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Online modelling of water distribution systems: a UK case study

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Abstract. Hydraulic simulation models of water distribution networks are routinely used for operational investigations and network design purposes. However, their full potential is often never realised because, in the majority of cases, they have been calibrated with data collected manually from the field during a single historic time period and, as such, reflect the network operational conditions that were prevalent at that time, and they are then applied as part of a reactive, desktop investigation. In order to use a hydraulic model to assist proactive distribution network management its element asset information must be up to date and it should be able to access current network information to drive simulations. Historically this advance has been restricted by the high cost of collecting and transferring the necessary field measurements. However, recent innovation and cost reductions associated with data transfer is resulting in collection of data from increasing numbers of sensors in water supply systems, and automatic transfer of the data to point of use. This means engineers potentially have access to a constant stream of current network data that enables a new era of "on-line" modelling that can be used to continually assess standards of service compliance for pressure and reduce the impact of network events, such as mains bursts, on customers. A case study is presented here that shows how an online modelling system can give timely warning of changes from normal network operation, providing capacity to minimise customer impact.

[Final Revised Paper](#) (PDF, 1634 KB) [Discussion Paper](#) (DWESD)

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