

Solt&erre Shape. Study. Share.

Energy-efficiency made
SIMPLE





Above: Solterre Design gets a photo-op with His Honour Brigadier-General The Honourable J.J. Grant, CMM, ONS, CD (Ret'd), Lieutenant Governor of Nova Scotia.

In this issue:

p. 2 - Shape: Pushing the boundaries of high-performance green design with an eye to comfort and longevity

p. 6 - Study: Testing, monitoring and knowing what works. Proof of good design through certification backed by data.

p. 9 - Share: Teaching others about what we've learned, encouraging new industry standards.

Solterre Design
3008 Oxford St., Suite 202
Halifax, NS, B3L 2W5
www.solterre.com

Philosophy

Solterre's philosophy is simple: great green architecture meeting the client's needs.

We have achieved this with 22 years of experience as a green design firm, propelling us as innovators by understanding the particular effects of natural resources, materials and energy on the built environment, and by incorporating good design principles while keeping economy in mind.

We have project expertise in energy-efficient and off-grid projects, energy retrofits, Passive House (PassivHaus) design and LEED certification. Our architectural design experience includes mid-size commercial, small institutional

and multi-unit residential, although our expertise is small footprint residential. Our green consulting experience covers every type of building program, including educational, long-term care, large commercial, multi-unit residential and defence.

Ultimately, Solterre aims to build better instead of bigger – by incorporating design features that make smaller spaces more adaptable, aesthetically-pleasing, economic and environmentally beneficial.

Our Roots

Principals Keith Robertson and Jennifer Corson aren't just the founders of Solterre, they are the reason why Nova Scotia has five other profitable green businesses!

Jennifer Corson is founder and president of Renovators Resource Inc., a used building material store in Halifax that reclaims pieces from buildings destined for demolition. She is also the creative inspiration and host for the nationally-aired *The Resourceful Renovator*, a green renovation and design TV program produced by Pick & Shovel Productions Ltd. The tv show spurred Corson's writing a book of the same name, published by Key Porter Books.

She and Keith are founders and co-owners of Local Jo Cafe & Market, a neighbourhood cafe where local, free range and fair trade commodities are commonplace.

Jennifer is the main force behind two green residential developments, 3 Pastures on Second Peninsula and Finntigh Mara, a heritage estate development with small footprint, high-efficiency housing.

FINNTIGH MARA
BY MARTHERRA INC.

3 Pastures
on 2nd peninsula



Renovators Resource Inc.



“Thank-you very much for showing your Concept House yesterday. It’s very important for design professionals to be able to see these emerging technologies and strategies working in concert in an actual constructed project. I am super impressed with all of the effort and thought you’ve invested in creating such a high performing dwelling. I am humbled by your commitment to a core environmental ethic and your determination to prove your results through Passive House and LEED standards. I appreciate your generosity and thoroughness in answering so many questions in great detail.”

David Coole
OAA, NSAA

TESTIMONIALS:

“Working with Solterre was a delight on all levels. The Solterre team was very responsive to our design requirements, and helped us to clarify what those requirements were. They were keenly aware of cost control, combined with creative and beautiful design in a small space. They were professional in every respect, meeting all deadlines and keeping the project on track by gentle pushing (including of us!) at appropriate stages. Finally, their particular expertise on environmental design was extremely helpful in enabling us to meet our own aspirations for maximizing sustainability.”

David Black

*Lester B. Pearson Professor of International Development Studies
Director, Centre for Foreign Policy Studies
Department of Political Science
Dalhousie University*



Solterre designed the first LEED platinum project in Atlantic Canada.

ACHIEVEMENTS:

- 2013 CaGBC Green Building Champion - Keith Robertson
- 2013 Nova Scotia Lt. Governors Award of Merit - Solterre Concept House
- 2007 Nova Scotia Lt. Governors Award - Honorable Mention - Tack Shop
- 2006 Junior Chamber International’s Award for Accomplishment - National Winner
- 1997 Canadian Woman Entrepreneur of the Year - Regional Winner
- 1996 BDC Young Entrepreneur of the Year - Provincial Winner
- 1995 Nova Scotia Home Award - Cow Cottage, Cow Bay, Nova Scotia
- 1995 Nova Scotia Home Award - Energy-Efficient House, Dartmouth, Nova Scotia
- 1994 Solar Nova Scotia’s Passive Solar Design Contest – Winner
- LEED Canada for Homes, Platinum - Concept House, Lunenburg Co., Nova Scotia
- LEED Canada for Homes, Platinum - Bullard House, Lunenburg County, Nova Scotia

