# DEVELOPING A TECHNIQUE FOR CALCULATING MOISTURE REMOVAL EFFECTIVENESS IN NEW ZEALAND HOMES

Stephen McNeil 1
Manfred Plagmann 1
Mark Bassett 1

1. BRANZ

Most homes in New Zealand rely on the natural ventilation option as described in the New Zealand Building Code. However a recent survey showed that insufficient ventilation is a common problem during the cooler months. This research investigates strategies for home ventilation from the perspective of managing indoor moisture in a temperate/marine climate. Two approaches to ventilation were studied, an infiltration only case; and a supply only mechanical system that delivered air from the roofspace into the lounge and bedrooms. An experimental building was constructed that allows the airtightness of the envelope to be selected anywhere in the range 1-9 ach@50Pa. The indoor climate is computer controlled, with humidifiers and heaters to simulate occupancy. Two tracer gases were used to study the ventilation rates between indoor zones in real time. A series of experiments investigating contaminant removal effectiveness revealed that the mean age of CO2 was significantly dependent on ventilation rate, with a large change observed between the infiltration only and supply only ventilation cases. However, the mean age of water vapour was found to be less sensitive to ventilation, and influenced by sorption in the building materials. A computer model has been developed to model the movement of moisture within the building by sorption into materials and by air transport between rooms. The model was shown to agree reasonably well with experiments.

Stephen McNeil – steve.mcneil@branz.co.nz