No furnace required: Energy-efficient 'passive houses' gaining steam

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Judd Blunk's house is like a womb. Although the temperature outside is in the 20s, his triple-pane windows overlooking the Fox River feel warm from inside.

Because there is no furnace, the rooms are quiet. The only sound in the kitchen is the hum of a refrigerator, which along with other appliances, helps supply heat to the airtight 2,300-square-foot Batavia, Ill., home.

Blunk is part of a small movement of engineers and homeowners who are taking President Barack Obama's vision of building energy-efficient homes to another level. They are inspired by "passive houses" in Germany that are so well-insulated and energy-efficient they eliminate the need for a conventional heating system.

Such design could be the future as Americans become more concerned with shrinking their carbon footprints and look at ways to avoid volatile energy prices.

But the method has posed problems in the past. In the late 1970s, passive solar house design was thriving in the United States, fueled by tax credits issued by the Carter administration.

Then in the 1980s, most companies specializing in this design, which sought to maximize heat from the sun, went out of business after credits ran out and designers neglected to put vents in the airtight buildings, causing them to grow mold.

Now engineers say that problem has been solved with "heat-recovery ventilators," which provide circulation and warm incoming cold air with stale air exiting the house.

And proponents of passive-house design are hoping to ride the momentum generated by energy-efficient homes becoming a centerpiece of Obama's long-term energy plan.

In his first weekly address, the president said his economic recovery plan would save the average working family $350 a year on its energy bills by "weatherizing" 2.5 million homes. Experts say the days of relying on a furnace in winter could soon be over.

"I would predict that many of our homes in five to 10 years will start to achieve performance levels of passive house design," said Ren Anderson, manager of residential research at the U.S. Department of Energy's National Renewable Energy Laboratory.

But reaching that level is demanding. Technically, Blunk's house, which uses a water heater as a backup heat source, does not meet the strict German definition of a passive house, which is to use no more than the equivalent energy of running a hair dryer.

Passive houses have exploded in popularity in Germany, in large part because the country has increased taxes on gasoline, heating oils and natural gas.

Katrin Klingenberg, founder of the institute in Urbana, Ill., said that typically, passive-house owners use 10 percent of the energy used in a standard home.

However, there are some financial obstacles to creating a passive house. For one, it costs 15 to 20 percent more to install all the energy-efficient

features, said Marko Spiegel, president of Conservation Technology Inc., who helped design Blunk's house.

Although Blunk estimates the features cost him an additional $20,000, he is beginning to see a return on his investment. But he still needs to convince the gas company, which reads his meter every other month and estimates the usage for the month in between.

His first gas bill estimate was about $200, but after calling his gas provider, he got it knocked down to $40.

Besides saving money, Blunk said he likes that his house enables him to be more "green" than his neighbors.

"My conscience is clear," he said.

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