EVALUASI KINERJA INSTALASI PENGOLAHAN AIR LIMBAH (IPAL) KOMUNAL DI DUSUN SALAKAN, TRIHANGGO, GAMPING, SLEMAN TAHUN 2026

Sandhy Fajar Arifianto[1], Bambang Suwerda[2], Tri Mulyaningsih[3]
[1,2,3] Jurusan Kesehatan Lingkungan Poltekkes Kemenkes Yogyakarta
Jl. Tatabumi No. 3 Banyuraden, Gamping, Sleman DIY 55292
Email: sandhyfianto4@gmail.com

INTISARI

Latar Belakang: Instalasi Pengolahan Air Limbah (IPAL) Komunal Dusun Salakan mengolah air limbah domestik yang dihasilkan dari kegiatan rumah tangga masyarakat. IPAL ini dibangun pada tahun 2013 dan menggunakan sistem Anaerobic Baffled Reactor (ABR). Setelah lebih dari satu dekade beroperasi, diperlukan evaluasi kinerja untuk mengetahui efektivitas pengolahan air limbah sehingga kualitas efluen yang dihasilkan memenuhi baku mutu yang ditetapkan.
Tujuan: Mengetahui kinerja pengolahan limbah cair domestik pada IPAL Komunal Dusun Salakan
Metode: Jenis penelitian yang digunakan adalah penelitian deskriptif dengan objek penelitian IPAL Komunal Dusun Salakan. Penelitian dilakukan melalui pemeriksaan parameter pH, BOD, COD, TSS, amonia, minyak dan lemak, total coliform, serta pengukuran debit pada sampel inlet dan outlet IPAL. Hasil pemeriksaan dibandingkan dengan baku mutu Peraturan Daerah Daerah Istimewa Yogyakarta Nomor 7 Tahun 2016.
Hasil: Hasil penelitian dari dua kali pengulangan menunjukkan rata-rata kadar pH sebesar 7,40, BOD 100,25 mg/L, COD 191,25 mg/L, TSS 40,50 mg/L, amonia 47,950 mg/L, minyak dan lemak <0,40 mg/L, serta total coliform 23×10^7 MPN/100 mL. Rata-rata debit outlet sebesar 0,000406 m^3/detik atau 35,08 m^3/hari. Berdasarkan Perda DIY Nomor 7 Tahun 2016, parameter pH, COD, TSS, dan minyak dan lemak telah memenuhi baku mutu, sedangkan BOD, amonia, dan total coliform masih melebihi baku mutu.
Kesimpulan: Kinerja IPAL Komunal Dusun Salakan belum optimal. Meskipun mampu menurunkan konsentrasi pencemar, efluen yang dihasilkan masih belum memenuhi baku mutu pada parameter BOD, amonia, dan total coliform. Oleh karena itu, diperlukan peningkatan pengoperasian dan pemeliharaan IPAL agar efektivitas pengolahan meningkat.

Kata Kunci: IPAL,pH,BOD,COD, TSS, Minyak & lemak, Total Coliform,Debit Limbah cair.

PERFORMANCE EVALUATION OF THE COMMUNAL WASTEWATER TREATMENT PLANT (WWTP) IN SALAKAN HAMLET, TRIHANGGO, GAMPING, SLEMAN, 2026

Sandhy Fajar Arifianto[1], Bambang Suwerda[2], Tri Mulyaningsih[3]
[1,2,3] Jurusan Kesehatan Lingkungan Poltekkes Kemenkes Yogyakarta
Jl. Tatabumi No. 3 Banyuraden, Gamping, Sleman DIY 55292
Email: sandhyfianto4@gmail.com

ABSTRACT

***Background**: The Communal Wastewater Treatment Plant (WWTP) in Salakan Hamlet treats domestic wastewater generated from household activities. The WWTP was constructed in 2013 and applies the Anaerobic Baffled Reactor (ABR) system. After more than a decade of operation, a performance evaluation is required to assess the effectiveness of the wastewater treatment process and to determine whether the effluent complies with the applicable wastewater quality standards.*
***Objective**: To evaluate the performance of domestic wastewater treatment at the Communal WWTP in Salakan Hamlet.*
***Metods:** This study employed a descriptive research design with the Communal WWTP in Salakan Hamlet as the research object. The study included the analysis of pH, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), ammonia, oil and grease, total coliform, and wastewater flow rate using influent and effluent samples. The results were compared with the wastewater quality standards stipulated in the Special Region of Yogyakarta Regional Regulation Number 7 of 2016.*
***Result:** The results of two sampling repetitions showed average values of pH 7.40, BOD 100.25 mg/L, COD 191.25 mg/L, TSS 40.50 mg/L, ammonia 47.950 mg/L, oil and grease <0.40 mg/L, and total coliform 23 × 10^7 MPN/100 mL. The average effluent flow rate was 0.000406 m^3/s or 35.08 m^3/day. Based on the Special Region of Yogyakarta Regional Regulation Number 7 of 2016, the pH, COD, TSS, and oil and grease parameters complied with the wastewater quality standards, while the BOD, ammonia, and total coliform parameters exceeded the permissible limits..*
***Conclusion:** The performance of the Communal WWTP in Salakan Hamlet has not yet been optimal. Although the treatment process was able to reduce pollutant concentrations, the effluent still failed to meet the wastewater quality standards for BOD, ammonia, and total coliform. Therefore, improvements in the operation and maintenance of the WWTP are necessary to enhance treatment effectiveness.*

***Keywords:** Communal WWTP, pH, BOD, COD, TSS, oil and grease, total coliform, wastewater flow rate*