Major Retrofit Market Looms

Panels are bolted or welded into position.

Steel Will Play a Big Part in the Retrofit Market That Energy Consciousness Is Stimulating

A massive and continuing market is developing for the installation of new exterior walls on existing non-residential buildings, for energy conservation and compelling reasons listed below.

From surveys of owners, architects and construction professionals, the overall remodeling market in the U.S. and Canada—for commercial, industrial, institutional and government buildings—is estimated at some $35.2 billion annually.

This figure becomes even more significant because it does not include land, foundation or structural framework costs that are important in new construction. The total encompasses all exterior and interior renovation as well as equipment purchase.

Even if an extremely-conservative one percent was allocated to re-roofing and re-wallng, this segment alone would comprise $350 million a year. There are important reasons for the anticipated upsurge in retrofit construction.

• Increasingly, retrofitting possesses economical superiority to new construction costs that are escalating faster than the inflation rate, to sky-high land prices and to site shortages. As a rule of thumb, installation of modern steel walls is a relatively small percentage of the cost of a new building. Often performed in conjunction with building expansion, they are, almost always, added atop existing roofs and walls, with no need

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for demolition or facility interruption.

- Obviously, today’s major impetus for reconstruction is energy conservation.

Virtually every building erected before the onset of vastly-higher energy costs is thermally inefficient, designed in eras of little concern for maximizing insulation values. In fact, Dept. of Energy figures estimate 25 billion square feet of existing roofing area with either no insulation or insufficient amounts. Properly-insulated walls and roofs, a direct result of retrofitting, diminish heating/cooling expenses one-third or more.

- Another spur to renovation is the phenomenal growth of pre-engineered buildings, which commenced in the early 1950’s. As these low-rise structures approach the 20-to 30-year mark, they alone account for some backlog of needed replacement, be it new exteriors or increased insulation requirements.

- Until now, specifying the standard wall or roof was almost a reflex action. But problems can come with weather damage and constant expansion and contraction. Covering existing surfaces with improved insulated systems answers those problems.

- Finally, new tax incentives are helping to further the trend toward updating existing buildings. The U.S. Revenue act of 1978 extended the 10 percent investment tax credit to the rehabilitation of certain older buildings. Roughly the equivalent of a 20 percent reduction in cost, re-building expenditures are often eligible if a building has been in service at least 20 years.

While just about any building can benefit, those considered most suited to this exterior remodeling have long, uncluttered spans of walls. These include arenas, garages, industrial plants, laboratories, motels, nursing homes, offices, power plants, schools, stores, supermarkets, theaters and warehouses.

A prime example of exterior insulating proves the effectiveness of field-insulated panels. By covering windows alone, the Electrical Products Div. of Portec, Inc., Cleveland, reduced its wintertime use of natural gas 26 percent, even after adding a 13,000 sq. ft. bay to its existing 70,000 sq. ft., brick-walled plant.

The job involved construction of the new bay with insulated panels, and retrofit of the old, single-pane plant windows with 1½-inch fiberglass insulation and then with profiled steel wall sheet (topped with a zinc-asbestos-polymetric resin coating), both fastened to the existing mullions. Operating windows were left exposed for summer ventilation, then sealed with the panels in winter.

The third example illustrates another feasibility: complete replacement of old exterior walls with new, field-insulated panels. This is what was done at the Gismo Div. plant of Guarantee Electric, in St. Louis. Its renovation was triggered not only by soaring winter fuel costs but also the difficulty, in the fifty-year-old
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building, of heating some of the working space to more than 40°F.

The new walls (plus new roof) were put in by the technique of using an interior perimeter partition to daily close up the areas opened by removal of the old exterior wall. Later, the partition served as a finished wall in office spaces. The final result was a 20 percent cut in energy consumption.

Wall renovation, like roof, is normally a field-insulated operation. One technique involves affixing a new steel wall, over insulation, to a building’s existing wall, be it masonry, wood or metal.

Painted-galvanized steel has been the traditional panel material, but aluminum-coated, aluminum-zinc alloy and weathering steel are other options. Some panel makers also bond acrylic film to steel as a fade-, chip- and peel-resistant surfacing. Panel walls 24 to 30 feet high are feasible, and even higher when panels are spliced atop one another.

In the installation procedure, a subpurlin is fastened horizontally, as a girt, either to the old wall or the structural framing. Blanket insulation, from 3’ to 5’ wide, is temporarily adhered to the existing wall and the new panels then screwed or riveted through the insulation to the sub-purlins. Color caps, matching the panels, cover and hide the fasteners. Panels are pre-cut to accommodate windows and to blend with solid, half-glass or full-glass doors. In some instances, new walls are designed as impermeable, solid surface (except for

As important as the retro-fit market is, new construction is leaning heavily toward the advantage of exterior insulating systems as this Dryvit job demonstrates.

Clarification: Use of Lower Yield Strength Steel

Light gage steel framing components, 16 gage and heavier, are normally manufactured with steel having minimum yield strength of 50,000 PSI.

You should be advised that it can be acceptable to use components manufactured from steel having a lower yield strength if the framing system is engineered accordingly.

The contractor should obtain approval from the project architect and/or engineer when using components which do not meet industry standards.
doors) from one end of the building, to completely seal a structure and prevent air infiltration.

It is recommended that, before any roof or wall reconstruction is planned, local codes be checked to ensure that the projected alterations meet possible new and stricter requirements. For example, in erection of new roofing on buildings over 30 feet in height, some codes may require a heavier panel material.

Information on sources of steel building materials for roof/wall retrofit systems is contained in the “Directory of Manufacturers of Steel Building Construction Products,” obtainable from the Sheet Committees, American Iron and Steel Institute, 1000 16th Street N.W., Washington, D.C. 20036.