SHAPE:

Our mission is to create architecture that provides comfort and quality while minimizing the environmental impact. Each project begins with client goals, the particularities of a site and local material culture. High performance housing is not made through a process of tacking on green technologies and assemblies to a preconceived building type. Rather, a small footprint, passive solar strategies, an efficient envelope and integrated technologies are the opportunities for Solterre to reshape the places in which we live. Through a collaborative process with our clients and contractors, these core building blocks are shaped into personalized spaces formed with carefully selected materials, a direct response to site and best practice building assemblies.



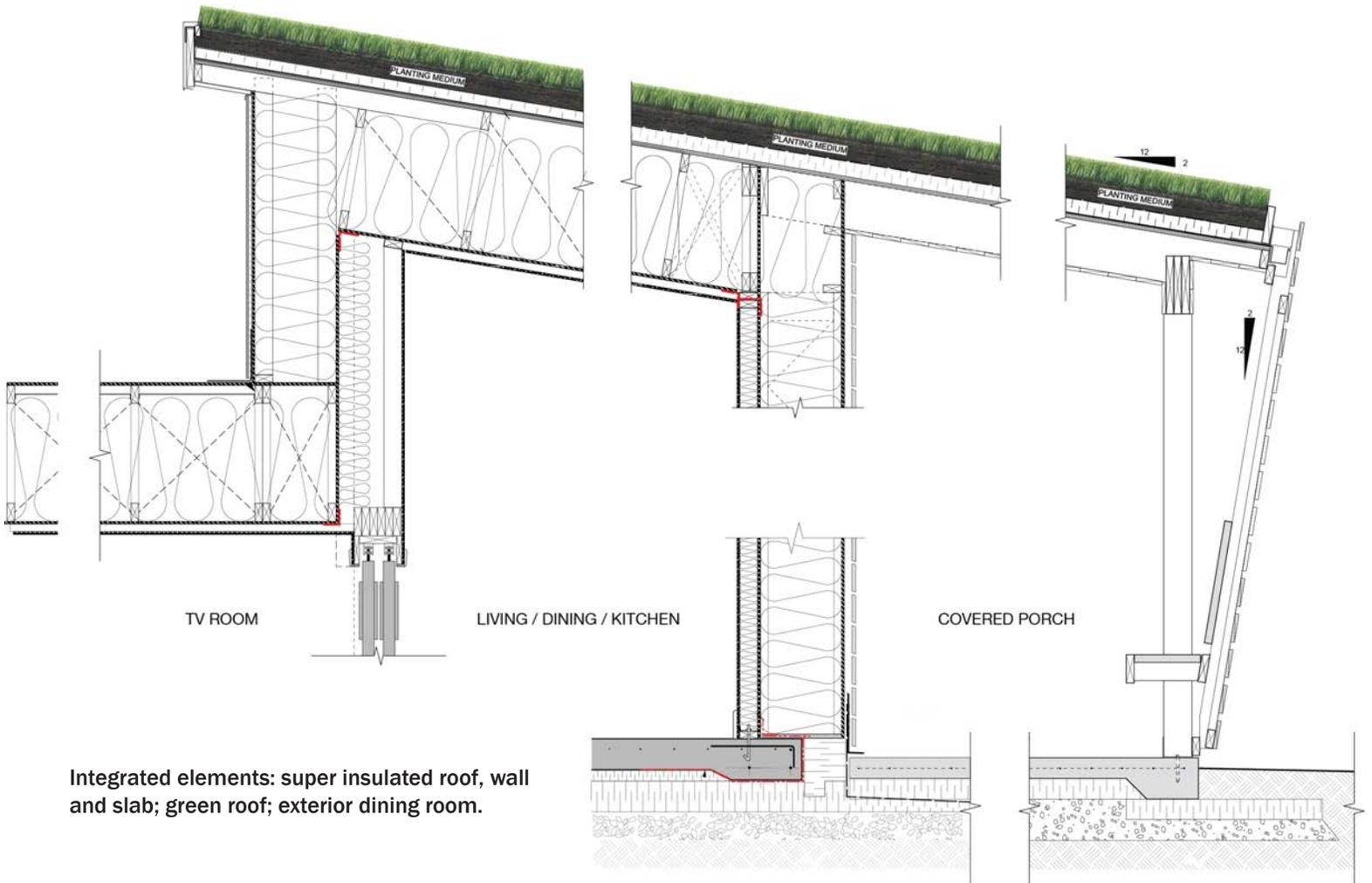
Chimney surround also houses wood storage for the high-efficiency wood stove located steps from the door.

