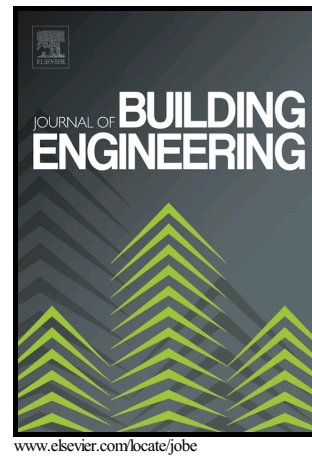


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Application to an office setting

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## Diagnosis of sensor grids in a building context: Application to an office setting<sup>☆</sup>

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### Abstract

This paper aims at designing a diagnosis tool that shall be used to support experts for detecting and localizing faults in a sensor grid of a building system. It is a tool-aided diagnosis with mathematical models and reasoning tools that determines whether a sensor is faulty or not. It is based on detection tests and logical diagnosis analysis for the first principle.

At the beginning, a succinct state of art is provided for existing fault detection and diagnosis (FDD) methods. Then, the diagnosis algorithm is proposed: it deals with a BRIDGE approach of FDD for a building system focusing on sensor grids. Sensor faults are diagnosed thanks to detection tests and diagnosis first principle. In addition, this approach provides the possible fault modes including multiple sensor faults. Finally, a serie of tests are performed in order to validate the approach. An application example shows the efficiency of the proposed technique: an office setting at Grenoble Institute of Technology.

*Keywords:* sensor grids, fault detection and isolation, test design, fault diagnosis, building system, BRIDGE approach

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<sup>☆</sup>Fully documented templates are available in the elsarticle package on CTAN.

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