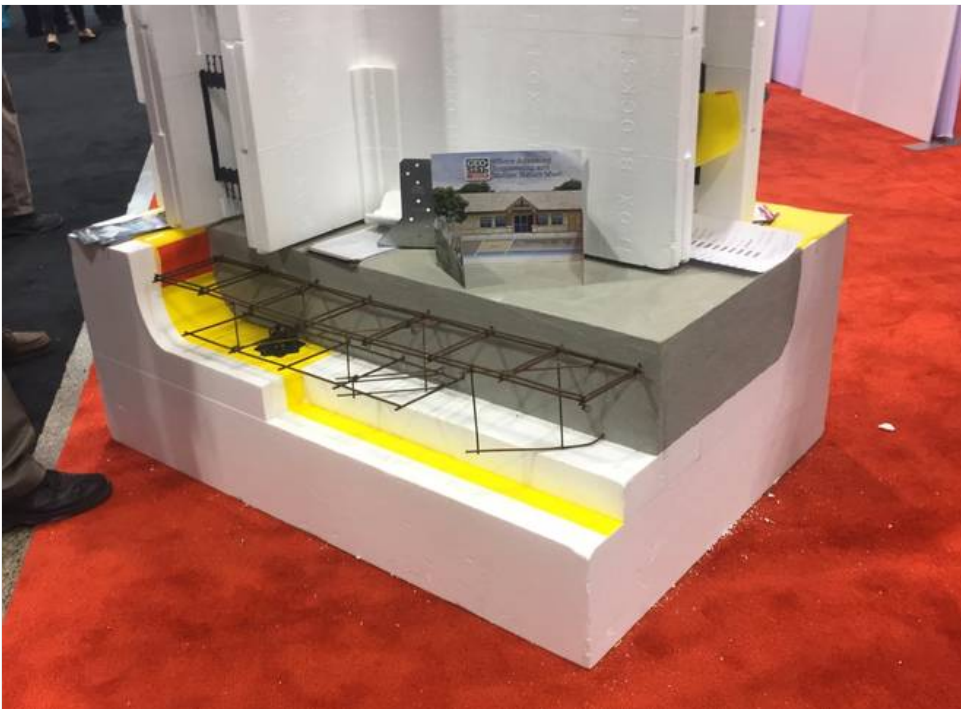


# Floating foam foundation insulation system from Legalett wraps house from bottom up



Lloyd Alter (@lloydalter)  
Design / Green Architecture  
December 2, 2016

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CC BY 2.0 Lloyd Alter/ floating foam foundation

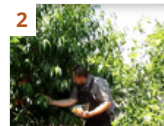
It has been a mantra of TreeHugger that where possible, **it is better to build foam free**. Plastic foams are sometimes made with blowing agents that have **serious global warming potential**; they are made from known carcinogens and they are treated with **toxic flame retardants**. I have been **called an idiot** so many times by people who point out that foam insulation works really well and that it pays back the carbon and greenhouse gas footprint in short order. But over the last few years it has become common for green builders to reject foam, especially as alternatives like rock wool became available.



