Identifikasi dan evaluasi instalasi pengolahan air limbah ipal industri pulp dan kertas : studi kasus PT Riau Andalan Pulp and Paper = Identification and evaluation of waste water treatment plant wwtp pulp and paper industry : case study PT Riau Andalan Pulp and Paper

Yuki Leonita, author

Abstrak

Industri pulp dan kertas merupakan salah satu industri penyumbang air limbah, sehingga diperlukan instalasi pengolahan air limbah. Instalasi Pengolahan Air Limbah (IPAL) industri pulp dan kertas di PT.RAPP terdiri dari beberapa unit, seperti unitbucket screen, primary clarifier, neutralization basin, cooling tower, aeration basin, dan secondary clarifier. Terjadi peningkatan jumlah produksi maka terjadi peningkatan beban air limbah yang dibuang, sehingga harus dilakukan identifikasi dan evaluasi kinerja sistem dan unit pengolahan. Evaluasi yang dilakukan berdasarkan parameter-parameter kinerja berupa TSS, pH, warna, COD, dan BOD yang akan dibandingkan dengan baku mutu lingkungan, kriteria desain IPAL, serta studi literatur. Selain itu, dilakukan perhitungan terhadap proses kondisi bak aerasi pada kondisi eksisting dan pada kondisi perencanaan.

Dari penelitian yang dilakukan menunjukkan bahwa timbulan limbah cair sebesar 330000 m3/hari, dimana masih memenuhi kriteria desain IPAL sebesar 450000 m3/hari. Karakteristik limbah cair industri pulp dan kertas menunjukkan limbah cair tersebut memiliki pH kondisi basa, yaitu 9,0, sedangkan untuk parameter TSS (566 mg/l), warna (1256 PtCo), COD (741 mg/l) dan BOD (338 mg/l). Konsentrasi effluent secara keseluruhan sudah dibawah baku mutu lingkungan, dengan nilai efisiensi pH sebesar 14%, warna sebesar 70%, TSS sebesar 94%, COD sebesar 78% dan BOD sebesar 96%.
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Pulp and paper industry is one of the contributors to the wastewater industry, so that the necessary wastewater treatment plant. Waste Water Treatment Plant (WWTP) in the pulp and paper industry PT.RAPP consists of several units, such as units of bucket screen, primary clarifier, neutralization basin, cooling tower, aeration basin and secondary clarifier. Increase the amount of production then increase loads wastewater, so it should be the identification and evaluation of system performance and the processing unit. Evaluation of performance is based on parameters such as TSS, pH, color, COD, and BOD which will be compared with environmental quality standards, design criteria for wastewater treatment, and the study of literature. In addition, the calculation is done on process conditions of the existing conditions of aeration basin and on the conditions of the planning.

From research conducted showed that wastewater generation of 330 000 m3/day, which still meets the design criteria of 450000 m3/day WWTP. Characteristics of wastewater pulp and paper industry showed the effluent pH alkaline conditions, namely 9.0, whereas for the parameters of TSS (566 mg/l), color (1256 PtCo), COD (741 mg/l) and BOD (338 mg/l). Effluent concentration is below the overall environmental quality standards, with a pH value of efficiency by 14%, color by 70%, amounting to 94% of TSS, COD and BOD by 78% at 96%.