Drink. Water Eng. Sci. Discuss., doi:10.5194/dwes-2017-8-RC2, 2017 © Author(s) 2017. CC-BY 3.0 License.





Interactive comment

## Interactive comment on "All-in-one model for designing optimal water distribution pipe networks" by Dagnachew Aklog and Yoshihiko Hosoi

## Anonymous Referee #2

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Thank you for the chance to review this manuscript. The manuscript is generally well written. My major concern is the practicality of this all-in-one model and the innovation of the study. Please refer to my detailed comments below.

1) The authors developed a common user interface for three simple WDS optimizers that have been developed in previous studies. There is no new method/concept developed in this study.

2) Stochastic optimization methods, such as a GA, are often sensitive to parameter values. Multiple runs are often required to find an optimal set of parameter values for the GA to converge to near-optimal solution(s). In the developed all-in-one model, how is this issue handled? Is there any function in the all-in-one model that can be used to

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help the users to determine the optimal parameter values of the methods used?

3) The authors claim that the all-in-one model can be used to compare the results of different optimizers. However, if there is no guarantee that the best performance of the optimizers has been achieved, it is a comparison between "an apple and an orange".

4) This all-in-one model can only be used to optimize for one objective. However, water distribution system optimization has developed far beyond a single objective. In real-world practices, multiple objectives including cost and reliability, are often considered. Can the OBORM optimizer handle multi-objective optimization problems?

5) There are better methods of handling constraints in a GA than the use of a penalty function.

6) The authors claim that the all-in-one model was developed for practical purposes. However, as the authors acknowledged that the model has not been tested on realworld case studies. Also, the optimizers in the model was compared with a few studies from a couple of decades ago. WDS optimization has advanced significantly in the past two decades. Without tests on real-world case studies and comparisons with newer optimizers, the practicality of the all-in-one model is not justified.

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