

ABSTRAK

UNIT PENGOLAHAN AIR MINUM MENGGUNAKAN MEMBRAN DAN *POST CARBON* DENGAN VARIASI TEKANAN FLUIDA TERHADAP KUALITAS AIR PDAM

(Saskia Rizqi Maharani, 2025, 59 Halaman, 11 Tabel, 24 Gambar, 5 Lampiran)

Kualitas air minum yang aman sangat penting untuk kesehatan masyarakat. Penelitian ini bertujuan untuk menganalisis kualitas produk air minum hasil rancangan unit pengolahan air minum oleh penulis dengan berbasis membran *reverse osmosis* Silvertec ULP-2012-100G dan juga *post carbon* pada variasi tekanan fluida 4, 5, 6, 7, dan 8 bar. Air baku yang digunakan berasal dari keluaran air PDAM yang sebelumnya diproses melalui beberapa tahapan filtrasi, meliputi sedimen filter, GAC, CTO, membran RO, dan *post carbon*. Produk air minum ini juga mengacu pada Permenkes RI No. 2 Tahun 2023 sebagai standar air minum berkualitas baik yang memenuhi aspek fisika, kimia, dan mikrobiologi yakni pH, TDS (*Total Dissolved Solid*), Fe, Mn, Cl, dan NO₂. Penelitian ini dilakukan di Laboratorium Teknik Energi Politeknik Negeri Sriwijaya, Palembang. Hasil penelitian diharapkan dapat memberikan rekomendasi tekanan operasi yang optimal dan kontribusi terhadap pengembangan sistem pengolahan air minum yang efisien dan aman di lingkungan pendidikan maupun masyarakat.

Kata kunci: pengolahan air minum, membran *reverse osmosis*, *post carbon*, tekanan fluida, air PDAM

ABSTRACT

DRINKING WATER TREATMENT UNIT USING MEMBRANE AND POST CARBON WITH VARIATIONS OF FLUID PRESSURE ON THE QUALITY OF PDAM WATER

(Saskia Rizqi Maharani, 2025, 59 Pages, 11 Tables, 24 Figures, 5 Attachments)

The quality of safe drinking water is essential for public health. This study aims to analyze the quality of drinking water produced by a treatment unit designed by the author, which is based on the Silvertec ULP-2012-100G reverse osmosis membrane and post carbon filter at fluid pressure variations of 4, 5, 6, 7, and 8 bar. The raw water used comes from the output of PDAM water that has undergone several filtration steps, including sediment filter, granular activated carbon (GAC), CTO, RO membrane, and post carbon. The produced drinking water is evaluated following Indonesian Ministry of Health Regulation No. 2 of 2023 as a standard for high-quality drinking water that meets physical, chemical, and microbiological aspects, namely pH, TDS (Total Dissolved Solids), Fe, Mn, Cl, and NO₂. The research is conducted in the Energy Engineering Laboratory of State Polytechnic of Sriwijaya, Palembang. The results are expected to provide recommendations for optimal operating pressure and contribute to the development of efficient and safe drinking water treatment systems for educational and community environments.

Keywords: drinking water treatment, reverse osmosis membrane, post carbon, fluid pressure, PDAM water