With Energy Costs Rising Along With New Construction Costs, Retrofitting Increases in Potential

The Potential in Retrofit

The drywall laminate system recommended by The Dow Chemical Company has excellent utility as interior wall insulation for new construction. In the system, the board is attached to the masonry or concrete wall surface with mastic adhesive. The insulation boards are pressed firmly to the wall surface to ensure proper bonding. The finish consists of one-half-inch thick gypsum wallboard attached with wood nailer strips at the top and bottom of the wall surface and laminated to the insulation with mastic adhesive.

By Jeremy Walsh
Construction Writer

For the wall and ceiling contractor willing to make the marketing effort, a construction bonanza is developing.

It’s the replacement, remodeling, retrofitting market for non-residential buildings. And you don’t necessarily need to be a big industrial-commercial contractor to go after this business, because the bulk of opportunities lies in the small low-rise commercial type properties.

The Department of Energy calculates that the nation’s commercial buildings waste 20-40% of the fuel they consume at an estimated rate of 1.8 million barrels of oil equivalent per day.

This loss can be attributed to energy inefficiency.

Some 72% of the country’s commercial buildings are more than five years old, and 47% are more than ten. These buildings thus were built during the period prior to the “oil embargo” when fuel was cheap and energy utilization was a much less important element in building operation figuring.

Today, the building technology used in these “outmoded buildings” represents a rapidly escalating — and unplanned — expense for their owners and for the construction industry in general.

Owners can figure. The profits and income projected for their buildings are going up the flue — literally — and they are desperately looking for alternatives to get their buildings into a better pay-off situation.

One of the most viable alternatives is retrofit, Martin Glesk, energy consultant for A.D. Little, Inc., international management consulting firm, says: “As much as 30% of the fuel consumed in existing commercial buildings can be saved by retrofitting with effective energy conservaion measures.”

What makes the commercial-industrial market such an attractive target is the fact that energy inflation is growing faster than overall inflation. The consequent energy waste
expense jump is catching up with the commercial market which is the largest single energy consuming sector.

The 20-40% waste figures are highly visible — and growing more so — in the operations budgets of all types of commercial buildings — from offices, schools, hospitals and lodging facilities to multi-unit dwellings.

“Everyone is directly involved in the commercial market if he lives in other than a single-family residence and/or works anywhere other than in his home,” says Bob Marshall, Dow Chemical Company’s commercial market manager. “Operating budgets impact upon business profits and, ultimately, upon pay scales.”

Contractors, architects, and engineers are increasingly being asked for recommended alternatives in the effort to reduce fuel consumption.

Most of the publicity heretofore has been aimed at the residential housing sector where homeowners pay for high-cost fuel with a larger percentage of their total income. Obviously, they were more eager and receptive customers for the many products and services available to reduce the energy consumption of their homes.

This market is still a viable one, but going after effective retrofit measures for existing commercial buildings has now become just as important to the building owner and operator as it is to the homeowner.

Even those involved in the construction of contemporary buildings are aware that as fuel costs continue to mount, the buildings going up today may be candidates for retrofit measures in a short time.

“Commercial retrofit has long been considered too expensive and too confusing to be worthwhile,” Marshall explained. “Owners and building operators often adopt a ‘we have to live with it’ attitude.

“This has been largely due to the fact that few alternatives have existed which were economical enough to make the initial investment pay back in fuel savings in the long run. This is no longer the case.”

Plan Should Be Three-Phase

Energy experts suggest that building owners should pursue a three-phase plan to gradually move buildings toward increased energy efficiency.

The first phase should involve what is called “screwdriver technology” which includes changes in habits of use and operating of lighting and heating, ventilation and air conditioning (HVAC) systems.

Phase II planning should involve capital expenditures in the way of improvement equipment for lighting, timed lighting and switching devices, thermostats and, where the expenses would be justified, in computer control systems.

The third phase is where wall and ceiling contractors can make a major contribution. This is where an owner should consider adding insulation to his building.

“Insulation is important to all buildings,” says Tishman Research Corporation’s Joseph Newman. “But it is particularly critical in those buildings with a relatively high ratio of surface to floor space (i.e. where the exterior envelope is larger compared to the interior floor space).”

“Insulation is the major key to conserving and saving money, and a sound insulation system is invariably the important factor in commercial energy conservation.”

The reason that insulation takes on Phase I importance for low-rise buildings is fundamental. Only so much expense can be recovered by changing the HVAC system and investing in sophisticated control devices. These may represent significant savings in a large, high-rise, but they have limited ability to contribute in the smaller unit.

The marketing targets for wall and ceiling contractors are, understandably enough, the walls as well as the roofs.

Department of Energy figures estimate 25 billion square feet of existing roofing area in this country which has no insulation or insufficient amounts to meet today’s energy standards.

This is generally the first place to look to realize substantial reduction in energy consumption from additional insulation.

Conventional roofing retrofit involves laying a new layer of insulation over a building’s membrane and installing a new membrane to protect this new insulation from moisture. This is an expensive route.

One alternative is to use Styrofoam

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insulation which can be installed directly over the existing membrane. This highly moisture resistant material provides the added advantage of protecting the membrane from further effects of ultraviolet breakdown and thermal shock.

In this system boards of Styrofoam insulation are laid directly over the existing stone top covering or over the membrane with the stone layer removed, depending upon owner desires and weight requirements. A new layer of stone is then applied directly over the insulation.

Sidewalls Getting Increased Attention

Sidewalls of commercial buildings are now receiving greater attention as a retrofit priority.

The taller the building, the more heat will be lost through the sidewalls as opposed to the roof. And as more energy-efficient measures are taken into account, the more important the sidewalls become. For example, it has been determined that as the roofs and windows are protected, the percentage of heat loss through the sidewalls will increase.

Wall and ceiling contractors are perhaps in the most enviable marketing position so far as encouraging — and installing — the concept of the total insulation envelope.

“An owner shouldn’t allow himself to concentrate measures in just one or two areas,” warns Bob Frey, of Dow. “A minimum of protection overall will do more good than over protection in one or two areas and complete elimination in others.”

In the past the alternatives for this type of retrofit have been limited. Insulation costs were low and sidewall measures were customarily on the bottom end of priorities so the market wasn’t there in sufficient volume to justify a contractor’s presence.

That has changed. Today, sidewall retrofit is accomplished either in the interiors or on the exteriors — and energy efficiency where possible is generally a top priority item.

Furthermore, any building built more than 5-6 years ago it a candidate for an insulation retrofit — or should be.

The best marketing approach, specialists say, is for the contractor to follow a life-cycle costing method of evaluation for his customer. Here, the insulation investment is assessed in terms of estimated energy savings over the life of a building, rather than just in terms of initial cost.

Operating much like a tax deduction, the cost of the insulation is the initial cash outlay, minus predicted energy savings over the life of the buildings.

Contractors who are unfamiliar with the technique for calculating lifecycle costs can often obtain assistance from manufacturers, most of whom already have a system for computing savings using their systems.

Whether, though, the wall and ceiling contractor does his own figuring or has someone else do it, the attractiveness of the insulation retrofit market is great enough that serious thinking should be given immediately.

With each new increase in fuel costs, the tradeoff in wasted energy swings toward an immediate investment in insulation. The contractor who is in place with a program to meet this demand virtually guarantees future sales.