

Abstract Submitted  
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**Experimental and numerical results for CO<sub>2</sub> concentration and temperature profiles in an occupied room**<sup>1</sup> ALINE COTEL, LARS JUNG-HANS, XIAOXIANG WANG, Univ of Michigan - Ann Arbor — In recent years, a recognition of the scope of the negative environmental impact of existing buildings has spurred academic and industrial interest in transforming existing building design practices and disciplinary knowledge. For example, buildings alone consume 72% of the electricity produced annually in the United States; this share is expected to rise to 75% by 2025 (EPA, 2009). Significant reductions in overall building energy consumption can be achieved using green building methods such as natural ventilation. An office was instrumented on campus to acquire CO<sub>2</sub> concentrations and temperature profiles at multiple locations while a single occupant was present. Using openFOAM, numerical calculations were performed to allow for comparisons of the CO<sub>2</sub> concentration and temperature profiles for different ventilation strategies. Ultimately, these results will be the inputs into a real time feedback control system that can adjust actuators for indoor ventilation and utilize green design strategies.

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