

Another Shade of Green



By *Keith Lindemulder*

We've looked at the thermal properties of cold-formed steel as a structural component of a building. We also compared some different ways R-values of wall assemblies are calculated in an effort to help make comparisons of materials a bit easier. And we need to remember that steel conducts heat far more efficiently than other commonly used building materials like wood or concrete.

It's common practice in the building industry to adjust how the structure it built to accommodate the differences in the climate. A good example is the foundation of the building. In the southern US, the weather never gets cold to freeze much below the surface of the ground. However, the farther north you go, the deeper the frost penetrates the soil. Likewise, the deeper the frost line, the deeper the footings need to be to prevent foundation damage and performance problems. The same types of adjustments are made with insulation and thermal treatments.

In cold climates it's necessary to install a 'thermal break' with cold-formed steel construction to prevent the studs from creating a bridge between the exterior and interior surfaces of a wall (or ceiling). Usually, rigid foam sheets are applied to the exterior side of the wall either over the sheathing material or in place the sheathing material. This way there is a continuous thermal barrier between the wall studs and the exterior side of the wall.

The International Energy Conservation Code includes a map where each county in the US is put into a climate zone. Each climate zone has specific minimum criteria for insulation R-values depending on construction type, window efficiency and even heating and cooling equipment efficiency. This allows a builder to be able to prescriptively determine what's required to build a building in any part of the country.

Generally speaking a cold-formed steel wall will require either a higher r-value insulation or, more commonly, will require exterior rigid foam sheathing to overcome the higher conductivity of steel. There are several alternative methods being studied such as putting the thermal break in the interior surface or even increasing the r-value of the exterior foam to eliminate the batt insulation in the wall cavity.

Nucor steel mills processed around 20 million tons of scrap steel in 2008. To put that into prospective, if all that was made into 24 gauge 3-1/2" NUFRAME or NUTRUSS2.0 material, it would circle the equator about 550 times! That's a whole lot of steel!

Have a SAFE and Sustainable week!

Reduce!

Reuse!

Recycle!



STEEL
IS THE NEW GREEN.



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