ANALISIS TINGKAT KEHILANGAN AIR NONFISIK BERDASARKAN METER AIR PELANGGAN DI PERUMDA AIR MINUM KOTA PADANG SUB *DISTRICT METER AREA* AUR

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ABSTRAK

Kehilangan air menjadi masalah serius bagi Perumda Air Minum Kota Padang, khususnya di Sub *District Meter Area* Aur, dengan tingkat kehilangan mencapai 49,34% pada Maret 2024, jauh di atas batas 20% yang ditetapkan Kementerian PUPR. Penelitian ini untuk mengetahui keakuratan meter pelanggan, menghitung kehilangan air nonfisik berdasarkan merek dan umur meter, menyusun neraca air manual dan *software* WB-Easycalc, menganalisis hubungan merek dan umur meter dengan kehilangan air, menentukan strategi penurunan kehilangan air nonfisik, dan membandingkan hasil pengukuran kehilangan air nonfisik metode manual dan menggunakan *Portable Test Bench Digital*. Pengambilan sampel dilakukan dari Juli hingga Agustus 2024 menggunakan ember 10 liter serta perhitungan neraca air secara manual dan *software* WB-Easycalc. Hasil penelitian menunjukkan 5 meter sangat akurat, 79 akurat, dan 35 tidak akurat, dengan total kehilangan air nonfisik akibat ketidakakuratan meter sebesar -41,01% (-4.410 m^3/2 bulan). Kehilangan air nonfisik berdasarkan merek meter yaitu Smart meter sebesar -21,23% (-2.283 m^3), Itron sebesar -50,81% (-5.465 m^3), Actaris sebesar 64,29% (6.914 m^3), Linflow sebesar -112,00% (-12.046 m^3), Bestini sebesar 400,00% (43.020 m^3), dan JM sebesar -396,67% (-42.662 m^3). Dari segi umur, meter berumur ≤5 tahun mengalami kehilangan -26,78%, sedangkan >5 tahun sebesar -55,98%. Perhitungan neraca air manual dan WB-Easycalc menunjukkan perbedaan karena *margin error* pada WB-Easycalc. Penelitian ini menemukan bahwa hubungan antara merek meter dan kehilangan air nonfisik tidak signifikan, sedangkan hubungan umur meter menunjukkan signifikansi positif yang sangat lemah. Rekomendasi untuk mengurangi kehilangan air nonfisik meliputi tera meter, penggantian, dan relokasi meter. Pengukuran dengan *Portable Test Bench Digital* terbukti lebih efisien dibandingkan metode manual.

Kata kunci: *District Meter Area*, Kehilangan Air Nonfisik, Neraca Air, Tingkat Kehilangan Air

ABSTRACT

Water loss is a serious problem for Perumda Air Minum Kota Padang, especially in the Aur Sub District Meter Area, with the loss rate reaching 49.34% in March 2024, far above the 20% limit set by the Ministry of PUPR. This research aimed to determine the accuracy of customer meters, calculate non-physical water losses based on meter brand and age, compile a manual water balance and WB-Easycalc software, analyze the relationship between meter brand and age with water losses, determine strategies to reduce non-physical water losses, and compare the results of non-physical water loss measurements using the manual method and Portable Test Bench Digital. Sampling was conducted from July to August 2024 using a 10-liter bucket and manual water balance calculations and WB-Easycalc software. The results showed 5 meters were highly accurate, 79 were accurate, and 35 were inaccurate, with a total nonphysical water loss due to meter inaccuracy of -41.01% (-4,410 m³/2 months). Non-physical water loss based on meter brand is Smart meter by -21.23% (-2,283 m3), Itron by -50.81% (-5,465 m3), Actaris by 64.29% (6,914 m3), Linflow by -112.00% (-12,046 m3), Bestini by 400.00% (43,020 m3), and JM by -396.67% (-42,662 m3). In terms of age, meters aged ≤5 years experienced a loss of -26.78%, while >5 years was -55.98%. Manual and WB-Easycalc water balance calculations showed differences due to the margin of error in WB-Easycalc. This study found that the relationship between meter brand and non-physical water loss loss was insignificant, while the relationship between meter age showed a very weak positive significance. Recommendations to reduce non-physical water loss include meter tera, meter replacement, and meter relocation. Measurement with Portable Test Bench Digital proved to be more efficient than the manual method.

***Keywords**: District Meter Area, Non-physical Water Loss, Water Balance, Water Loss Rate*