

INTISARI

Instalasi pengolahan air limbah (IPAL) Komunal sanitasi fabrikasi (SANFAB) dusun Karangwetan menggunakan sistem *Decentralized Wastewater Treatment System* (DEWATS). Hasil evaluasi PT. Biosan Mandiri, *effluent* belum memenuhi standar baku mutu limbah cair IPAL Komunal Pergub DI Yogyakarta No. 7 tahun 2010 dan perencanaan PT. Biosan Mandiri. Perlu dilakukan evaluasi tiap-tiap unit pengolahan pada *vessel* kanan dan *vessel* kiri, dengan dan tanpa menggunakan limbah produksi kerupuk, untuk mencari faktor-faktor penyebab IPAL Komunal tidak optimal

Penelitian dilakukan dengan wawancara masyarakat yang memiliki sambungan rumah (SR) dengan IPAL Komunal dan masyarakat yang memiliki industri kerupuk. Pengukuran debit dilakukan pada tanggal 9 -10 September 2014 dan pengambilan sampel limbah dilakukan pada tanggal 2 Oktober 2014 – 13 November 2014, pengukuran dan pengambilan pada titik-titik unit pengolahan. Pengujian BOD, COD dan TSS dilakukan di balai laboratorium kesehatan Yogyakarta, sedangkan suhu dan pH dilakukan pengukuran di lapangan.

Hasil penelitian didapat jumlah pengguna sebanyak 272 jiwa dengan 65 sambungan rumah. Debit air limbah domestik $21,76 \text{ m}^3/\text{hari}$, air limbah industri kerupuk $0,32 \text{ m}^3/\text{hari}$ total yang diolah IPAL $22,08 \text{ m}^3/\text{hari}$. *Effluent* yang dihasilkan dari limbah domestik dengan BOD $592,39 \text{ mg/L}$ menjadi $202,58 \text{ mg/L}$ efisiensi 65,8 %, COD $868,80 \text{ mg/L}$ menjadi $443,06 \text{ mg/L}$ efisiensi 49 %, TSS 280 mg/L menjadi 42 mg/L efisiensi 85%. Proses pengolahan mampu mendegradasi polutan tapi hasil *effluent* belum memenuhi baku mutu dan perencanaan. *Hydraulic Retention Time* (HRT) desain, HRT teori dan HRT aktual pada *settler* sebesar 1,2 – 2 jam, 2 - 4 jam dan 8 jam. Pada *Anaerobic Baffled Reactor Hydraulic Retention Time* (HRT) desain, HRT teori dan HRT aktual sebesar > 8 jam, 6 - 24 jam dan 12 jam dan pada *Anaerobic Filter (AF) Hydraulic Retention Time* (HRT) desain, HRT teori dan HRT aktual sebesar 24 - 48 jam, 25 hari – 37 hari dan 3,12 jam belum sesuai dengan desain IPAL komunal. Faktor penyebab IPAL Komunal tidak optimal diantaranya kelebihan jumlah pengguna, limbah industri kerupuk berbahan tapioka, tinggi lumpur dan pengurasan lumpur yang tidak maksimal. Faktor lain, adanya scum pada *settler* kanan dan *Anaerobic Baffled Reactor* (ABR) kanan, *Hydraulic Retention Time* (HRT) dan kinerja *Anaerobic Filter* (AF) tidak optimal dan belum memenuhi kriteria desain.

Kata kunci : IPAL Komunal, SANFAB, DEWATS, *Anaerobic Baffled Reactor* (ABR), *Anaerobic Filter* (AF)

ABSTRACT

Communal Waste water treatment plant (WWTP) Fabrication Sanitation (SANFAB) Karangwetan water system using Decentralized Waste water Treatment System (DEWATS). The results of the evaluation of PT. Biosan Mandiri, effluent not meet quality standards Communal WWTP effluent Pergub Yogyakarta No. 7 in 2010 and planning PT. Biosan Mandiri. Necessary to evaluate each processing unit on the right vessel and the vessel left, with and without the use of waste cracker production, to look for factors that cause suboptimal Communal WWTP

The study was conducted by interviewing people who have a home connection (SR) with communal waste water and industrial communities have crackers. Discharge measurements performed on September 9 to 10, 2014 and wastewater sampling was conducted on October 2, 2014 – November 13, 2014, and taking measurements at points of processing units. Testing BOD, COD and TSS performed in the laboratory hall health Yogyakarta, while the temperature and the pH was measured in the field.

The result is the number of users as many as 272 people with 65 home connection. Domestic waste water discharge $21.76 \text{ m}^3/\text{day}$, industrial waste water crackers $0.32 \text{ m}^3/\text{day}$ of treated waste water total $22.08 \text{ m}^3/\text{day}$. The resulting effluent from domestic waste water with BOD 592.39 mg/L to 202.58 mg/L efficiency of 65.8%, COD 868.80 mg/L to 443.06 mg/L efficiency of 49%, TSS 280 mg/L to 42 mg/L efficiency of 85%. The processing can degrade pollutants but the results do not meet the effluent quality standards and planning. Hydraulic Retention Time (HRT) design, HRT theory and HRT actual on settlers for 1.2 to 2 hours, 2-4 hours and 8 hours. On Anaerobic Baffled Reactor Hydraulic Retention Time (HRT) design, HRT theory and actual HRT for > 8 hours, 6-24 hours, and 12 hours and the Anaerobic Filter (AF) Hydraulic Retention Time (HRT) design, HRT theory and HRT actual amount 24-48 hours, 25 days-37 days and 3.12 hours is not in accordance with the design of communal waste water. Factors causing suboptimal Communal WWTP such excess number of users, industrial waste crackers made from tapioca, high sludge and sludge dewatering are not optimal. Another factor, the presence of scum on the right settler and Anaerobic Baffled Reactor (ABR) right, Hydraulic Retention Time (HRT) and the performance of Anaerobic Filter (AF) is not optimal and do not meet the design criteria.

Keywords: *Communal WWTP, SANFAB, DEWATS, Anaerobic Baffled Reactor (ABR), Anaerobic Filter (AF)*