

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

### **Anonymous Referee #1**

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This paper considers the development and use of on-line simulation of a distribution network. This kind of management tool, if implemented, could have far-reaching benefits for the optimal near real-time management of distribution systems. As such, the paper addresses a significant scientific and industrial challenge, the content of which is appropriate for publication in DWES. The paper is well-written, with only a small number of typographical or grammatical errors. Thus, the scientific significance, scientific quality and presentation quality are all good. This is an interesting paper which should appeal to a broad range of the journal's readership.

The paper presents a case study in which novel techniques are applied to transfer data from the distribution system to an existing network model. The model is then run and analysed, and conclusions regarding the state of the network are drawn. The results

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demonstrate that online modelling can be used to identify issues (such as bursts) in the network and to assess impacts on customer service. The principal conclusion (not currently stated by the authors, but which should be included) is that online modelling of distribution networks offers tangible benefits for system managers. However, the paper presents just the one example of a single DMA drawn from a larger network model. The paper would benefit from a brief discussion regarding the feasibility and likelihood of being able to extend this form of modelling to a wider geographical range. For example, what would be the computational and human resource cost of covering increasingly larger areas?

Other points for the authors to consider are as follows: The authors state that “even low accuracy data will produce an apparently sensible, if not wholly accurate solution” (284:19-20). This statement requires some discussion. Are the authors suggesting that a low accuracy, inaccurate model can be fit for purpose, or are they suggesting that such a model should be avoided. Their meaning is unclear.

The paper would benefit from a discussion regarding the selection of operator defined rules (285:15). At which times and under what circumstances are the different rules (last / default / average) invoked?

The authors state that online simulation results were comparable to those produced by the conventional hydraulic model (286:1). The authors should provide some indication of the degree of error found (and tolerated) between modelled and measured data.

The authors mention the possibility of acquiring data at 15 minute resolution (287:3). Some discussion regarding any potential implications of such a regime (e.g. computational expense) should be discussed.

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

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