

Interactive comment on “Experimental and numerical effects of flow hydraulics and pipe geometry on leakage behavior of laboratory water network distribution systems” by Tamer Nabil et al.

Anonymous Referee #1

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Abstract: it is really not clear what the purpose of the work is, what the scientific contribution is and how the proposed methods are chosen.

- The English needs to improve significantly, as there are too many to list structural, grammatical and typological errors. The language used in the paper is a bit ‘flowery’, starting from the first sentence of the abstract. The abstract and so the paper should be restructured to clearly motivate what the engineering/societal objective is; there is a large set of literature on leakage detection using various methods, which can be references to clearly set the context. Then the choices of experiments and method

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should be justified.

Brevity and unsuggestive language is more appropriate when discussing health risks associated with microbial contamination. I suggest a review of language used, typos, and grammar.

- it is really not clear what such a scaled experiment adds, the claim that WDN real leakage tests are difficult and so building a lab model brings more value is not valid. In fact, leak detection and localisation methods with distributed sensors in the real network and with simulation of the real system are successfully applied in practice (as demonstrated by numerous manuscripts in literature. - why is a hardy cross method used when there are free, modern alternatives that even allow pressure driven leakage simulations in milliseconds (eg. EPANET, WNTR, etc) - it is not clear what these are: ancient WDN, dispersed sensors, the pressure numbers, etc? - the paper seems to mix up leak detection using transient methods with study state approaches using pressure sensors, and control of solenoid valves. - what is really the proposed ‘new technique’ of investigation the water leakage effects on the water distribution network performance; what is the performance index? What is the leakage localisation method in Figure 5.

Although the paper may potentially have some useful contributions, the structure and quality of the writing makes it difficult to grasp what the contributions are, what has been done and why, and what the relationship is with the rich recent literature on leakage diagnosis and localisation.

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