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**Neutral Pressure Levels in a Two-Storey Wood Frame
House**

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ABSTRACT

Neutral Pressure Levels in a Two-Storey Wood Frame House

Air infiltration continues to play a major role in the ventilation of houses, despite modern trends to increased airtightness of the building envelope. In colder climates, stack effect is the principal driving force for this natural air exchange. The neutral pressure level divides the envelope areas subjected to stack effect pressures driving infiltration from those subjected to pressures driving exfiltration. The neutral pressure level is therefore important to our understanding of stack driven air exchange and our ability to model it.

The neutral pressure level in a house is difficult to measure because calm conditions are needed to avoid distortions caused by the wind. In a recent research project a two-storey house was instrumented for automatic minute-by-minute measurements of weather conditions and envelope pressure at 22 locations around and its exterior walls. The dataset provides the measurements necessary for determination of the neutral pressure levels for four different leakage distributions created by opening and closing a flue and a basement vent. The data set covers a full range of weather conditions typical for a cold climate.

The neutral pressure levels for the four leakage distributions of the house were measured repeatedly, where wind conditions permitted. The statistical confidence levels for these NPL values are presented. Also, the full range of wind conditions encountered has produced guidelines for wind speeds which are acceptable for effective measurement of NPL values in situations where automatic instrumentation is not practical or possible. These results should be of interest to designers and researchers alike.