

# Building moisture diagnosis: Processing, assessing and representation of environmental data for root cause analysis of mould growth

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The occurrence of surface condensation and mould can lead to concerns of poor indoor air quality and adverse health implications of occupants. Remedial actions require identification of the root causes, but this can be challenging even for experts. The focus of the research is the development of a diagnostic tool that helps to streamline root cause analysis. The diagnostic method comprises a protocol with guidelines for installation of sensors, easy data collection, and a set of calculations to process environmental information. Environmental parameters collected and calculated from an environmental monitoring exercise of dwellings with and without mould, include physical properties associated with the indoor surface of external walls and surrounding air conditions. The methodology relies on linking specific surface and air environmental parameters together with critical thresholds proposed for the control and avoidance of surface condensation and mould growth in dwellings. These parameters were assessed and used to determine the likely causal factors of a moisture imbalanced environment leading to surface condensation and mould growth; poor thermal building envelope performance, an imbalanced heat-moisture regime, and/or insufficient ventilation. Examples from different scenarios are presented to show the process towards environmental data collection, post-processing to compute and assess pertinent parameters, and the display of environmental conditions in a clear and easy-to-interpret manner. The novel developed system is a time-saving method for processing and represents environmental data. It provides a straightforward building moisture index (BMI) and a systematic diagnostic procedure for environmental assessment

and possible causes of mould growth. This helps to support neutral decision making, to identify rectification strategies and direct to more cost-efficient solutions to existing damp and mould problems in buildings. © 2020, The Author(s).

buildings

condensation

diagnosis

environmental monitoring

moisture

mould growth

Air quality

Condensation

Decision making

Housing

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Moisture

Molds

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