

Building In & Building Out: Lessons Learned from Deep Energy Retrofits

Q&A with the Presenters

Anna Heath, Jesper Kruse, and Jennifer Hatch

Questions are organized by topic:

- Building Material (1-12)
- Building Process (13-19)
- Insulation (20-24)
- General (25-27)

1. Can you post a product list somewhere?

- a. Intello-interior air barrier, D.A.- interior air barrier, Mento-exterior WRB, Lunos e2 (for living spaces) and eGO (for kitchen and bath), TJI-floor joists/larsen trusses, Stego- 15mil yellow vapor barrier, Vana tape- companion to mento (we use for many applications), Stego tape (red tape on Stego vapor barrier)-although we were recently recommended Pro Clima's Compego tape as a substitute.

2. How much of ventilation can Lunos provide? Can they be used for multi-family or commercial?

- a. Between 10-22 CFM. Check this link: <https://foursevenfive.com/lunos-e/> Yes should be okay in multi-family or commercial, but I would use a centralized unit if possible.

3. Where are you buying your Roxul from?

- a. My local lumberyard. I think it changed its name to Rockwool.

4. Where does wood fiber fall on the carbon impact spectrum?

- a. It's one of the best materials I believe.

5. What is the siding on Jesper's house?

- a. Reversed board and batten (1x4 and 1x10 rough cut pine. And cedar claps stained with Seal Once and a black tint.

6. Name of yellow vapor barrier product?

- a. <https://www.stegoindustries.com/products/vapor-barrier-15-mil> They also make a 10 mill.

7. What do you use for lateral bracing without plywood?

- a. Simpson Strong-Tie Galvanized Steel Wall Bracing TWB12.

8. What kind of finish is on the exterior EPS?

- a. On the foundation of my house it's slate pavers. Behind siding or underground, none.

9. Are you working w/ 475 for your air barriers, lunos, etc?

- a. Yes.

10. What do you use for spot ventilation with the LUNOS?

- a. We use Lunos E2 in living spaces and Lunos Ego in bathrooms and kitchens.

11. Jesper: You switch from DA at the inner part of the wall to Mento on the outside of the TJIs. Why did you change products? I don't know DA as well.

- a. DA has a very low perm rating and won't allow moisture to get into the wall cavity. Mento has high perm rating and will allow moisture to escape if it gets inside.

12. I still wonder if taped air barriers work 30 years out.

- a. My experience with the Pro Clima products (vana tape, mento and Intello) is that the bond only gets tighter and stronger the longer it's attached.

13. Anna: do you want to comment on work flow for the roof assembly at OxBow, where carpenters are doing the first layer of strapping without a traditional plywood deck to stand on? I was always scared the carpenters would hate me. :)

- a. We had to stand inside the TJI bays for the first few runs (because the old barn boards could be soft it was all about strategic foot placement on the bottom 2x of the TJI). Usually what we will do is lay a short vertical stretch on every truss, maybe 6 feet, then we apply two runs of horizontal strapping across the entire length. At that point we can use the strapping as a ladder (with caution) and continue up the roof.

14. Is it possible to attach the strapping without penetrating the WRB?

- a. We haven't found a way yet, however, our solution are those batten boards in between the bays to help draw any moisture away from those penetrations along the trusses.

15. How do you address the need for ventilation of a commercial kitchen with the desire to maintain airtightness?

- a. Big fat ERV system. All heating and baking is in the pizza oven, no stove in the kitchen so no commercial exhaust either.

16. Was the overhang overbuild essentially (on Jesper's house) a T-shaped cross section, with the flange lapping over the roof into the strapping layer?

- a. Otherwise I would have had no overhangs, and I really like that for the sake of sheading water away from the building.

17. Many HVAC-Subs like to tie the ERV to the Central Ductwork - Any thoughts?

- a. With a high performing home we normally don't use centralized duct work for heat distribution so I have no experience with that. But the idea is to use your \$ on the envelope and install a simpler and cheaper heating system.

- 18. How do you evaluate the energy performance and/or effectiveness of the retrofit construction, do you use a program such as OpenStudio or do you have another method?**
- We use PHPP (Passive House Planning Package). No real program in place to monitor performance, but we should set something up.
- 19. Expense of building in vs. building out?**
- Building in is cheaper I'd say.
- 20. Yes, insulating the foundation and wrapping vapor barrier from there over outside wall is a concern. Termites?**
- We have put termite shield up in some situations.
- 21. I was interested in whether the brewery could have used insulation on the frost wall instead of the slab to reduce energy transfer in the slab.**
- You definitely want insulation under the slab. Yes it's "only" 40F, but it's always 40F so it is always cooling.
- 22. How to insulate outside foundation walls and then protect that insulation.**
- We use painter sheet metal a lot. On my house we used slate pavers. We have also used granite landscaping steps which looked super sexy, but also expensive.
- 23. Since your air barrier is behind your insulation how much of an energy penalty are you paying due to wind washing?**
- None, since we treat our WRB as an air barrier as well so that's always taped really well with the same meticulous details.
- 24. What's the importance of having the air barrier in the interior 3rd of your insulation?**
- So warm moist air doesn't move so far into your wall cavity that the temperature makes it condense.
- 25. The beer garden is gorgeous, Have you presented it at a Passive House Accelerator Happy Hour?**
- Thank you! No, this is our first presentation with it. Definitely interested though.
- 26. For general information, would these retrofits come under any credit of LEED rating systems?**
- I have to admit I know next to nothing about LEED.
- 27. Is there data on energy reductions?**
- Not yet, sorry. Probably around 75% for my house, and no idea in regards to Oxbow.