

Wall Panels Help Combat High Energy Costs

New Thermal Wall Panel Technology Optimizes Energy Efficiency

Concerned about energy costs? It's a worthy concern. Heating and cooling costs represent up to 32 percent of a commercial building's total operating budget, which makes energy efficiency one of new construction's highest priorities. Unfortunately, achieving energy efficiency in new construction is not a standard procedure. If anything, it's a constantly changing science

This much is known: Optimizing energy efficiency is a multi-component, integrated process; it's not the result of a single technique or product. While some aspects are unique to different regions and buildings, certain elements are consistent when the objective is heating and cooling efficiency:

- Adding insulation where needed to create an effective thermal (building) envelope
- Selecting the right heating, ventilation and air-conditioning system for the facility's size, location and function
- Selecting window sizes and glass types that minimize heat transfer
- Choosing a building shell that helps reduce air leakage

- Monitoring and adjusting thermostat settings to coincide with usage
- Scheduling routine maintenance on the building and its heating/cooling equipment

An inadequate building envelope is a leading cause of unnecessary energy use. A building's envelope is comprised of walls, windows, doors, foundation and roof. Installing the right amount of insulation keeps an envelope strong and reduces energy expenses. Accurate facility planning requires understanding how to 1) calculate insulation value, and 2) compare the insulation efficiencies of various building materials.

Calculating Insulation Effectiveness Using an "R-value"

A material's "R-value" measures its *resistance* to heat flow. It's the term most commonly used to represent how easily insulation materials transfer heat. A high R-value means that the material is better at resisting heat flow and functioning as an insulation material.

When measuring wall system R-values in various parts of a building, a sector's



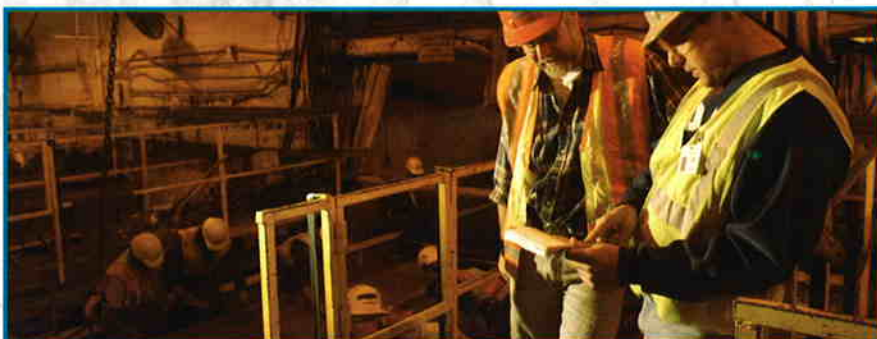
Fabcon's VersaCore Plus™ panels help customers improve energy efficiency while maintaining optimum design flexibility.

R-value is only as good as its least-efficient component. For example, if a building uses high-performance windows designed to reduce heat flow (e.g., double-paned glass with low-emissivity coating), but has insufficient wall panel insulation, the R-value will reflect the lower efficiency of the panels, not that of the more highly efficient windows.

The most accurate method of calculating R-values for wall systems is to:

1. add the R-values of all the panel materials,
2. subtract the value of heat loss from thermal breaks, and then
3. add the effects of thermal mass (if any).

Example: For a wall panel comprising a 3-inch layer of concrete, a 2-inch layer of foam and another 3-inch layer of concrete, the first number (in the equation above) is the combined R-value of all the materials.



Fabcon supervisors review placement of the Expanded Polystyrene (EPS) foam billets for a recent VersaCore Plus™ panel order. EPS foam billets feature a high-density cell structure that maximizes energy efficiency.

