

## **ABSTRAK**

### **PERANCANGAN ALAT DETEKSI LETAK KEBOCORAN PIPA PVC MENGGUNAKAN SENSOR FLOWMETER MODEL FS300A BERBASIS TCP/IP**

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Kebocoran jaringan pipa air dapat menyebabkan kerugian finansial yang besar bagi pihak pengguna sistem perpipaan. PDAM umumnya menggunakan metode manual untuk mendeteksi letak kebocoran pipa, yaitu dengan melihat secara kasat mata jika terjadi genangan air yang berada diatas jaringan pipa. Penelitian bertujuan untuk menghasilkan metode guna merancang alat yang dapat mendeteksi letak kebocoran pipa secara cepat dan akurat. Metode dilakukan dengan menggunakan dua buah sensor flowmeter yang ditempatkan sebelum dan sesudah titik kebocoran pipa untuk merekam data selisih debit air masuk dan keluar ( $\Delta Q$ ). Data hasil ditransmisikan ke komputer menggunakan jaringan berbasis TCP/IP. Hasil yang diperoleh menunjukkan bahwa semakin kecil nilai selisih debit air masuk dan keluar ( $\Delta Q$ ), semakin jauh letak kebocoran pipa ( $X$ ). Penurunan besar diameter lubang bocor ( $D$ ) sebesar 43% mengakibatkan penurunan nilai selisih debit air masuk dan keluar ( $\Delta Q$ ) sebesar 21%. Oleh karena itu, alat deteksi letak kebocoran pipa menggunakan teknologi sensor flowmeter dapat membedakan letak titik kebocoran pada pipa air secara cepat dan akurat.

**Kata kunci:** *kebocoran, debit air, sensor flowmeter, TCP/IP, WIZ110SR*

## **ABSTRACT**

### **DESIGN OF DEVICE FOR DETECTING PIPELINE LEAK LOCATION USE WATER FLOW SENSOR FS300A AND TCP/IP**

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*Pipeline leaks can cause major financial losses for the users of pipeline system. PDAM generally uses manual methods to detect leak location, such as by looking puddle above the pipeline. The research proposed to produce a method to design device that can detect pipeline leak location quickly and accurately. The method use water flow sensors that are placed before and after the leak. The water flow sensors are used to record data of the difference between incoming and outgoing water flow ( $\Delta Q$ ). The data are transmitted to a computer using a network based on TCP/IP. The results showed that the smaller value of the difference between incoming and outgoing water flow ( $\Delta Q$ ), the farther distance leak location ( $X$ ). If diameter hole ( $D$ ) had decreased by 43%, the value of the difference between incoming and outgoing water flow ( $\Delta Q$ ) would have decreased by 21%. Based on these results, the device for detecting pipeline leak location with technology water flow sensor can distinguish pipeline leak location quickly and accurately.*

**Keywords:** leak, water flow, water flow sensor, TCP/IP, WIZ110SR