

Fault Detection of Pipeline in Water Distribution Network System

Authors : Shin Je Lee, Go Bong Choi, Jeong Cheol Seo, Jong Min Lee, Gibaek Lee

Abstract : Water pipe network is installed underground and once equipped; it is difficult to recognize the state of pipes when the leak or burst happens. Accordingly, post management is often delayed after the fault occurs. Therefore, the systematic fault management system of water pipe network is required to prevent the accident and minimize the loss. In this work, we develop online fault detection system of water pipe network using data of pipes such as flow rate or pressure. The transient model describing water flow in pipelines is presented and simulated using Matlab. The fault situations such as the leak or burst can be also simulated and flow rate or pressure data when the fault happens are collected. Faults are detected using statistical methods of fast Fourier transform and discrete wavelet transform, and they are compared to find which method shows the better fault detection performance.

Keywords : fault detection, water pipeline model, fast Fourier transform, discrete wavelet transform

Conference Title : ICCESE 2014 : International Conference on Civil, Environmental and Structural Engineering

Conference Location : Barcelona, Spain

Conference Dates : February 27-28, 2014