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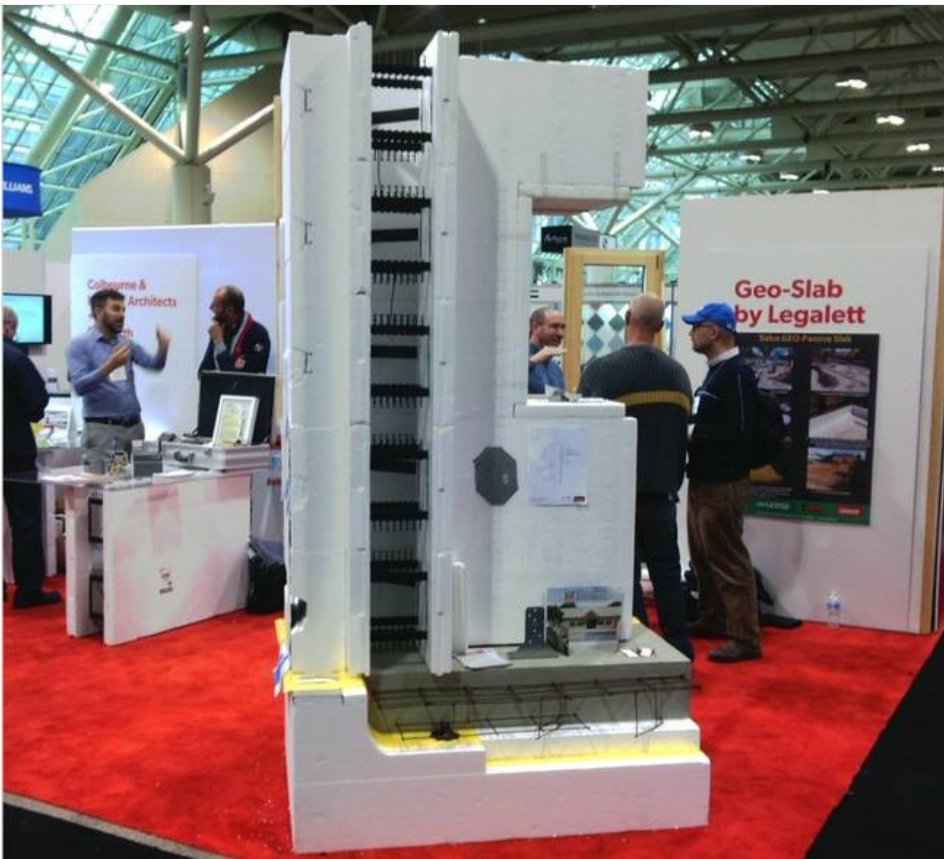
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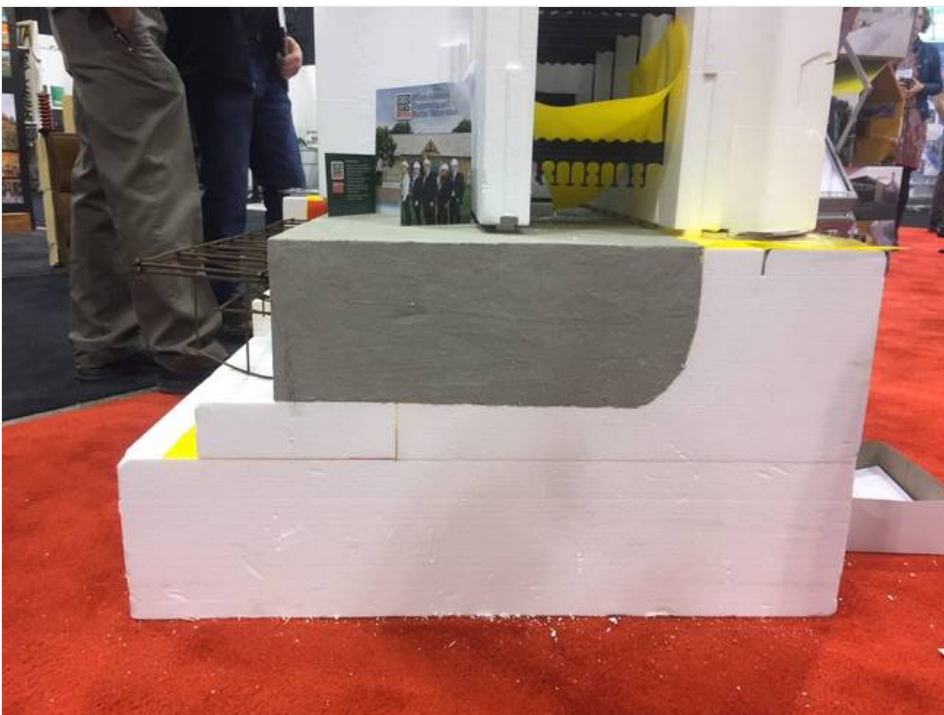
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But there are some serious advantages to foam that can make a TreeHugger think twice, especially when one is talking **Passive House**, where one needs a lot of insulation and avoiding thermal bridges is a very big deal. **Legalett**, originally from Sweden but now in North America, has developed a floating foundation system that eliminates the frost walls that always are a difficult thermal bridge; the concrete slab is floating in a bathtub of expanded polystyrene foam.



