



GREEN PIECES THE SCOOP ON SUSTAINABILITY 2009



the slab to the roof, with a continuous barrier of either .08- or 2- pound foam insulation. “Even the speaker boxes are insulated,” he gushes. He then installs triple-layered glass windows with argon gas fills between each layer to reduce convective air movement and low-e coatings to reduce radiant heat flows. And the fresh air that does enter the home does so on the homeowner’s terms, through energy recovery ventilators that retain heat and filter incoming air for maximum comfort and high indoor air quality.

But perhaps most impressively, to reduce the flow of air through the walls, Trolle has gone to great lengths to reduce the amount of wood (studs, plates, and headers) that actually touches the sheetrock, thereby increasing the area he can insulate behind it. “Wood is a mediocre insulator,” says Trolle. “And 25 percent of a typical wall is wood, with no insulation behind it.” So Trolle spaces his wall studs 24 inches apart, rather than 16 inches. He also attaches the sheetrock to small wooden bridges that come off the studs, which allows for thicker walls (more insulation) and less wood exposure (from 25 percent to only 5 percent.)

“This wall is an air-tight R-31,” he says proudly. It’s true that you may not understand all the words that Trolle and his BPC team use. But when you get your first utility or heating bill, the meaning suddenly becomes clear. ✿

Green Speak BY DAN BRIODY

BPC Green Builders and the language of building science

Mike Trolle is what you might call a green-building geek. And he’s okay with that.

“What matters most to me is building science,” says Trolle, founder of BPC Green Builders. “This business is about physics; about the relationships between air, heat, and moisture. You may not need a Ph.D. to build a house, but there is a science to it.”

For the last ten years, Trolle, a former teacher, has been on a quest to master that science, and construct homes that are comfortable, healthy, safe, and fantastically energy efficient. He has built homes

with geothermal heat; homes that harvest rainwater; homes with solar systems; and homes that were certified by the American Lung Association. He is fluent in the language of building science, unafraid to pepper casual conversation with references to pascals (a unit of force), U- and R-Values (measures of thermal resistance), and VOCs (air pollutants).

Trolle is quick to point out that while sustainable materials and renewable energy systems are important, it is the science of building that is the backbone of green homes.

In particular, there is one aspect of building that really gets Trolle excited: air leak-

age. As Trolle explains it, it was once thought that houses should “breathe,” meaning that air should pass naturally through walls, doors, windows, and roofs. But air carries moisture with it, which rots wood and spawns mold and mildew. Unwanted air flows also reduce comfort and are expensive to heat and cool when allowed to freely leave the confines of a home. “My job as a builder is to think like air—and then stop it,” says Trolle.

To reduce air leakage, Trolle has a series of weapons at his disposal. In a house he is currently building in Ridgefield, Trolle sprays every surface of the home, from