seeding*, aklimatisasi, *running* I, dan *running* II. *Running* I dilakukan dengan variasi OLR 1,57; 2,78; dan 4,12 kg COD/m³.hari. Nilai OLR tersebut didapat dari COD influen 2.000, 4.000, dan 6.000 mg/L dengan HRT 36 jam. *Running* II dilakukan dengan variasi 4,12; 6,61; dan 13,17 kg COD/m³.hari. Nilai OLR didapat dari COD influen 6.000 mg/L dengan HRT 36, 24, dan 12 jam. Cara analisis data menggunakan persamaan regresi dan determinasi. Hasil penelitian menunjukkan *seeding* dan aklimatisasi masing-masing dilakukan selama 7 hari. Pada OLR 1,57; 2,78; 4,12 kg; 6,61; dan 13,17 COD/m³.hari, efisiensi COD rata-rata berturut-turut sebesar 47,54%, 55,43%, 30,62%, 24,13%, dan 10,73% dan efisiensi TSS rata-rata berturut-turut sebesar 25,34%, 44,65%, 52,58%, 25,27%, dan 22,68%. Nilai OLR dengan variasi COD influen memberikan pengaruh sebesar 25,6% terhadap menurunnya efisiensi penyisihan COD, dan sebesar 48,2% terhadap meningkatnya efisiensi penyisihan TSS. Nilai OLR dengan variasi HRT memberikan pengaruh sebesar 40,8% dan 18,1% terhadap menurunnya efisiensi penyisihan COD dan TSS.

Kata kunci: OLR, COD, TSS, air limbah sintesis, dan anaerobik filter

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ABSTRACT

The aim of this study was to know the influence of OLR variations to COD and TSS removal efficiency in anaerobic filter. Anaerobic filter was made by polypropylene 10 L and honeycomb media as filter media. This study used glucose synthetic wastewater. This study consists of seeding and acclimatization, running I, and running II. Running I was done using OLR 1.57, 2.78, and 4.12 kg COD/m³.day. Those OLRs were obtained from COD influents 2000, 4000, 6000 mg/L and HRT 36 hours. Running II was done using OLR 4.12, 6.61, and 13.17 kg COD/m³.day. Those OLRs were obtained from COD influent 6000 mg/L and HRTs 36, 24, and 12 hours. Analysis data method was using regression and determination. This study showed each seeding and acclimatization were done during 7 days. On OLR 1.57, 2.78, 4.12 kg, 6.61, and 13.17 COD/m³.day, COD removal efficiencies sequently were 47.54%, 55.43%, 30.62%, 24.13%, and 10.73%, TSS removal efficiencies sequently were 25.34%, 44.65%, 52.58%, 25.27%, and 22.68%. The OLR using COD influent variations influenced the decrease in COD removal efficiency was 25.6% and the increase in TSS removal efficiency was 48.2%. The OLR using HRT variations influenced the decrease in COD and TSS removal efficiency were 40.8% and 18.1%.

Keyword: OLR, COD, TSS, synthetic wastewater, and anaerobic filter