# ABSTRAK


**PENGARUH TEKANAN OPERASI DAN AIR BAKU PADA UNIT PENGOLAHAN AIR MINUM BERBASIS SINGLE MEMBRAN GOLDY ULP-2012-100G**

(Annisa Nur Shafa, 2025, 35 halaman, 10 Tabel, 15 Gambar, 4 Lampiran)

Permintaan air minum berkualitas dan aman semakin meningkat seiring pertumbuhan penduduk dan keterbatasan sumber air bersih. Penelitian ini bertujuan untuk menganalisis pengaruh tekanan kerja dan jenis bahan baku (air PDAM dan air Sukomoro) terhadap kualitas air minum hasil proses Reverse Osmosis (RO) dengan menggunakan membran Goldy ULP-2012-100G. Penelitian dilakukan di Laboratorium Teknik Energi Politeknik Negeri Sriwijaya selama enam bulan, menggunakan variasi tekanan 3–7 bar. Parameter yang dianalisis meliputi TDS, pH, fluks permeat, dan efisiensi rejeksi. Hasil penelitian menunjukkan bahwa peningkatan tekanan kerja berbanding lurus dengan peningkatan efisiensi penyisihan TDS, fluks permeat, dan perbaikan nilai pH. Tekanan optimal dicapai pada 6 bar, dengan efisiensi rejeksi mencapai 95% dan fluks permeat tertinggi. Air PDAM menghasilkan kualitas lebih stabil dibanding air Sukomoro, yang menunjukkan fluktuasi pada percobaan kedua akibat kemungkinan fouling. Air hasil olahan dari kedua sumber telah memenuhi standar kualitas air minum sesuai Permenkes RI No. 492 Tahun 2010 dan Permenkes No. 2 Tahun 2023. Penelitian ini membuktikan bahwa sistem RO dengan membran Goldy ULP-2012-100G mampu mengolah air baku dari berbagai sumber menjadi air minum yang layak konsumsi, dengan efisiensi terbaik pada tekanan kerja 6 bar.



**Kata Kunci: *Reverse Osmosis*, Tekanan Kerja, Air PDAM, Air Sukomoro, Membran Goldy ULP-2012-100G, Kualitas Air Minum.**

# ABSTRACT

**EFFECT OF OPERATIONAL PRESSURE AND RAW WATER ON GOLDY ULP-2012-100G SINGLE MEMBRANE BASED WATER TREATMENT UNIT**

(Annisa Nur Shafa, 2025, 35 Pages, 10 Tabels, 15 Pictures, 4 Appendixs)

*The demand for high-quality and safe drinking water continues to increase in line with population growth and limited clean water sources. This study aims to analyze the effect of operating pressure and raw water sources (PDAM water and Sukomoro water) on the quality of drinking water produced by the Reverse Osmosis (RO) process using the Goldy ULP-2012-100G membrane. The research was conducted at the Energy Engineering Laboratory of Politeknik Negeri Sriwijaya over a period of six months, using pressure variations ranging from 3 to 7 bar. The parameters analyzed included TDS, pH, permeate flux, and rejection efficiency. The results showed that increasing operating pressure positively affected TDS removal efficiency, permeate flux, and pH improvement. The optimal pressure was found at 6 bar, achieving a 95% rejection rate and the highest permeate flux. PDAM water yielded more stable results compared to Sukomoro water, which showed fluctuations in the second trial, possibly due to fouling. The treated water from both sources met the drinking water quality standards based on the Indonesian Ministry of Health Regulation No. 492 of 2010 and No. 2 of 2023. This study confirms that the RO system using the Goldy ULP-2012-100G membrane can effectively process various raw water sources into potable water, with the best efficiency achieved at 6 bar of operating pressure.*

***Keywords: Reverse Osmosis, Operating Pressure, PDAM Water, Sukomoro Water, Membrane Goldy ULP-2012-100G, Drinking Water Quality.***