SARAHNICHOLSON.CO

SARAH R. NICHOLSON

MASc. Mechanical Engineering

SOFTWARE SKILLS:

- Comp. Fluid Dynamics (CFD)
- COMSOL Multiphysics
- MATLAB, C, Python, CSS
- E-Quest, Revit
- SolidWorks, SketchUp, Fusion 360
- Illustration/Animation Software
- Adobe Suite, DaVinci Resolve, OBS, iMovie, Figma, Gravit, GIMP
- Microsoft/Google Suite

GRANTS & FUNDING:

Grateful recipient of $890,620 in funding through grants and awards for research work over the past 6 years.

2019
NSERC Graduate Scholarship

2019
Clean Energy Award

2018
Thermofluids Award

RELEVANT WORK:

2021 Current

CEO, CO-FOUNDER

UMNY INC.

Developing research, AI software, and science communication towards the understanding of sustainable energy in nature. Specific focus and expertise in geoscience and thermodynamics.

Featured Software:

GEO-PILE PREDICTIVE SOFTWARE

GROUND TEMPERATURE PREDICTOR

SOIL THERMAL CONDUCTIVITY PREDICTOR

2018 2021

CTO, MARKETING DIRECTOR

INNOVIA GEO CORP.

Assisted in the design, planning, and implementation of technical projects. Energy modelling, programming, and data analysis for project development. Contributed research and writing for grant proposals, technical reports, and public communications.

2019

ENGINEERING CONSULTANT

WJS

Utilized technical software to develop simulation models of buildings and HVAC equipment to generate projected performance data and inform the design of new engineering systems. Engaged in teamwork and technical report writing.

EDUCATION:

Master's of Applied Science in Mechanical Engineering
Ryerson University 2018-2020 | CGPA 4.26/4.33

Bachelor's of Mechanical Engineering
Ryerson University 2013-2018 | CGPA 3.67

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MASc. Mechanical Engineering

ARTICLES & PAPERS:

The Influence of Geometry on the Performance of a Helical Steel Pile as a Geo-Exchange System

SR Nicholson, LR Kober, P Atefrad, A Mwesigye, SB Dworkin
Renewable Energy (2021) 172, 714-727

Modelling & Optimization of Helical Steel Piles as In-Ground Heat Exchangers for Ground-Source Heat Pumps

SR Nicholson, A Mwesigye, SB Dworkin (2019)
Materials Science and Engineering (2019) 609(5), 052026

IAQVEC International Conference | Bari, Italy
Sept., 2019

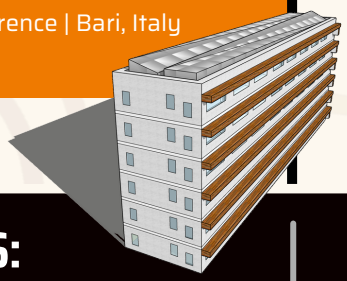
Paper+ Talk

Modelling of a Net-Zero Energy Condo in a Cold Climate Using an Interdisciplinary Design Framework

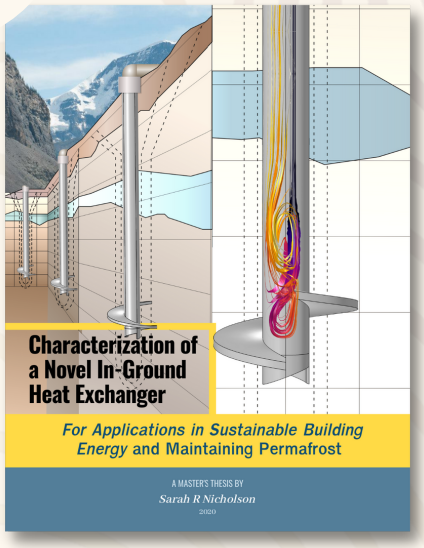
SR Nicholson, R Shohet, AS Fung
Material Science and Engineering (2019) 609(7), 072041

IAQVEC International Conference | Bari, Italy
Sept., 2019

Paper+ Talk



SCI. COMMUNICATION PUBLICATIONS & TALKS:



Characterization of a Novel In-Ground Heat Exchanger for Applications in Sustainable Building Energy and Maintaining Permafrost

Nicholson S. R.
May 2020

READ

Using computational research to develop geothermal heating/cooling from a building's foundation, which also reduces permafrost melt.

New Technology in Geo-Exchange

SR Nicholson, P Atefrad, HV Nguyen, SB Dworkin
Aug., 2019
Graduate Showcase | Toronto ON

Numerical Modelling of Helical Steel Piles as In-Ground Heat Exchangers for Ground-Source Heat Pumps

SR Nicholson, A Mwesigye, SB Dworkin
June, 2019
CSME International Congress | London ON

Omni-directional Robotic CNC Design & Prototype Demonstration

P Bhatt, SR Nicholson, MH Nizami, F Izraitel
RU CDSS Proceedings (2018) 120-124

April, 2018
Capstone Design Symposium | Toronto ON

Award Winner

RESEARCH AREAS:

High Performance Computer Modeling of Sustainable Energy Systems

PHYSICS + DEEP LEARNING (AI)
THERMODYNAMICS
HEAT TRANSFER
FLUID MECHANICS
MECHANICAL ENGINEERING

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