

GREEN BUILDING TECHNOLOGY NETWORK



Project Leo

Project Lead: Homes By Sorensen LTD.

Project Partners: Passive House Alberta + Nicol Design +

4 Elements Integrated Design

Building Owner: Private Owner

A multi-generational home with no operational Greenhouse Gas (GHG) Emissions; that is the goal of Homes by Sorensen in this net-zero, Passive House Low Energy build. The project team looks at single family detached home and reimagines the design and building process with the intent of eliminating operational GHG emissions as well as minimizing embodied GHG emissions as much as possible. The team aims to refine that design at an affordable price tailor made specifically for cold weather climate.

Sustainable design can be found in the application of creative passive heating principles, a unique wall system, clever mechanical equipment utilization, locally installed smart energy monitoring systems (one per unit) to collect data and improve the residence usability of the home, as well as local renewable energy. As the demand to reduce GHG emissions grows so does the demand for conceptual designs that are scalable and ready to disrupt the status quo in residential development markets, this project team is here to press that agenda forward with Project Leo.



Location

Calgary



Project Dates

01.2020 - 07.2022



GHG Emission Reduction

90%



Energy Use Reduction

90%



New

Construction



Sector

Residential

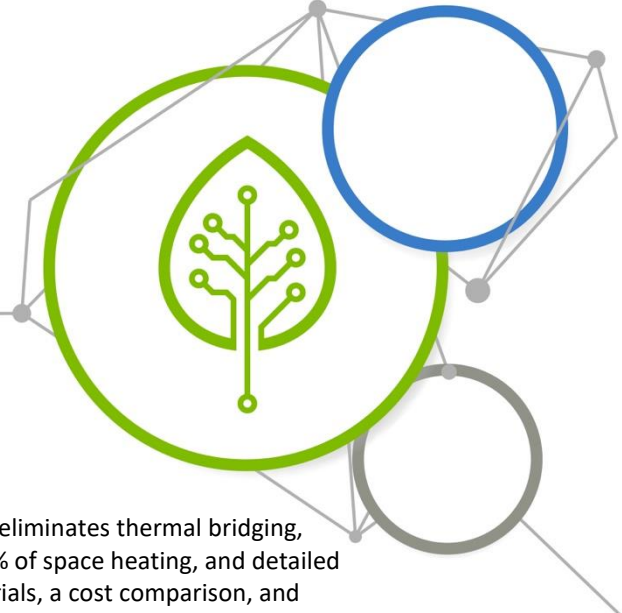
ABOUT SSRIA

The Smart Sustainable Resilient Infrastructure Association (SSRIA) is fostering collaborative partnerships across the Architecture, Engineering, Construction (AEC) industry that apply innovation to reduce energy consumption and greenhouse gas (GHG) emissions in the built environment while positioning Canada as a global leader in innovative design and construction.

The Green Building Technology Network is jointly funded by the Alberta Innovates Clean Resources - Clean Technology Program and Western Economic Diversification Canada.

PROJECT SUMMARY

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Project Summary

SSRIA funding is being applied to the implementation of a unique wall system that eliminates thermal bridging, the testing of a Sanden SANCO₂ heat pump that will provide water heating and 50% of space heating, and detailed monitoring and analysis of the project outcomes including an LCA on project materials, a cost comparison, and energy results comparing Net Zero and Passive House Low Energy Building Plus.

The above grade wall system is innovative. The exterior of the double stud wall is installed 9" outboard of the structural studs. The floor system stops at structural studs, providing an unbroken layer of insulation from foundation to eaves, a real improvement of thermal bridging. The air and vapour barrier is then installed on the interior of the structural studs, with a third stud wall then installed to act as a mechanical chase, making installations faster and simpler, and protecting the vapour barrier from future damage. A rain screen system is installed on the exterior, completing the system and keeping the thick insulated wall dry and protected. Project Leo also features an EPS below grade wall system and foundation from SI Construction Systems.

Both units are approximately 1400 sq ft in size and are built in Calgary's inner-city on a readily available lot shape and orientation for scalability and cost reduction. The units are attached front to back therefore have different solar exposures and homeowner demographics which will provide a rich data set for analysis of net-zero and Passive House Low Energy design.



PROJECT TEAM

