Research Opportunity: Optimization of Natural and Mixed Ventilation in Canadian Schools

Record number : OPR-1245

Overview

RESEARCH DIRECTION

Hélène Proulx, Professeure - Department of Civil and Building Engineering

INFORMATION

helene.proulx2@usherbrooke.ca

ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie civil et de génie du bâtiment

LEVEL(S)

3e cycle

LOCATION(S)

Campus de Sherbrooke

Project Description

We are looking for a highly motivated PhD student to join an interdisciplinary research project focused on optimizing natural and mixed ventilation strategies in Canadian schools. The position is based at the Université de Sherbrooke, under the supervision of Professor Hélène Proulx at the Faculty of Engineering, Department of Civil Engineering and Building Engineering.

This project aims to develop optimized ventilation strategies for Canadian school buildings to improve indoor air quality, reduce airborne infection risks (e.g., during pandemics), ensure thermal comfort, and reduce energy consumption. The research focuses primarily on passive ventilation methods, complemented by low-energy systems when necessary.
The project integrates experimental field measurements in operational school environments with computational fluid dynamics (CFD) modeling. Field measurements—conducted during weekends—include monitoring air and surface temperatures, relative humidity, and CO_2 concentrations through tracer gas experiments. These data will validate CFD models simulating airflow and contaminant transport under different architectural and climatic scenarios. The outcomes will provide evidence-based design and operational strategies to enhance the resilience, energy efficiency, and health standards of educational facilities in Canada.

Candidate Profile
• Holds a master's degree (or equivalent) in mechanical engineering, building or construction engineering, or architecture.
• Demonstrates a strong interest in indoor environmental quality, sustainable building design, and applied fluid mechanics.
• Experience in CFD is considered an asset.

Application Process
Interested candidates are invited to submit their CV, a cover letter, and the contact information of two academic references to: Recru.Etudiants@Usherbrooke.ca

Discipline(s) by sector

Sciences naturelles et génie

Génie civil

Funding offered

Yes

The last update was on 24 October 2025. The University reserves the right to modify its projects without notice.