Matthew Vandewiel, M.E.Sc.

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Employment History

Matthew Vandewiel is a Building Science Engineer-in-Training (EIT) at Building Enclosure Labs Inc. (BELi) in London, Ontario. He previously completed a master's degree in Civil and Environmental Engineering studying building aerodynamics and its impact on indoor air quality.

Education & Extracurriculars

M.E.Sc. Civil and Environmental Engineering, Western University, London, ON

- Teaching Assistant – Western University

B.E.Sc. Civil and Environmental Engineering, Western University, London, ON

- Head of Design and Data Analysis & Concrete Mix Lead – Western Engineering Concrete Canoe Association
- Vice President (Social) – Western Society for Civil Engineering

BELi Projects

Conducted a study to determine the lowest cost pathway to achieve a deep energy reduction in light low-rise commercial buildings. Energy modelling was performed in RETScreen Expert for several individual retrofit measures and combinations of these measures (packages). The results contained the reduction of energy consumption and carbon emissions as well as a financial analysis for each of the measures and packages.

Upgraded RETScreen Expert's building envelope properties tool. This included updating and expanding on the material thermal conductivities based on reliable, local standards. This will allow users to implement more materials from advances in the building industry in recent years. The methodology for thermal bridging was also revised using the parallel path method to improve the overall assembly thermal resistance accuracy.

Assisted with building enclosure consulting services for a major renovation project. This included using an internal calculator to evaluate thermal resistance and embodied carbon of retrofit assemblies. Effects of thermal bridging were modelled through THERM software and mitigated through an iterative process. Altogether, this provided the overall effective thermal resistance of the façades.

Provided support for building envelope assessments through air and water leakage testing for the City of Mississauga's construction of a new Fire Station targeting net-zero energy design. During the project, both blower door tests to quantify air leakage and pressurized fog testing to diagnose areas with excessive air leakage were conducted. After the building was fully constructed, it surpassed their Toronto Green Standard airtightness target.

Conducted masonry testing for a designated heritage building. This included determining the hygrothermal properties, compressive strength, and freeze-thaw decay vulnerability. A report was prepared to support the client in making an informed decision on retrofit strategies.

Publications and Research

- Vandewiel, M.R. "CFD and Deep Learning Based Natural Ventilation Analysis in Buildings." Thesis, Western University, 2024.
- Vandewiel M.R., Younis, M., Kahsay, M.T., Capretz, M.A.M, and Bitsuamlak, G.T. "Numerical Investigation of Wind-Driven Cross-Ventilation on a Low-Rise Residential Building." COBEE 2022.

Memberships

Engineer-in-Training (EIT), Professional Engineers of Ontario (PEO)

Certified Passive House Designer (CHPD), Passive House Canada

Certified RETScreen Expert (CRE), CIET

APTI, Emerging Professional

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