Solar-Powered Construction Site:
Remote site forced the project to go off-grid.



SHAPE:

Solterre works with industry partners in making incremental steps toward greener building materials available, while making giant leaps with our own projects.



Integrated elements: super insulated roof, wall and slab; green roof; exterior dining room.



SHAPE:

Materials and Salvage

When selecting materials there are many issues to consider – health, adaptability, life cycle, embodied energy, and resource efficiency. With these issues in mind we often look to salvaged material. Solterre’s expertise in salvage, deconstruction and material reuse has us always looking for opportunities to demonstrate how to easily incorporate salvaged materials into new construction.

A recent project has one of the best lists yet!

“Neighbours still looking for 100 Tonne Trash Pile”

500 bags of cellulose insulation: 6.8 tonnes
Recycled blue bag glass in septic field: 77.0 tonnes
Recycled window glass in slab-on-grade: 17.0 tonnes
Salvaged walnut and oak doors (18 total): 2.2 tonnes

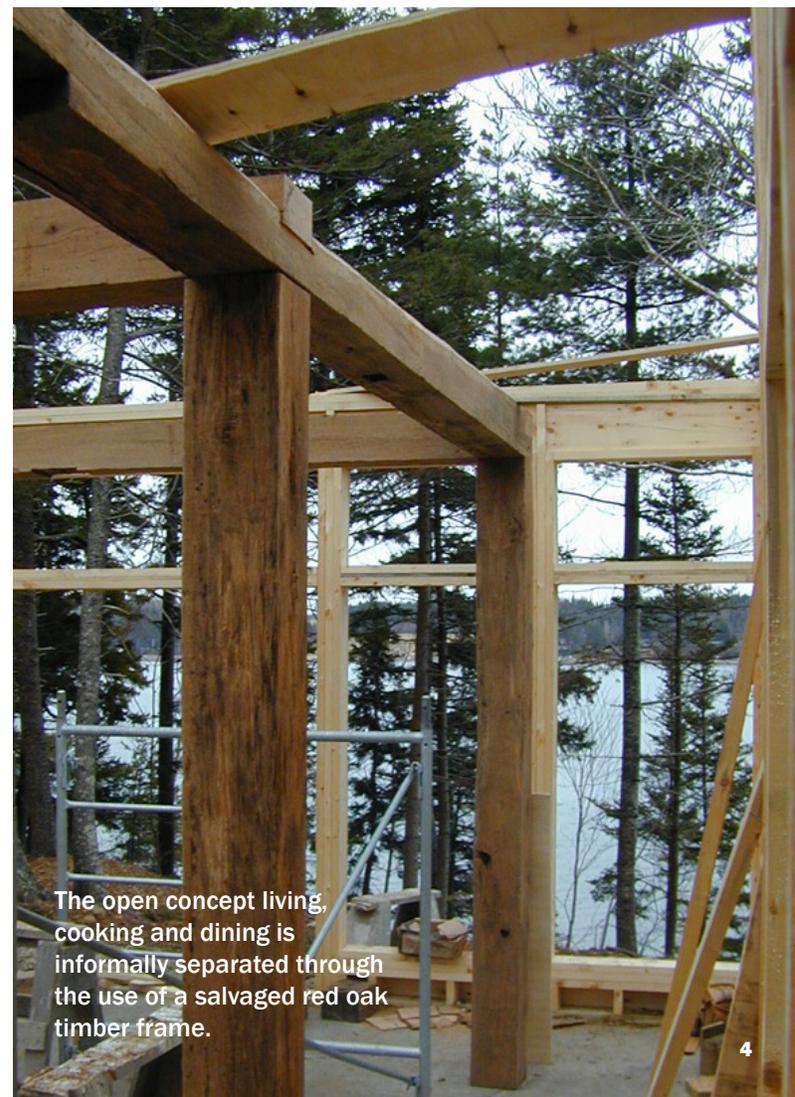
PLUS:

- Salvaged wood trusses for wall insulation
- Salvaged wood flooring from c.1800 farmhouse for window trim
- Salvaged hospital metal cabinet for kitchen

