Abstract

Title: Detection of water losses in water suppling systems using Acoustic Wave Method and comparison with other methods

The main reason of conducting this experimental research is the lack of data and experience regarding the water leakage detection and localization in water distribution systems. In modern water networks, small water leakages with minor water outflow of maximum 0,5 m^3/h are very difficult to be detected, located and at the end to be repaired on time. Annual losses of such failures can reach the amount of over 4300 m^3 caused by each undetectable break. Thus, it is crucial for operational, environmental and financial reasons, every utility to be able to detect and repair rapidly and effectively even minor losses. Tools and methods used for this reason are several such as pressure monitoring, water balance of water outflow from elevated storage tank and consumption of inhabitants and Acoustical Leakage Detection (ALD) and they will be compared in similar conditions.

The experiment was conducted in two phases, one in the closely monitored area of Altingen, where two positions were chosen to be strictly monitored and several pipe failures were simulated in order data to be collected and analyzed and afterwards research gaps and questions to be born. The second phase of experimental simulations was a setup of three different pipelines, made by different materials, different dimensions of pipes and breaks where failures were simulated in in closer distances.

Data collection related with comparison of different parameters of influence, presentation of most relevant and obvious results is part of conclusion, where detailed analysis of combinations of factors will be conducted.