

# EVALUASI DAN OPTIMALISASI UNIT *PRESSURE FILTER* DALAM MENGHASILKAN AIR BERSIH DI PDAM SLEMAN PROVINSI DAERAH ISTIMEWA YOGYAKARTA

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## INTISARI

Ketersediaan air yang berkualitas sangat penting untuk kelangsungan hidup manusia. Pemanfaatan airtanah sebagai sumber air bersih memerlukan proses pengolahan terlebih dahulu agar air tersebut dapat memenuhi standar baku mutu air bersih sesuai Permenkes RI No.2 Tahun 2023. Kendala yang sering ditemui adalah kandungan besi (Fe) tinggi sehingga tingkat kekeruhan tinggi. PDAM Sleman telah mengolah air baku dengan unit *pressure filter* sebelum didistribusikan. Namun masalah yang terdapat di unit *pressure filter* air bersih (outlet) masih keruh. Selain itu limbah efluen *backwash* yang keruh langsung dibuang ke sungai tanpa dilakukan pengecekan. Hal tersebut dapat berasumsi bahwa kurangnya efektifitas dalam penurunan kualitas air bersih (outlet) dan limbah *backwash*. Penelitian ini bertujuan untuk <sup>(1)</sup>menganalisis kualitas air baku (*inlet*) dan air olahan (*outlet*) di PDAM, <sup>(2)</sup>menganalisis pengaruh limbah dari hasil *backwash* unit *pressure filter* terhadap kualitas air sungai, <sup>(3)</sup>menganalisis kinerja unit *Pressure Filter* ditinjau dari effisiensinya dalam penurunan parameter, serta <sup>(4)</sup>merancang arahan pengelolaan untuk mengoptimalkan kinerja unit *pressure filter*.

Penelitian dilakukan menggunakan metode kuantitatif dan kualitatif. Metode kuantitatif digunakan meliputi survei, sampling serta uji laboratorium. Pengambilan sampel dilakukan dengan metode *purposive sampling*, dimana metode tersebut digunakan untuk tujuan penelitian 1 dan 2. Metode kualitatif yang dilakukan meliputi analisis perhitungan dan deskriptif. Metode kualitatif dilakukan untuk mengetahui status mutu air dan parameter yang perlu diturunkan. Metode evaluasi efisiensi kinerja unit *pressure filter* PDAM juga digunakan untuk mengetahui keoptimalan dalam mengolah air bersih yang digunakan untuk tujuan 3 dan 4.

Hasil uji laboratorium menunjukkan bahwa parameter pH dan suhu pada kualitas air bersih PDAM sudah memenuhi baku mutu, sedangkan parameter sisa *chlor* masih dibawah baku mutu dan parameter besi (Fe), kekeruhan melebihi baku mutu. Hasil penelitian efluen air *backwash* PDAM menunjukkan bahwa parameter pH, suhu pada efluen PDAM sudah memenuhi baku mutu, sedangkan parameter besi (Fe) dan kekeruhan melebihi baku mutu yang mengacu pada PP RI No. 22 Tahun 2021. Standar stream juga menunjukkan adanya parameter yang perlu diturunkan. Parameter yang perlu diturunkan, yaitu besi (Fe) 118,17 mg/l dan kekeruhan 3,16 mg/l. Arahan pengelolaan yang digunakan untuk mengoptimalkan kinerja unit *pressure filter* PDAM, yaitu penambahan blower *regenerative* dengan model HRC025-1.

**Kata Kunci** : *Backwash*, Blower, Air Bersih, *Pressure Filter*

**EVALUATION AND OPTIMIZATION OF PRESSURE FILTER UNITS IN  
PRODUCING CLEAN WATER IN PDAM SLEMAN, SPECIAL REGION OF  
YOGYAKARTA PROVINCE**

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**ABSTRACT**

*The availability of quality water is essential for human survival. The use of groundwater as a source of clean water requires a treatment process first so that the water can meet the clean water quality standards according to the Indonesian Minister of Health Regulation No. 2 of 2023. The obstacle that is often encountered is the high iron (Fe) content so that the level of turbidity is high. PDAM Sleman has treated raw water with a pressure filter unit before distribution. However, the problem in the sewer water pressure filter unit (outlet) is still cloudy. In addition, the cloudy backwash effluent waste is directly discharged into the river without checking. It can be assumed that there is a lack of effectiveness in decreasing the quality of clean water (outlets) and backwash waste. This study aims to <sup>(1)</sup>analyze the quality of raw water (inlet) and treated water (outlet) in PDAM, <sup>(2)</sup>analyze the effect of waste from the backwash of the pressure filter unit on the quality of river water, <sup>(3)</sup>analyze the performance of the Pressure Filter unit reviewed from its efficiency in parameter reduction, and <sup>(4)</sup>design management directions to optimize the performance of the pressure filter unit.*

*The research was conducted using quantitative and qualitative methods. Quantitative methods used include surveys, sampling, and laboratory tests. Sampling was carried out by the purposive sampling method, where the method was used for research purposes 1 and 2. The qualitative methods carried out include computational and descriptive analysis. A qualitative method is carried out to determine the status of water quality and parameters that need to be lowered. The method of evaluating the performance efficiency of PDAM pressure filter units is also used to determine the optimality in treating clean water used for purposes 3 and 4.*

*The results of laboratory tests show that the pH and temperature parameters in the quality of clean water of PDAM have met the quality standards, while the residual chlorine parameters are still below the quality standards and iron (Fe) parameters, the turbidity exceeds the quality standards. The results of the PDAM backwash effluent research show that the pH and temperature parameters in the PDAM effluent have met the quality standards, while the iron (Fe) and turbidity parameters exceed the quality standards referring to PP RI No. 22 of 2021. The stream standard also indicates the presence of parameters that need to be lowered. The parameters that need to be lowered are iron (Fe) 118.17 mg/l and turbidity 3.16 mg/l. The management direction used to optimize the performance of the PDAM pressure filter unit is the addition of a regenerative blower with the HRC025-1 model.*

**Keywords :** *Backwash, Blower, Clean Water, Pressure Filter*