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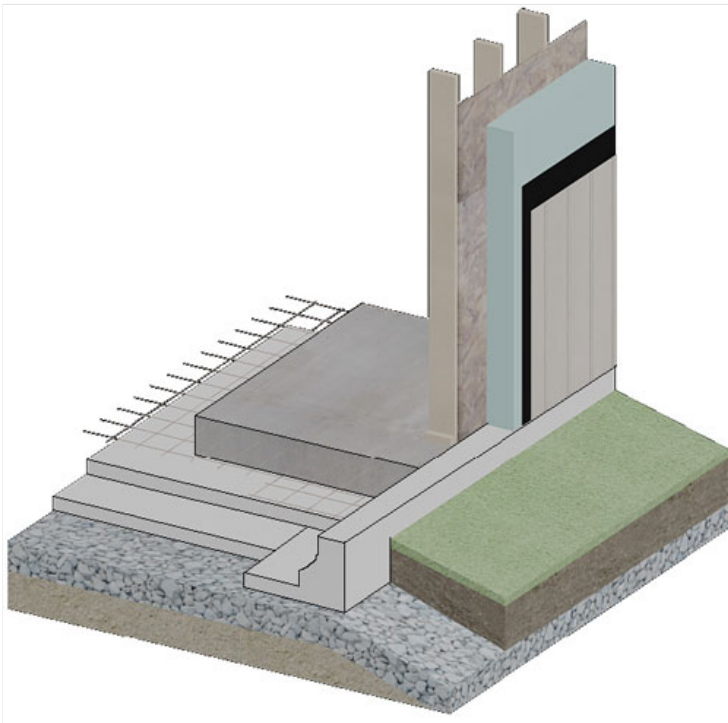
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There is a big custom shaped piece of foam at the edge that curves around the edge of the slab so that the exterior insulation can just keep going up the wall with no thermal bridge at all.



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EPS is one of the more benign foams because they use pentane as a blowing agent, which is not a significant greenhouse gas. In some cases it is available without flame retardants, and apparently, according to Duncan Patterson of Legalett, "as of next month, all EPS manufacturers are switching over to a different (less toxic) flame retardant which is the retardant more commonly used in Europe. "

Passive House Slab Insulation Design ICF GEO Passive LEED Plati...



The system was used on a big Passive House multifamily design in Ottawa, Ontario this year, a four storey, 42 unit affordable housing project. "The continuous edge form

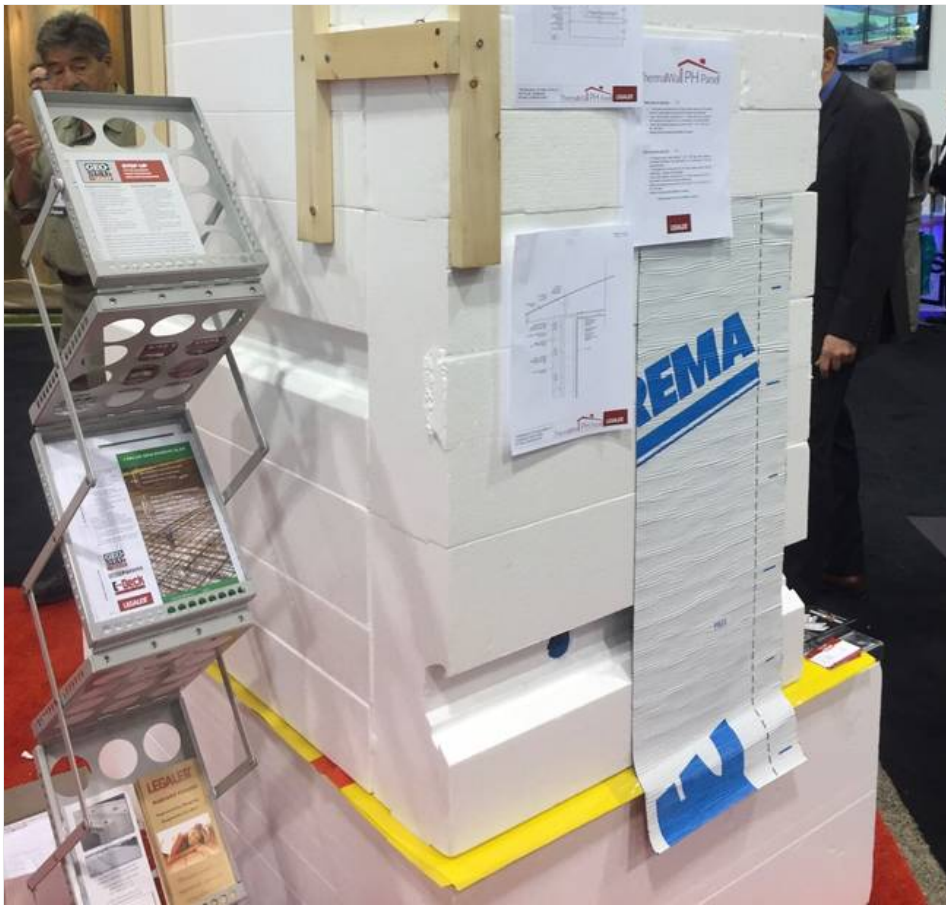
eliminates thermal bridging and provides maximum air-tightness for your building envelope between the foundation and wall.”



