



EG&G Building

3-story EG&G office building was finished during one of Idaho's cruelist winters, using a combination of field-applied "outsulation" and panelization methods.

Lightweight, Exterior Insulated Panels Provide Many Benefits in Today's Construction Markets

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As the curtain fell on World War II, the countries of Europe assessed their damages and began rebuilding the devastated areas where cities once stood.

There was little energy available for either commercial or residential use. Raw materials, such as lumber and stone—the traditional construction elements—were scarce.

The rubble and debris set the stage for the evolution of an innovative construction system—using a combination of natural and synthetic materials. German firms began producing vast quantities of this new hybrid building material very quickly. It was then that the ideas of synthetics and exterior insulation came

together, the invention of Edwin Horbach. The material either could be applied to the outside of existing buildings, used to repair damaged sections, or used in new construction.

This new building material was so successful that even when traditional construction supplies became readily available, people opted for the synthetics instead. During the years since the end of World War II, up to 40 percent of the buildings in many European countries have utilized exterior insulation.

However, it wasn't until 1969 that this exterior wall system appeared in the United States. The 1973 Arab oil embargo forced Americans to focus on energy conservation, so fuel-

savings exterior insulation gained a more substantial foothold in the construction industry. Today over 40,000 buildings have been built or retrofitted using both insulation and finish on the outside.

Two basic types of exterior application are used. One is field application in which the "outsulation" is applied on site. The entire structure can be encapsulated in a seamless skin. The second is a panelization process. Panels can be fabricated on the premises or manufactured at a fabricating plant and transported to the site.

Panels are lightweight and easy to maneuver into place. They consist of welded steel studs with screw-attached exterior grade sheathing.

“Two basic types . . . are used . . . one is field application of which ‘outsulation’ is applied . . . and second is a panelization process.”

After the finish is applied, the panels are bolted or welded into position on the building's exterior.

Four Layered . . .

The field application consists of four layered components: insulation board, reinforcing mesh, plaster adhesive and finish.

The insulation board is a rigid material made of expanded polystyrene. It provides high R values and can be formed in accordance with exact design specifications for shape and thickness.

The reinforcing mesh of woven and treated fiberglass is embedded in the adhesive. This layer adds structural integrity and helps to prevent surface cracking.

The adhesive, made from a plaster material and cement, also has another function. It adheres the insulation board to the substrate. Typical substrates include sheathing on steel studs and cement block construction.

The finish, a synthetic plaster, is available in any one of a number of textures and colors. Besides its inherent bond strength, the finish is

crack-resistant, weather-resistant, and able to retain color without fading. The exterior needs virtually no routine maintenance.

More specifiers are choosing exterior wall insulation and finish systems because projects can be completed quickly (only a short drying period is necessary), and applicators find the material easy to work with because of its light weight.

The energy savings potential of exterior insulation is superior to inside insulation because thermal bridges are closed by the seamless construction. Thermal shock to the wall struc-

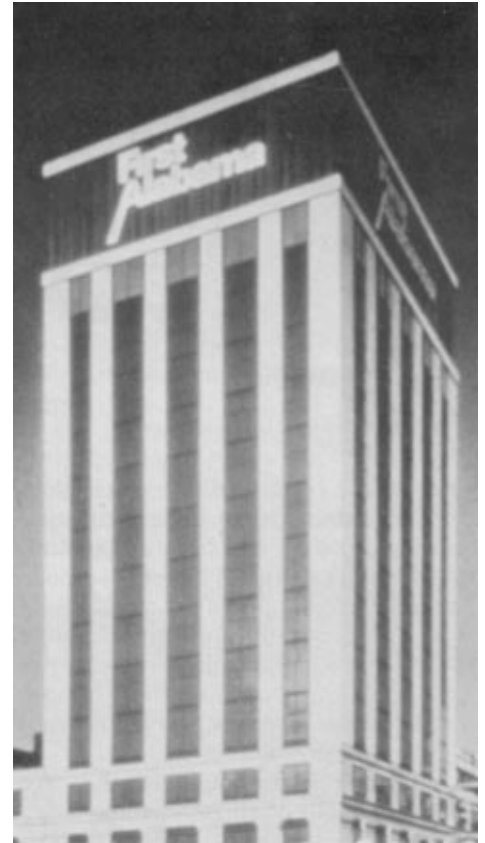


California Farm Bureau

The new California Farm Bureau Federation Headquarters is notable for several energy-efficient mechanisms, including earth berms, natural ventilation, passive evaporative cooling, solar collection, and exterior insulation and finish.

First Alabama

Exterior insulation brought 50 percent savings in heating costs, 40 percent drop in cooling costs at 70-yr. old First Alabama Bank, Montgomery.



AFTER

BEFORE

ture is also reduced.

Not only is the exterior process unaffected by humidity, it prevents water penetration. In 1979, for instance, when Hurricane David battered the Florida coast with 100-mile-an-hour winds and rain, the 42-story Tiara Condominium on Singer Island sustained water damage in a small area that was completed with only a cementitious material. The part of the building which sported an exterior wall finish had no water penetration.

Another advantage of exterior insulation and finish in a retrofit situation is that activity in the occupied interior of the building doesn't have to be disturbed. At the busy main office of the Mercantile Commerce Trust Company located in St. Louis, upgrading the 60-year-old building without interrupting customer traffic

was of prime concern.