- Salvaged industrial stainless counter for kitchen island
- Salvaged exterior signage panels for shower wall enclosures
- Salvaged wood flooring for kitchen upper cabinets
- Salvaged metal shelving for wood stove backer wall
- Salvaged light fixtures refit with LED bulbs
- Salvaged plywood panelling for walk-in closet
- Recycled strawboard panels for bedroom, and tv built-ins
- Salvaged marble slab for patio tabletop



The 12- to 18-inch walls of this LEED Platinum house pursuing the PassivHaus energy standard were built with salvaged floor joists and packed with 500 bags of recycled newsprint insulation.



The open concept living, cooking and dining is informally separated through the use of a salvaged red oak timber frame.

SHAPE:

The most direct environmental impact that any building has is the energy used to run it. One of the great benefits of super insulated envelope, the house will never freeze, even without a heating system. Passive solar energy, collected through large south-facing windows keeps the house at a stable temperature and prevents the pipes from freezing, even if the house is unoccupied for long periods of time in the winter.



South facing windows provide passive solar heat through the winter and careful placement of operable windows give ample natural ventilation during warm months.

This project has no fresh water on site and ambitious energy goals to meet the Passivhaus Standard. These constraints led to an efficient building form with a dynamic roof, shaped to collect rainwater.



STUDY:

Researching Results

Monitoring Solterre's Performance

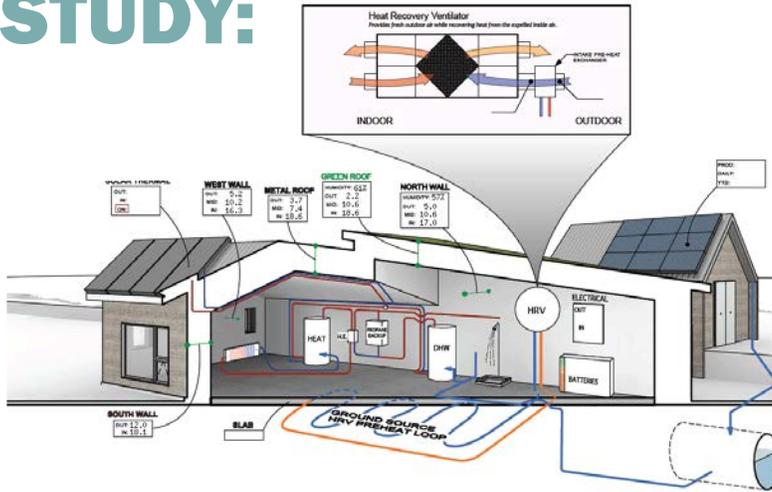
In order to better understand our projects we monitor and verify the performance of our built work. We study our buildings during construction and post-occupancy in an effort to quantify the ongoing environmental impact of housing and to assess how buildings evolve to meet users' needs. The extent of our research varies with each project, from, at a minimum airtightness testing during and after construction, to the development of a residential "lab" for students of the Energy Sustainability Engineering Technology program at the Nova Scotia Community College.

Through the NSCC Pilikan Project, the Energy Sustainability Engineering Technology students are able to get hands-on experience in the emerging green technology field in a building designed to the best green building and energy-efficiency standards available.



First installation of blue bag glass in certified septic field.

STUDY:

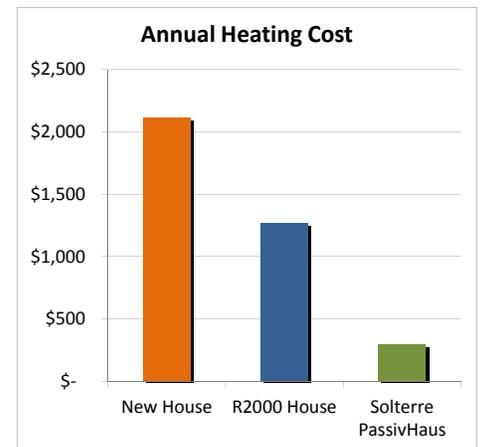


Solterre developed this diagram to clearly communicate real-time building performance on a public website (<http://www.welserver.com/WEL0634/>)

The opportunity to collect and study energy and performance data while collaborating with tradespeople, students and energy specialists allows for further understanding and improvement of building assemblies and systems. New green building materials are a continual source of test products.

