

## Robust Leakage Detection and Localization using Interval Estimation in Water Distribution Network

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The water supply network has a complex structure in cities with high population density. A damage to the water pipe can occur in the form of a leakage or a burst and the technique for early detection of the occurrence and for the exact determination of the location is required. In this paper, we propose a novel method that can detect the leakage of the water supply network using the pressure data. After the noise is eliminated using the Kalman Filter, the mean of normal state pressure is calculated and deviation from the mean is obtained. By calculating the cumulative integral of the pretreated data and applying a floor function, the leakage can be detected. Once the leakage is detected, the time of occurrence is refined by radius of curvature to determine the location with statistical methods. The verification test is conducted with respect to two different field data sets. It is found that the suggested method is more robust and practical to implement and shows a higher precision compared to the previous methods. This work is supported by the Korea Ministry of Environment as a Project for Developing Eco-Innovation Technologies (GT-11-G-02-001-3).