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Model-based approach for cyber-physical attack detection in water distribution systems

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1 2	Model-based Approach for Cyber-Physical Attack Detection in Water Distribution Systems
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7	Abstract
8	Modern Water Distribution Systems (WDSs) are often controlled by Supervisory
9	Control and Data Acquisition (SCADA) systems and Programmable Logic
10	Controllers (PLCs) which manage their operation and maintain a reliable water
11	supply. As such, and with the cyber layer becoming a central component of WDS
12	operations, these systems are at a greater risk of being subjected to cyberattacks. This
13	paper offers a model-based methodology based on a detailed hydraulic understanding
14	of WDSs combined with an anomaly detection algorithm for the identification of
15	complex cyberattacks that cannot be fully identified by hydraulically based rules
16	alone. The results show that the proposed algorithm is capable of achieving the best-
17	known performance when tested on the data published in the BATtle of the Attack
18	Detection ALgorithms (BATADAL) competition (<u>http://www.batadal.net</u>).
19 20	
21	Keywords: cyber-physical systems, water distribution systems, event detection
22	methodology, model-based fault detection, cyber-attacks

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