Annual Heating Cost

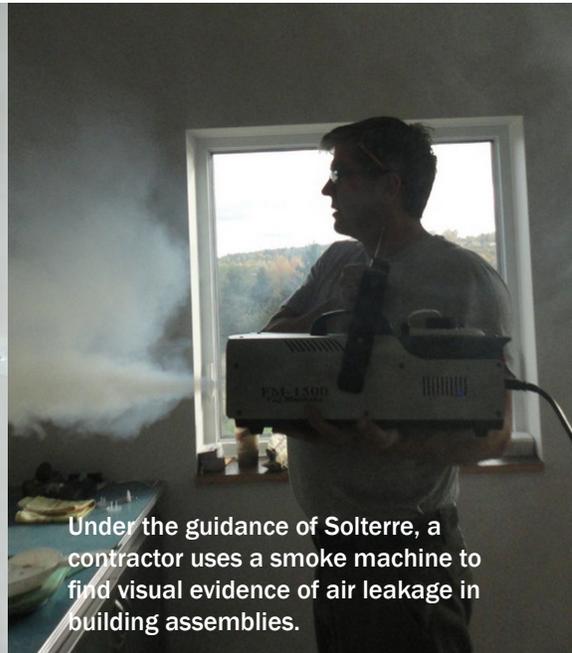
| | |
|---------------------|--------|
| New House | \$2113 |
| R2000 House | \$1258 |
| Solterre PassivHaus | \$ 297 |



This chart shows the cost of heating a 1700 square foot home, according to 2011 Statistics from the Nova Scotia Department of Energy.



Solterre regularly works with third-party testing agencies to measure air tightness of building assemblies.



Under the guidance of Solterre, a contractor uses a smoke machine to find visual evidence of air leakage in building assemblies.

PASSIVHAUS & LEED:

In an age where green-washing is abundant, Solterre shows that the proof is in the pudding by having their projects third-party certified by rigorous ratings systems such as LEED Canada and PassivHaus. These programs are widely accepted as the leading force behind moving all construction and renovation projects to be more resourceful, responsible and accountable.

Current Count:

LEED for Homes:

2 Platinum, 1 Gold (multi-unit residential)

Other LEED non-residential:

24 certified, 40 pursuing certification

PassivHaus (PHIUS):

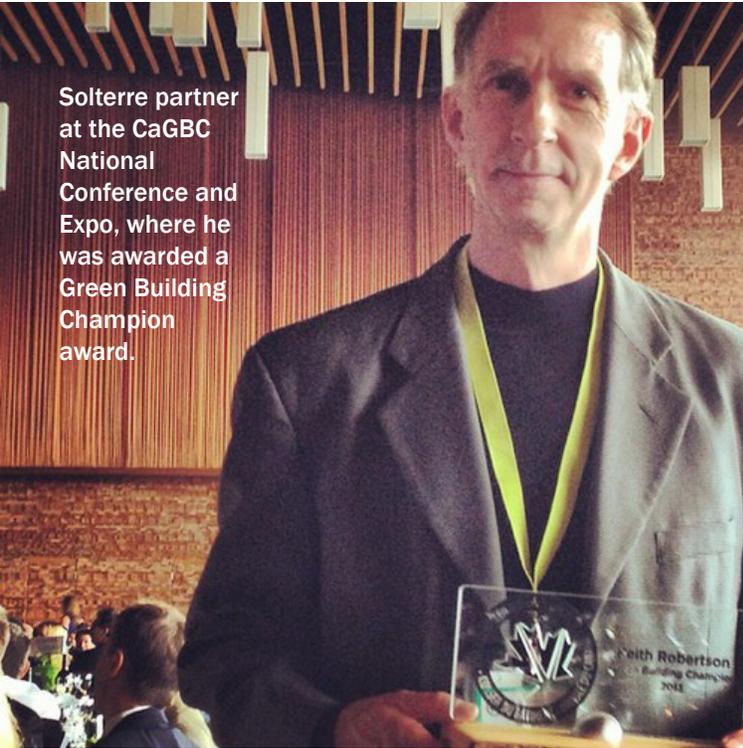
1 certified (1st Commercial PassivHaus certification in Canada)

3 pursuing certification



SHARE:

Solterre partner at the CaGBC National Conference and Expo, where he was awarded a Green Building Champion award.



Solterre President and Co-Founder wins the CaGBC Green Building Champion Award!