"It was business as usual," says Chairman of the Board John H. Obermann about the renovations. Originally the building was an

automobile dealership as evidenced by the enormous ground-floor windows designed to showcase cars. "We reduced the expanse of glass by about 50 percent," continues Obermann,



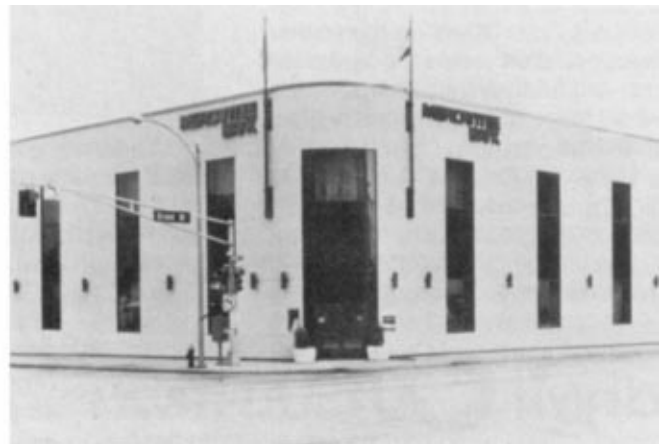
Harris House

Rhode Island food warehouse was spared and recycled by local contractor under HUD Section 8 program. Today the Harris House is a comfortable apartment for the elderly and handicapped.



Midland Hospital

These "before and after" photos show the dramatic facelift for Midland (Texas) Memorial Hospital which brought unified look to facility which had sections added during four separate years.



Mercantile Bank

Exterior insulation and finish was applied to this busy St. Louis bank with no disruption during business hours

“The larger jobs usually represent more phases of work which means a greater need for a consultant type role by the contractor . . . and in some areas only a professional contractor can supply the kind of information that designers need.”

“and installed thermal pane windows which greatly decreased our heating costs.”

The building was originally constructed of stone and brick. However, when contemplating the face-lift, the bank decided that stone was too expensive and the bricks were difficult to match. “We could have spent twice as much money on expensive material,” concludes Obermann, “but we didn’t. Yet we have an attractive, energy-efficient building.”

Uniform Appearance . . .

Uniform architectural appearance was a main concern in the renovation

of Midland Memorial Hospital, Midland, Texas. Built in 1950, the hospital added sections in 1957, 1963, and 1970. In 1975, projected growth indicated that still another addition was necessary.

Exterior insulation reduced heating and air conditioning costs, and provided the medical center with a fresh, modern look. Panels fabricated in New Mexico were trucked over 400 miles and erected on site.

In Cranston, Rhode Island, the federal Title III energy program provided funds for energy improvements at the Park View Junior High School. According to Principal Haig Varadian, “The school was experiencing

a tremendous heat loss. The window moldings were tearing away from the foundation and we were getting air infiltration between the frames and brick.”

In an effort to insulate the brick walls as well as reduce the number of windows in the 25-year-old school, the building committee decided on exterior insulation. Applied to over 80 percent of the building, including 60 percent of the windows, the total cost was about \$100,000.

“The insulation is very successful,” says Varadian, “and it’s worked out well for us.” With fuel costs cut sharply, payback for the retrofit

project was estimated to be four years.

Approximately 50 percent savings in heating and 40 percent savings in cooling costs accrued to First Alabama Bank in Montgomery when deteriorating walls were retrofitted with exterior insulation.

The 70-year-old building, situated on valuable real estate, stepped into the '80s with a contemporary facade in keeping with neighboring buildings. Lightweight parapets extending beyond the roof provided an attrac-

tive backdrop for the bank's logo identification.

Retrofit Advantages . . .

With the high cost of demolishing old and rundown buildings, owners are taking a closer look at the retrofitting alternatives. One interesting example is that of a former A & P warehouse scheduled for demolition. Its potential for rescue was recognized by a contractor. Today, Harris House, located in Cran-

ston, Rhode Island is a handsome and energy-efficient, 133-unit apartment complex for the elderly and handicapped.

Two energy award-winning buildings with skins insulated on the outside make interesting examples to demonstrate the fuel-savings advantages involved. One—the California Farm Bureau Federation Headquarters building—calculated at 74 per-

cent savings over a comparable conventional building. Using a combination of several energy innovations, this large 2-story building is cutting company fuel expenses sharply and still presents a modern, handsome exterior with clean, flowing lines.

The new EG&G office building in Idaho is three times larger than the previous quarters, yet it uses 22 percent less energy.

These cases both help prove that although the commitment to energy

efficiency may change the face of the architecture of today, buildings can still be built as attractively as ever.

Included in the ranks of companies using exterior insulation are: AT&T, Coca Cola, Digital, Polaroid, Celanese, Monsanto, Johnson & Johnson, Marriott and Holiday Inns, to name a few.

At our company, we're proud of the fact that in just twelve years we've had a hand in introducing this concept to 40,000 building owners in the

U.S. alone, and we're winning new converts every day. "Outsulation" is good news for end users of both new and remodeled buildings because of the added comfort, lower maintenance costs, easy installation, and the substantial energy savings they can realize by adopting this modern method of wall construction.