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Drinking Water Engineering and Science Discussions

Interactive comment on "Online modelling of water distribution systems: a UK case study" *by* J. Machell et al.

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Thank you to the reviewer for their thoughts and queries.

> However, it is believed that it can serve as a good practice paper that may be of a > particular interest to water companies and practitioners. > Specific comments > The literature review presented in the first section is found rather generic and lacks > any methods of WDS state estimation that are typically used in online hydraulic >modeling. >The authors might consider including following publications: >Sterling, M. J. H., and Bargiela, A. (1984). "Minimum norm state estimation for computer >control of water distribution systems." Control Theory and Applications, IEE Proceedings >D, 131(2), 57-63. >Andersen, J. H., and Powell, R. S. (2000). "Implicit state-estimation technique for water >network monitoring." Urban Water, 2(2), 123-130.

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Interactive Discussion

Discussion Paper

Thank you for the suggestion. These are indeed valid references however, we felt the background was sufficient for a practical paper i.e. one aimed at practitioners and so avoided adding too many academic references.

>The validation procedure mentioned on P285, L26 does not seem to be described in >sufficient detail. The provided information suggests that the online model was capable >of reproducing the same results as the conventional model, however, it is unclear >how this can infer that the online model also reflected the actual pressure and flow >measurements in the real system under normal conditions.

The main difference we are presenting in this paper is the move from using an offline (standard industry built) model to an online model. Doing this has no detrimental effect on the existing model, and provides comparable results under normal conditions. Since we only have inlet/export flow and pressure which are being used as the boundary conditions a comparison to measured data is not relevant/appropriate.

>As discussed by the authors Figures 4-6 describe the effects of an open hydrant in a >downstream DMA on the studied DMA in Fig. 2. The authors should comment on the >sudden pressure drop at 11 a.m. (more than 20m) shown in Fig. 3 and how it is related >to the open hydrant given the fact that there was no corresponding increase in flow to >explain the drop in pressure (e.g., similar to the flow increase and pressure drop at 7 >a.m.)

The reviewer makes an interesting observation. This is reflection of using real field data and not simulated data in which various events in the live distribution system, often unknown to the utility company, will manifest in recorded data.

>It would be interesting if the authors included a table comparing the modeled and >observed >pressures at the two pressure monitoring (DG2) points in addition to the model >results shown in Fig. 6. The purpose of these pressure monitoring points should be >described too and in particular as if and how these were used by the online hydraulic >model.

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Normally these two DG2 points would be boundary condition i.e. online measurement points. Unfortunately during this event neither of these loggers was recording data hence the comparison requested is not possible.

Interactive comment on Drink. Water Eng. Sci. Discuss., 2, 279, 2009.