In his nomination letter to the CaGBC Architect John Crace called Keith "the godfather of green building in Atlantic Canada". He went on to say "Over the past 20 years, Keith's commitment has been a legacy of sharing his abundant knowledge with almost every association, school and organization with an interest in greening the built environment, or of supporting a healthy, resilient and sustainable future. In his professional life and accompanied by his wife, Jennifer Corson, under the banner of their company, Solterre Design, Keith has been a mentor, tutor, and leader to his colleagues and the next generation of green building designers and advocates".

The Kids are Alright:

The best part of our day at Solterre is to share our work with...well just about anyone! The most enthusiastic are typically students. Elementary classes come for tours of our houses, to post-graduate studies work-term students practicing in our office. Most school curriculums challenge students to consider new ways to live lightly on the earth and we're glad to show them Solterre's own examples.

Fourth grade class from Halifax Independent School learning about high performance housing and integrated green technologies at a Solterre project.



Class presentation including Concept House and other renewable systems such as biomass, tidal, solar and geothermal.

SHARE:

Global Interest:

When Solterre first established a website, clients came from afar. We were found and hired from England and Israel that first year alone. We continue to work with clients and organizations around the world. In 2014, we will collaborate on a Sustainable Housing in Remote Communities session in Mexico, design a Passive House in St. Pierre/Miquelon as well as initiate a volunteer project in Ghana, Africa.



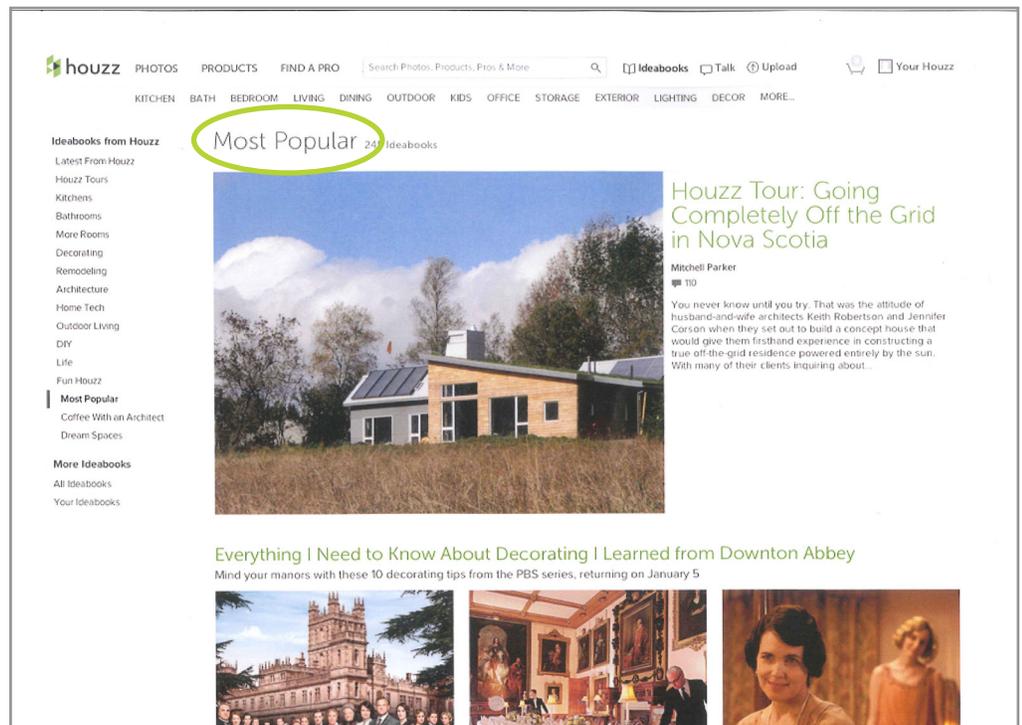
Reach:

To our surprise and delight, emails and calls have been pouring in from recent press on national news programs (CBC), local newspapers, and a US-based on line housing websites, Treehugger and Houzz. Not to our surprise is that people are interested in all aspects of passive solar and energy-efficiency. Evidently, the Houzz article hit such a pulse that we even positioned ahead of our Solterre crew's favourite series, Downton Abbey! See proof here

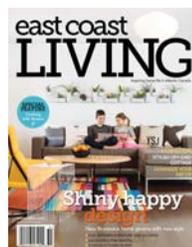


More: Concept Cottage makes a splash in East Coast Living Magazine!
www.eastcoastliving.ca

www.solterre.com



www.houzz.com





In its simplest form, consisting of a ring fixed in the plane of the equator and a sphere at its centre, the armillary sphere is one of the most ancient of astronomical instruments. Shadows are used as indices of the sun's positions as well as solar solstice and equinox. This sundial, located near Zealandia, Saskatchewan, was built by iron craftsman John Little of West Dover, Nova Scotia. As the basis for our logo, the armillary sphere is emblematic of the sun and earth, from which Solterre derives its name.

