

ABSTRAK

Rumah sakit merupakan fasilitas pelayanan kesehatan yang menghasilkan limbah cair dari aktivitas medis dan nonmedis yang berpotensi mencemari lingkungan apabila tidak dikelola dengan baik. Seiring dengan peningkatan jumlah tempat tidur, Rumah Sakit Hermina Karawang melakukan penambahan kapasitas Instalasi Pengolahan Air Limbah (IPAL) dari 50 m³/hari menjadi 150 m³/hari. Oleh karena itu, diperlukan evaluasi terhadap desain konstruksi serta kinerja IPAL pasca penambahan kapasitas guna memastikan kesesuaian dengan standar teknis dan baku mutu lingkungan. Penelitian ini bertujuan untuk menganalisis kualitas dan kuantitas air limbah, mengevaluasi kesesuaian antara desain teknis (*Detail Engineering Design/DED*) dengan kondisi eksisting di lapangan (*as-built drawing*), serta menilai efektivitas kinerja IPAL dalam memenuhi baku mutu air limbah rumah sakit. Metode penelitian yang digunakan adalah deskriptif evaluatif dengan pendekatan studi kasus, melalui analisis data primer wawancara serta observasi dan data sekunder berupa dokumen perencanaan, gambar teknis, serta hasil uji kualitas air limbah pada titik inlet, outlet dan sumur pantau IPAL. Hasil penelitian menunjukkan bahwa secara umum sistem IPAL dengan teknologi biofilter *anaerob–aerob* di RS Hermina Karawang mampu menurunkan beban pencemar organik dan menghasilkan efluen yang memenuhi baku mutu air limbah sesuai peraturan yang berlaku. Namun, ditemukan beberapa perbedaan antara desain perencanaan dan pelaksanaan konstruksi di lapangan yang perlu mendapat perhatian untuk meningkatkan kinerja dan keberlanjutan operasional IPAL.

Kata kunci: IPAL rumah sakit, evaluasi desain konstruksi, biofilter anaerob–aerob, kualitas air limbah.

ABSTRACT

Hospitals are healthcare facilities that generate wastewater from medical and non-medical activities, which may potentially cause environmental pollution if not properly managed. Along with the increase in the number of beds, Hermina Hospital Karawang expanded the capacity of its Wastewater Treatment Plant (WWTP) from 50 m³/day to 150 m³/day. Therefore, an evaluation of the construction design and performance of the WWTP after the capacity expansion is required to ensure compliance with technical standards and environmental quality regulations. This study aims to analyze the quality and quantity of wastewater, evaluate the conformity between the technical design (Detail Engineering Design/DED) and existing field conditions (as-built drawings), and assess the effectiveness of WWTP performance in meeting hospital wastewater quality standards. The research method employed is a descriptive evaluative approach with a case study method, involving analysis of primary data obtained from interviews and field observations, as well as secondary data consisting of planning documents, technical drawings, and laboratory test results of wastewater quality at the inlet, outlet, and monitoring wells of the WWTP. The results indicate that, in general, the anaerobic–aerobic biofilter system applied at Hermina Hospital Karawang is capable of reducing organic pollutant loads and producing effluent that complies with the applicable wastewater quality standards. However, several discrepancies between the planned design and the actual construction implementation were identified and require further attention to improve the performance and operational sustainability of the WWTP.

Keywords: hospital wastewater treatment plant, construction design evaluation, anaerobic–aerobic biofilter, wastewater quality.