ABSTRAK

SIMULASI JARINGAN DISTRIBUSI AIR MINUM MENGGUNAKAN SOFTWARE EPANET UNTUK MENGANALISIS KELAYAKAN TEKNIS DISTRICT METERED AREA

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66 halaman, 14 tabel, 14 gambar, 12 lampiran

ABSTRAK

Sistem distribusi air bersih adalah pengaliran air melalui sistem perpipaan dari bangunan pengolahan ke area pelayanan. Distribusi air bersih masih memiliki beberapa permasalahan, yaitu kualitas air di rumah pelanggan yang belum sesuai standar baku mutu, tekanan air yang kurang, serta kehilangan air di sistem distribusi. Penerapan sistem *District Metered Area* dapat mendeteksi permasalahan dalam pendistribusian air bersih. Penelitian ini bertujuan mengetahui kondisi eksisting pada jaringan distribusi *Booster Pump* dan mensimulasikan *District Metered Area* di jaringan distribusi air minum menggunakan pendekatan Epanet 2.2.Sistem distribusi di wilayah layanan Booster Pump Bram Itam masih memiliki banyak ruas perpipaan dengan kecepatan aliran di bawah 0,3 m/detik. Terdapat lokasi yang memiliki rata-rata sisa tekanan di bawah 10m/detik, untuk itu diperlukan penggantian pipa ukuran diamter lebih besar di lokasi inlet. Berdasarkan hasil analisa teknis penerapan 6 Sub Zona DMA ini, Sub Zona V memiliki tekanan dan debit yang relatif stabil pada seluruh pipa, sehingga Sub Zona 5 menjadi lokasi terbaik jika menerapkan sistem DMA ini. Terjadinya peningkatan kebutuhan air oleh pelanggan tanpa adanya peningkatan kapasitas produksi/distribusi oleh IPA dan *Booster Pump* mengakibatkan penurunan tekanan distribusi. Untuk itu diperlukan peningkatan kapasitas produksi/distribusi IPA dan *Booster Pump* yang tentunya akan meningkatkan kualitas pelayanan dan berkelanjutan dari penerapan system *District Metered Area*.

Kata Kunci : *District Metered Area***,** Epanet

ABSTRACT

SIMULATION OF DRINKING WATER DISIUION NEWOK USING EPANET SOFTWARE TO ANALYZE THE TECHNICAL EASIBILITY OF DISTRICT METERED AREA

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ABSTRAK

The clean water distribution system is the flow of water through a piping system from the treatment building to the service area. Clean water distribution still has several problems, namely water quality in customers' homes that has not met quality standards, insufficient water pressure, and water loss in the distribution system. The application of the District Metered Area system can detect problems in the distribution of clean water. This study aims to determine the existing conditions in the Booster Pump distribution network and simulate the District Metered Area in the drinking water distribution network using the Epanet 2.2 approach. The distribution system in the Bram Itam Booster Pump service area still has many piping sections with flow speeds below 0.3 m / second. There are locations that have an average residual pressure below 10m/sec, for that it is necessary to replace a larger diamter size pipe at the inlet location. Based on the results of the technical analysis of the application of these 6 DMA Subzones, Sub Zone V has relatively stable pressure and discharge in all pipelines, so Sub Zone 5 is the best location if implementing this DMA system. The increase in water demand by customers without an increase in production/distribution capacity by IPA and Booster Pump results in a decrease in distribution pressure. For this reason, it is necessary to increase the production / distribution capacity of IPA and Booster Pump which will certainly improve the quality of service and sustainability of the implementation of the District Metered Area system.

Keywords*: District Metered Area**,** Epanet*.