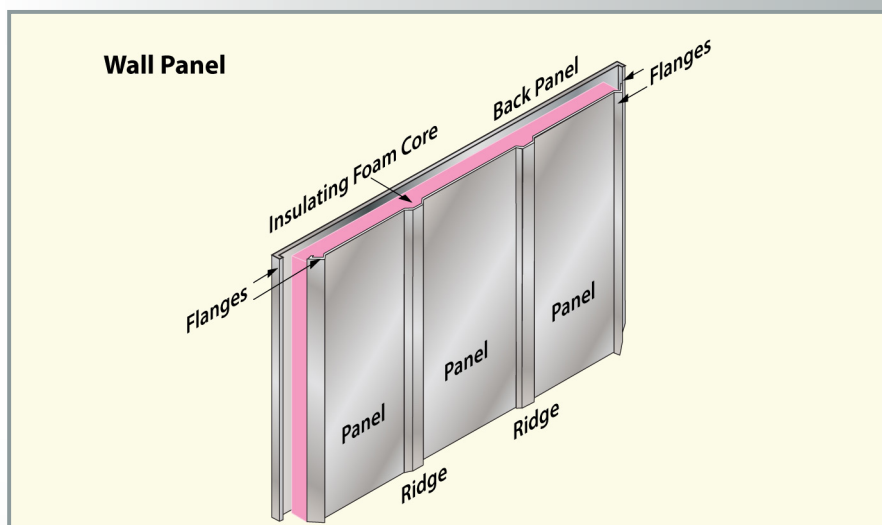


Energy Efficient Panelized Wall System with Foam Core Insulation

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Technology Summary

ORNL research has led to a new wall system technology that is easily assembled, airtight, and extremely energy efficient. Buildings are one of the greatest consumers of energy in the United States, so increasing building efficiency has a significant effect on energy consumption. The invention has a thermal resistance of more than R-20. It is impervious to termites and moisture, lightweight, and, although only four inches thick, is wind resistant to 150 mph. In addition, this wall system lowers construction costs, shortens production time, and reduces long-term maintenance costs.

The wall system includes two steel or aluminum panels, connected to each other with metal rib-like projections to form a core. This internal structural column is a separate component and can be connected directly to the wall. Channel portions are connected to the sides of the metal panels, and a grooved connector anchors the edges of the metal panels to the wall, forming a moisture resistant seal.

Insulating foam can be injected into and between the channels. The foam secures the structural column, while also providing thermal insulation. A wall finish material is mounted to the infrastructure and a phase change material, known to reduce peak loads, is inserted in the cavity between the metal panels and the wall finish material.

Advantages

- Reduces energy consumption (> R20)
- Low maintenance
- Resists termite damage, moisture, and mold
- Withstands winds to 150 mph
- Energy savings estimated between 0.02 and 0.03 quads per year if this technology is installed in 5% of new homes

Potential Applications

- Construction of residential and small commercial buildings.

Patent

Jan Kosny and Sally Gaskin, *Panelized Wall System with Foam Core Insulation*, U.S. Patent 7,603,822, issued October 20, 2009.

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