

Thinking outside the wood box Saves \$1000's on in-floor heat project



Project:

Creating a warm environment for this new 42,000 square foot pallet manufacturing facility took some real ingenuity. Using a wood burning stove and an in-floor heating system, will save money on heat and reduce wood scape from the manufacturing process.

In-floor heating systems work best by allowing the heat to rise up through the floor and warm the space above. Energy could escape and migrate back into the ground, but by using DuraSpec Expanded Polystyrene (EPS) Foam, it reduces that heat transfer making the system much more efficient.

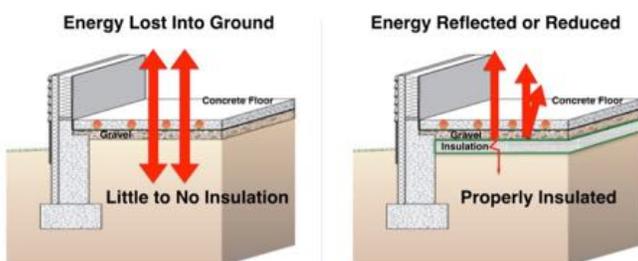
Product:

DuraSpec Below Slab EPS Foam was used for the insulation which required a density of 25 psi or the compressive resistance capability of 3,600 pounds per square foot. 4' x 8' sheets were installed over a vapor barrier. On top of the foam was a layer of reinforcing mesh, 46,000 linear feet of 3/4" pex tubing and 6" of concrete.

The 350,000 BTU Top Loading Wood Burning Stove was installed 85' from the building next to 3 separate operation bins for ashes, wood pile and fuel for machinery loading. The 85' supply lines are insulated to help reduce heat loss.

EPS was used because it is good insulator and its R-value stays consistent with no help from harmful chemical blowing agents. In field studies, EPS has been shown to absorb **less moisture** than previously considered. In fact, EPS absorbed only 1/2 of a percent (.005) over 15 years in a below grade field study. Expanded Polystyrene has the great property of allowing moisture to expel out. EPS insulation exhibited drying potential under severe exposure conditions while other rigid insulations like XPS, did not.

Heat Transfer





Insulating supply lines using EPS



Tom Eakes surveys insulation and pex installation

The Challenge:

Breaking away from the norm and thinking out side the box is what Lumber Sales & Products, Jackson, Wisconsin strived to accomplish. Using a wood stove and in-floor heating is beyond normal construction and took special design and engineering.

Instead of using the traditional pink or blue XPS insulation, Engineered EPS was used as the insulation beneath the concrete to dramatically help save energy. Not only does the EPS work better, but the cost savings was almost 30%. The cost savings for just the insulation was over \$15,000. In addition, the saving on the supply lines, using EPS, was \$7 per linear foot.

Often these types of projects are specified using XPS insulation because of the myth that EPS is not as good or somehow the hot water running through the pex will melt the insulation. The reality is EPS is a far better product in this application and the cost saving is just an additional benefit. Once the merits of Plymouth Foam Engineered EPS systems are reviewed, the substitution is usually welcome and accepted.

Project Participants

Owner: James Francois
Lumber Sales & Products James Francois JR

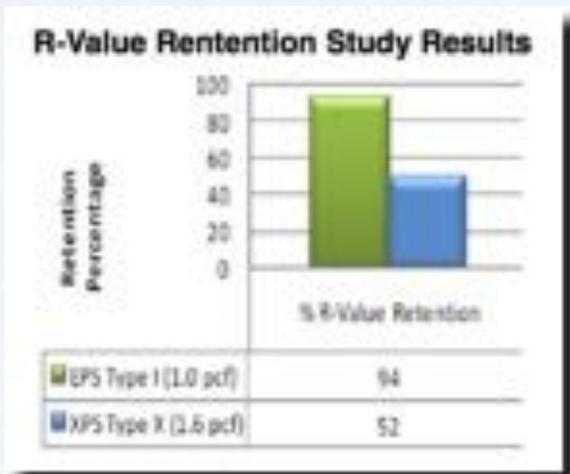
General Contractor: *Shawn McLaren*
 Design 2

Heating Contractor: Tom Eakes
 In-floor heat, insulation and wood stove

Common Applications for DuraSpec Below Grade Insulation:

DuraSpec Below Grade insulation has superior strength-to-weight ratio, great R-value performance characteristics, low moisture absorption and does not leach into surrounding soils. This product for a wide range of below grade applications including:

- Foundation wall insulation
- Below slab and in-floor heat
- Perimeter foundations
- Insulated footers
- Utility protection insulation
- In-fill and void replacements



DuraSpec Building Products

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