

ABSTRAK

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Program Studi : **Teknik Kimia**
Judul : **Pra-Rancangan Instalasi Pengolahan Limbah dengan Kapasitas 23 m³/hari**

PT Mutuagung Lestari merupakan perusahaan jasa pengujian, inspeksi, dan sertifikasi yang memiliki lokasi strategis di Jl. Raya Bogor. Kegiatan bisnis PT Mutuagung Lestari tentunya menghasilkan limbah, terutama limbah cair hasil kegiatan perkantoran dan laboratorium. Dalam upaya menjaga kelestarian lingkungan serta melaksanakan peraturan pemerintah yang berlaku maka PT Mutuagung Lestari perlu melakukan pengolahan terhadap air limbah yang dihasilkan. Setiap hari PT Mutuagung Lestari menghasilkan air limbah sebanyak 18 m³.

Unit pengolahan air limbah akan dioperasikan selama 24 jam dengan kapasitas 23 m³/hari. Proses pengolahan air limbah dilakukan beberapa tahapan yaitu pre-treatment dengan unit *greasetrapp* dan ekualisasi, primary treatment dengan tangki proses kimia dan sedimentasi, secondary treatment dengan unit proses biofilter anaerobik dan aerobik, lalu tertiary treatment dengan proses sedimentasi dan filtrasi. Proses pengolahan air limbah ini memiliki efisiensi menghilangkan 96,5% BOD, 89,1 % COD, 97% Minyak dan Lemak, 94% TDS, dan 99,3% TSS.

Analisa kelayakan pendirian pabrik menggunakan analisa ekonomi dengan modal total investasi sebesar Rp6.294.778.615,00, nilai titik impas (BEP) berada pada 70,88% dengan Internal Rate of Return (IRR) sebesar 59,35% dan Minimum Payback Period (MPP) yaitu 2 tahun, serta nilai Net Cash Flow Present Value (NCFPV) pada bunga bank sebesar 8,00% yaitu Rp26.081.274.029,74 (positif). Berdasarkan analisis ekonomi yang telah dibuat maka Pra-rancangan Instalasi Pengolahan Air Limbah PT Mutuagung Lestari layak didirikan.

ABSTRACT

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Department : Chemical Engineering
Title : *Pre-Designed Wastewater Treatment Installation with 23 m³/day of capacity*

PT Mutuagung Lestari is a testing, inspection and certification service company that has a strategic location on Jl. Raya Bogor. PT Mutuagung Lestari's business activities certainly produce waste, especially liquid waste resulting from office and laboratory activities. In an effort to preserve the environment and implement applicable government regulations, PT Mutuagung Lestari needs to treat the waste water it produces. PT Mutuagung Lestari produces 18 m³ of wastewater every day.

The wastewater treatment unit will operate 24 hours a day with a capacity of 23 m³/day. The wastewater treatment process is carried out in several stages, the first is pre-treatment with a greasetrapp and equalization unit, primary treatment with a chemical process tank and sedimentation, secondary treatment with an anaerobic and aerobic biofilter process unit, then tertiary treatment with a sedimentation and filtration process. This wastewater treatment process has the efficiency of removing 96.5% BOD, 89.1% COD, 97% Oil and Grease, 94% TDS, and 99.3% TSS.

Analysis of the feasibility of establishing a factory using economic analysis with a total investment capital of Rp6.294.778.615,00, the break-even point (BEP) is at 70,88% with an Internal Rate of Return (IRR) of 59,35% and a Minimum Payback Period (MPP) is 2 years, as well as the Net Cash Flow Present Value (NCFPV) at bank interest of 8,00%, which is Rp26.081.274.029,74 (positive). Based on the economic analysis that has been made, the Pre-designed Wastewater Treatment Plant of PT Mutuagung Lestari is feasible to build.