Lloyd Alter/ Thermal wall /CC BY 2.0

It actually gets more interesting as you come up above grade, where they have developed a new product, so new that it is not on the website yet, **just added to their website**, being shown for the first time at the Passive House pavilion at the IIDEXCanada show. This Thermalwall PH panel, designed for Passive House, is a block of EPS foam with a special removable piece covering a steel channel. It can be any thickness, but is shown here at 7", giving R-28 on top of whatever the structural wall behind is. (They are showing insulated concrete forms but it could be anything)

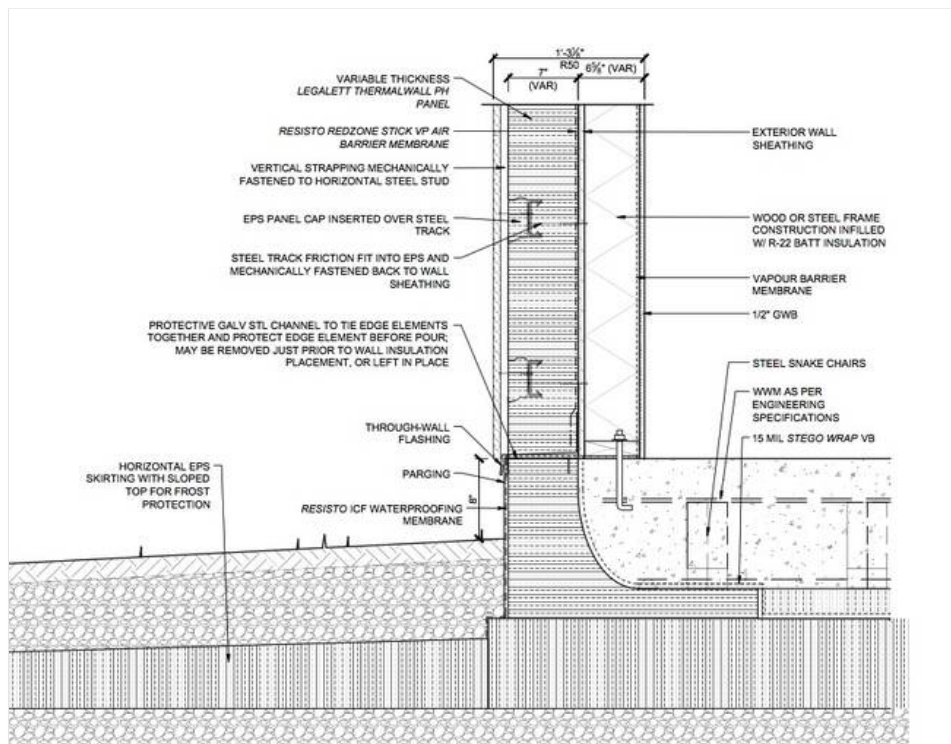
So the builder simply screws through that steel channel into the structure and then snaps the other piece of foam back in, and you have a continuous wrap of foam with no thermal bridges at all, not even the screw itself.



Lloyd Alter/ Legalett wall system/CC BY 2.0

The builder then screws exterior strapping into that channel as well; the steel channel is buried in foam and there is a fair distance between screws, so there is not much of a bridge there.

If you compare this to what [Susan Jones had to do with very long expensive screws](#) or what [I had to do with Cascadia Clips](#), both of us trying to hang siding six inches out in the air so that we can insulate with Roxul, this is a lot easier.



© Legalett

I do often foam at the mouth about foam insulation and have always promoted alternatives. But this system really does provide a continuous wrap of effective insulation from under the foundation to the roof. It is going to be pretty airtight too. It is such a simple system that makes a very good case for the stuff.

More information [at the Legalett website](#), where they also devote a lot of space to an underfloor radiant air heating system, but if you have this much insulation, that's serious overkill.

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