

Manuscript ID : 00000-49068

International Journal of Civil Engineering and Technology

Volume 6, Issue 4, April 2015, Pages 28-38, Page Count - 11



Source ID : 00000001

## **SIMULATION OF PRESSURE VARIATIONS WITHIN KIMILILI WATER SUPPLY SYSTEM USING EPANET**

Christopher Bwire <sup>(1)</sup> Richard Onchiri <sup>(2)</sup> Njenga Mburu <sup>(3)</sup>

<sup>(1)</sup> Post Graduate Student, Department of Civil and Structural Engineering, Masinde Muliro University of Science and Technology, Kakamega, Kenya.

<sup>(2)</sup> Lecturer, Department of Civil and Structural Engineering, Masinde Muliro University of Science and Technology, Kakamega, Kenya.

<sup>(3)</sup> Lecturer, Department of Civil And Structural Engineering, Dedan Kimathi University of Technology, Nyeri, Kenya.

### **Abstract**

*Water Supply system is a system of engineered hydrologic and hydraulic components which provide water supply for domestic use, industrial purposes, fire fighting and so on. The system comprises of intake structures, treatment units, storage tanks and distribution systems. A well designed water supply system is meant to operate optimally such that consumers have access to portable water of sufficient pressure and quality at all times. However during operations of water supply systems, cases of pressure drops, Leakages and contamination occur and the main challenge is the lack of a simple tool to accurately predict zones of low pressures and areas where quality is compromised. This study will investigate the operations of Kimilili Water Supply system in Bungoma County in terms of pressure Variations from the Treatment Works to the consumer points. The main objective of the study is to simulate pressure variations in the distribution system using EPANET software and Compare with measured data in the field. The EPANET programme analyses the pressure at each node, track the flow of water in each pipe and height of the Water in each tank during simulation period. After simulation of the whole Water Supply system, results were presented in various forms and compared with the field measured data using pressure loggers. Simulated water pressure did not vary significantly with the actual values indicating that the pipes still had their hydraulic capacities even though some sections of the network need augmentation.*

### **Author Keywords**

Hydraulic Simulation, Water Pressure, Pressure Variation, Nodes, Pressure Logger

### **Index Keywords**

Hydrologic and hydraulic components,EPANET software,hydraulic capacities

### **Acknowledgement**

The Authors are grateful to Masinde Muliro University of Science and Technology, Kakamega, Kenya for their cooperation and encouragement to carry out the Study. We are also grateful to the technical staff of Nzoia Water and Sanitation Company (Nzowasco) for their dedicated technical support.

**ISSN Print:** 0976-6308

**Source Type:** Journals

**Publication Language:** English

**Abbreviated Journal Title:** IJCIET

**Publisher Name:** IAEME Publication

**Major Subject:** Physical Sciences

**Subject area:** Civil and Structural Engineering

**ISSN Online:** 0976-6316

**Document Type:** Journal Article

**DOI:**

**Access Type:** Open Access

**Resource Licence:** CC BY-NC

**Subject Area classification:** Engineering and Technology

**Source:** SCOPEDATABASE

*Scope Database Link: <https://sdbindex.com/documents/0000001/0000-49068.pdf>*

*Article Link: [http://iaeme.com/MasterAdmin/Journal\\_uploads/IJCIET/VOLUME\\_6\\_ISSUE\\_4/IJCIET\\_06\\_04\\_003.pdf](http://iaeme.com/MasterAdmin/Journal_uploads/IJCIET/VOLUME_6_ISSUE_4/IJCIET_06_04_003.pdf)*

## Reference