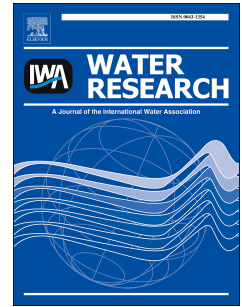


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Mashor Housh, Ziv Ohar



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# Model-based Approach for Cyber-Physical Attack Detection in Water Distribution Systems

Mashor Housh<sup>1,\*</sup> and Ziv Ohar<sup>1</sup>

<sup>1</sup>Faculty of Management, Department of Natural Resource and Environmental Management, University of Haifa, Haifa, Israel

\* Corresponding author, mhoush@univ.haifa.ac.il

## Abstract

Modern Water Distribution Systems (WDSs) are often controlled by Supervisory Control and Data Acquisition (SCADA) systems and Programmable Logic Controllers (PLCs) which manage their operation and maintain a reliable water supply. As such, and with the cyber layer becoming a central component of WDS operations, these systems are at a greater risk of being subjected to cyberattacks. This paper offers a model-based methodology based on a detailed hydraulic understanding of WDSs combined with an anomaly detection algorithm for the identification of complex cyberattacks that cannot be fully identified by hydraulically based rules alone. The results show that the proposed algorithm is capable of achieving the best-known performance when tested on the data published in the BATtle of the Attack Detection ALgorithms (BATADAL) competition (<http://www.batadal.net>).

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Keywords: cyber-physical systems, water distribution systems, event detection methodology, model-based fault detection, cyber-attacks

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