

Case Study

NCFI 2020 PLUS[®] Insulation System Plays a Key Role in Richmond Home Builder's Energy Conservation Strategy

Location: Richmond, VA

Tomac Corporation, a leading home builder in the Richmond, Virginia area, has used spray polyurethane foam to insulate their custom- and speculative-built houses since 1976. Tom Cauble, President of Tomac, chose to use NCFI 2020 Plus spray polyurethane foam system because of its economical benefits to Tomac home buyers.



Tom Cauble, President Tomac Corporation

"I was interested in energy issues," says Cauble. "We had the gas crisis [in the '70's] and the cost of energy was rising. I went out looking for a method which would give a real return to the home buyer. I didn't want to sell the home owner 'snake oil' energy-saving schemes which simply would not bring a return to the owner. I was looking for an economic

benefit to the consumer with a minimum investment."

Tom Cauble is a graduate of the Georgia Institute of Technology with a Bachelors Degree in Industrial Engineering. Cauble has been active on the state and national scene in advocating energy efficient homes and has served as Chairman of the National Home Builders Association (NAHB) Energy Committee.

With his engineering background and a high interest in energy issues, Cauble sought to offer his home buyers the best energy saving options for the least investment: the greatest bang for the buck.

"The fundamental here," reports Cauble, "is that we were under the gun to build a product which wouldn't be too expensive but still addressed energy issues in a real manner. We looked at a number of systems: Insulation and the thermal envelope; the heating system and equipment. The simplest and most efficient way to save the most energy is to seal it up from air infiltration and exfiltration. Another key energy improvement is to get the ductwork into the thermal envelope."

Cauble decided NCFI's 2020 Plus spray polyurethane foam was the best material to control air infiltration and exfiltration and add insulation to his wall system. "I learned about spray foam from reading and talking to people. The advantages are real, significant, and lasting. It gives the homeowner something that will make his home worth more down the line."

Tomac Corporation builds homes with an R-14+ wall. Their 2x4 stud-wall assembly consists of an impregnated exterior sheathing (R-1.3), a ½- to 5/8-inch thickness of spray polyurethane foam (R-3.3), an R-11

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—Tom Cauble

unfaced glass fiber batt (R-11), a 4-mil polyethylene vapor retarder, and ½-inch gypsum wall board (R-0.4).

"The foam expands into the crevasses and cracks to develop a seal. It's a wonderful infiltration/exfiltration reducer through the walls. By foaming on the inside we've basically reduced that down to zero."

The spray polyurethane foam used in the NCFI 2020 PLUS system is applied after the exterior sheathing is in place, windows and doors installed, and rough-in plumbing and electrical inspections are complete. The foam is a two-component system



A Tomac Home in Richmond, VA

NCFI RESIDENTIAL INSULATION CASE STUDY

which is sprayed as a liquid between the studs onto the inside surface of the exterior sheathing. Applicators spray foam using a "picture framing" technique by applying a cant of foam between the exterior sheathing and the inner stud surface. Then they spray apply the required thickness of foam against the sheathing.

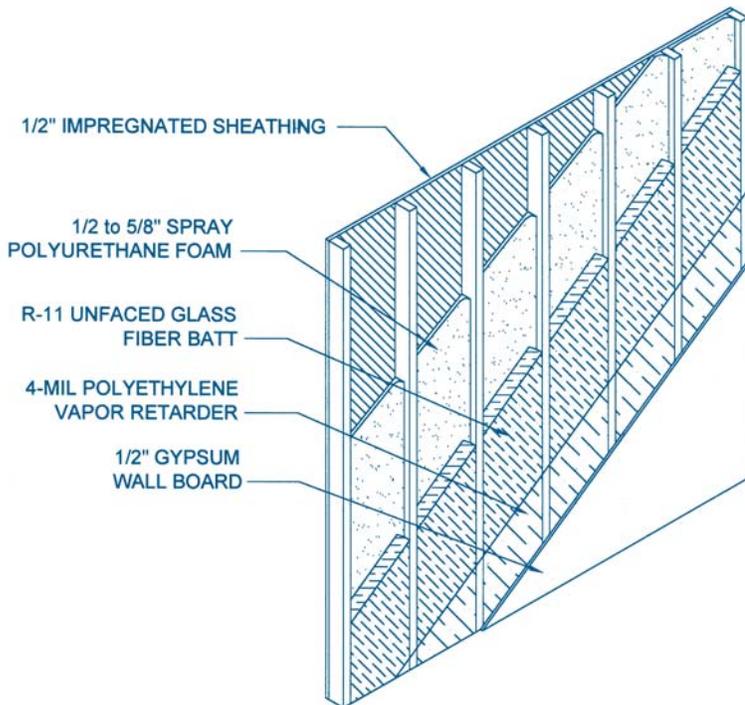
The foam expands and cures in place, sealing all of the cracks, crevasses, and joints in the wall structure. The cured foam forms a rigid, closed cell structure that intimately

bonds the exterior sheathing to the wall studs.

In a study conducted by the Department of Energy and Virginia Power, Tomac's energy efficient homes were compared with other home builder's conventionally insulated homes. "There were two basic house plans being studied," says Cauble. "They were all electric and the energy comparisons were apple-to-apple comparisons. Tomac's homes consumed 44% to 53% less energy than the conventional homes. We attribute this

to our use of foam insulation and keeping the ductwork within the thermal envelope."

The advantages of NCFI 2020 Plus spray polyurethane foam are more than just insulation and creating an air barrier. Tom Cauble describes additional advantages: "The foam is applied right to the studs. Even though it's only 1/2- to 5/8-inch, we're significantly reducing the shear [the tendency for a wall to bend]. Some houses will creak in the wind; our houses don't.



Tomac R-14+ Wall System using NCFI 2020 PLUS[®] Spray Polyurethane Foam



A typical spray polyurethane foam application

WHEN JUST INSULATION ISN'T ENOUGH[®]



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