Development of a Numerical Roof Snow Load Model

STEVEN HALL[1] AND JUSTIN FERRARO[1]

ABSTRACT

Snow loads on roofs can be calculated with a numerical model that combines velocities over the roofs with historical climate data. A model has been created that obtains the velocities from Computational Fluid Dynamics (CFD) simulations and iterates over several years of climate data to produce estimated snow loads over the roofs. This model considers the effects of snowfall, rainfall, melting, freezing, and drifting over the full course of each winter season. Several advantages and challenges are discussed regarding the use of CFD instead of physical experiments. Finally, several areas for future development and research are discussed.

[1] Gradient Wind Engineering Inc., Ottawa, ON, Canada