The Big Small

Wow. One of my absolute favourite tours so far on Houzz. Congrats to Solterre for pulling this off on a reasonable budget. I'm sure the folks at CanPHI are pleased to have another great project submitted for certification. The building science, energy nerd in me is dying of curiosity. The article comments on airtightness challenges - did they overcome them? And I couldn't help but notice the vaulted areas - did this increase in volume prove a challenge for meeting space heating requirements under PH? Were windows also sourced in Canada? Just wondering (if they are willing to share) what kind of numbers they came out with in the end for ACH and kWh/m²a. Thanks for sharing. Really enjoyed it.
January 5, 2014 at 11:59pm Like 12

cynthiamorrison

Thank-you for helping to save the planet!
January 6, 2014 at 7:02am Like 4

oldblackdog

What an exciting property! I love when ingenuity that also serves conservation is highlighted in Houzz. And thanks for showing the footprint and home layout, which makes it easier to visualize the spaces. Having been to Lunenburg on one past trip (we went to the annual fair - I remember scallop shucking and oxen-pulling competitions) I have a sense of its charm.
January 6, 2014 at 7:08am Like 5

oldblackdog

And - it's also refreshing to see a moderately small home highlighted. Not a 150 sq. ft. box; not a 2700 sq. ft. "weekend cabin" but something that does not have a big footprint, or a big carrying cost. One more plus here - Thank them for sharing their budget - that's a rarity.
January 6, 2014 at 7:12am Like 28

J & D Interiors

I love the great use of recycled products in your home! Good job on creating a LEED Platinum project!
January 7, 2014 at 1:44pm Like 4

River Architects

Solterre, thanks for clarifying and answering our questions. Great work and good luck the PHIUS consideration on the air tightness rating. I hope you present it at the PHIUS annual convention! I am glad to see compelling design entering into the PH body of work. Beautiful projects like yours will go much farther in bringing PH to mainstream!
January 7, 2014 at 2:26pm Like 2

mila_lolaa

loving the creativity.....wish more people would try this in Nigeria
January 8, 2014 at 1:12am Like

catsinn

love this house, would live off the grid in a second if I could for so many reasons. i live in Nova Scotia and love it, maybe one day I will do it. thanks for sharing your home and ideas.
January 8, 2014 at 2:38am Like 4

soji

Awesome article. It's nice to see such homes are actually achievable in Canada. I live in Toronto, so I am sure costs will be a little higher, but your cost breakdown provides great insight. Thanks.
January 8, 2014 at 3:26am Like 2

georgepav

Love it, Love it, Love it. Great space, awesome facade and every 2nd home should be required to be so energy efficient. Bravo!!
January 8, 2014 at 3:32am Like 2

Emily Larochelle

What a wonderful article. Firstly, that it's Canadian, and secondly the construction details are very interesting and nice to see. As a construction company, it is wonderful to see how people can use materials in new and exciting ways - while being environmentally conscious. Including the cost breakdowns is also a very helpful tool, as that is one of the first questions to ask. Thank you!
January 8, 2014 at 5:24am Like 4

msalchert

Beautiful! Inspiring!
January 8, 2014 at 7:04am Like 1

gregbaker

Bravo! Well done on many levels. Thank you for paying forward your experience.
January 8, 2014 at 7:17am Like 2

duckice

Again, so refreshing to see a local article that is inspiring and beautiful in so many ways. Truly is a wonderful Concept. Let's see more features on Maritime dwellings and associated ingenuity.
January 8, 2014 at 8:24am Like 1

2B Design

Great job, beautiful house!
Critics be damned!
I love to see Architects/Builders leading by example.
January 8, 2014 at 9:05am Like 4

megconway

This is exactly what potential homebuilders need to see. The architects themselves building a home with the technology that allows them to be "off grid", and allows everyone else to see that it works; and it looks beautiful.