Putri, A. D. K., 2018. Perencanaan Ulang Instalasi Pengolahan Air Limbah (IPAL) Industri Tahu "X" di Kota Probolinggo. Skripsi ini di bawah bimbingan Nur Indradewi Oktavitri, S.T., M.T. dan Dwi Ratri Mitha Isnadina, S.T., M.T. Program Studi S1 Teknik Lingkungan, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga.

## ABSTRAK

Instalasi Pengolahan Air Limbah (IPAL) Industri Tahu "X" di Kota Probolinggo terdiri dari unit *anaerobic digester* dan *Anaerobic Biofilter* (ABF) yang digunakan untuk mengolah limbah cair tahu. Unit ABF tersebut tidak beroperasi sejak tahun 2014 sehingga unit *anaerobic digester* menjadi unit utama dalam pengolahan limbah cair Industri Tahu "X". Hasil pengolahan limbah oleh *anaerobic digester* belum memenuhi baku mutu menurut Peraturan Gubernur Jawa Timur No. 72 Tahun 2013 sehingga diperlukan evaluasi kinerja IPAL Industri Tahu "X". Metode yang digunakan dalam perencanaan ini meliputi studi literatur, pengumpulan data primer dan sekunder, analisis perhitungan debit dan karakteristik limbah yang akan diolah, evaluasi unit IPAL eksisting, penentuan alternatif pengolahan, penyusunan DED, pembuatan profil hidrolis, serta penyusunan BOQ dan RAB. Hasil evaluasi menunjukkan bahwa kinerja IPAL belum optimal sehingga diperlukan perencanaan ulang IPAL. Perencanaan ulang IPAL meliputi perencanaan unit *Anaerobic biofilter* (ABF) dan *constructed wetland.* Dimensi unit ABF yang direncanakan menyesuaikan dengan dimensi unit ABF eksisting yaitu 6,32 m x 1,10 m x 1,50 m, sedangkan dimensi *constructed wetland* yaitu 13 m x 6 m x 0,90 m. Biaya pembangunan hasil perencanaan ulang unit IPAL Industri Tahu "X" sebesar Rp 34.337.209,35.

Kata kunci: *Anaerobic biofilter* (ABF), *Constructed Wetland*, evaluasi, IPAL, perencanaan ulang

*Putri, A. D. K., 2018. Redesign of Tofu Industry "X" Wastewater Treatment Plant (WWTP) in Probolinggo. This script was supervised by Nur Indradewi Oktavitri, S. T., M. T. and Dwi Ratri Mitha Isnadina, S. T., M. T. Bachelor Study Program of Environmental Engineering, Department of Biology, Faculty of Science and Technology, Airlangga University.*

## *ABSTRACT*

*Tofu Industry "X" Wastewater Treatment Plant (WWTP) in Probolinggo consists of anaerobic digester and Anaerobic Biofilter (ABF) that used to treat tofu wastewater. Unfortunately, ABF was no longer in operation since 2014, therefore anaerobic digester became main unit in Tofu Industry "X" wastewater treatment plant. The output result from wastewater treatment by anaerobic digester has not achieve quality standards according to Peraturan Gubernur Jawa Timur No. 72 Tahun 2013 yet, so WWTP performance evaluation is necessary. Applied methods in this planning such as literature study, primary and secondary data collection, flow-rate calculation and wastewater characteristic analysis, WWTP existing evaluation, alternative treatment determination, DED calculation, hydraulic profile arrangement, also BOQ and budget plan calculation. Evaluation result shows that WWTP performance has not reach optimum performance yet, so WWTP re-design is necessary. WWTP re-design comprises Anaerobic biofilter (ABF) and Constructed wetland design unit. Anaerobic biofilter dimensions adjust existing ABF dimensions, which are 6.32 m x 1.10 m x 1.50 m, while constructed wetland dimensions are 13 m x 6 m x 0.90 m. Tofu Industry "X" WWTP re-design construction costs as much as Rp 34,337,209.35.*

*Keywords: Anaerobic biofilter (ABF), Constructed Wetland, evaluation, Wastewater Treatment Plant (WWTP), re-design.*