

EIFS ORIGIN



Wall systems, which incorporate insulation into the exterior of the building wall, were invented in Europe after 1947. The rebuilding of Europe after the World War II spawned the invention of many revolutionary building materials and systems. Insulation materials made from fiberglass, cork, and rock wool were either not suitable for exterior use or were not suitable as a base for plaster. Also during this time, German engineers had formulated a wide variety of materials utilizing polymer chemistry.

The impetus for the invention of EIFS systems was the efficient use of energy in a building when the insulation is to the outside of the wall. By keeping the wall construction at a more uniform temperature close to the controlled, interior temperature, the construction moves less because the structure sees less of a difference in temperature. An added advantage is that the structure acts as a heat bank and those BTUs or calories are available to the interior space. This energy bank reduces peak load heat (or cooling) demand, saves energy and reduces the required size of the energy equipment. In summary, the most efficient placement of insulation is the outside.

Insulate to the Exterior



The desire to insulate to the exterior demanded materials that:

- Insulated
 - Were strong enough to withstand the forces of nature (wind, water, and snow)
 - Could serve as a base for cladding. The cladding needed to keep out the water, protect the insulation and be aesthetically pleasing. European construction typically consisted of a masonry wall clad with cement stucco. The insulation that became available during the 60's was expanded polystyrene. Polystyrene has good physical characteristics to perform as a base for plaster, with the exception of its high coefficient of expansion and contraction. With a coefficient of expansion 6 times higher than cement plaster, the use of polymers in the formulation of a synthetic plaster resulted in a plaster that could be applied to a plastic insulation such as polystyrene.
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EIFS Invented

The marriage of these two modern materials (polymers and polystyrene) became the EIFS wall systems that are the subject of this course.

The first EIFS systems were generally thicker cement plasters that had been modified with polymers. They were used over masonry and were successful. The first use of EIFS in the US occurred in 1969 when Dryvit was imported by Dryvit System in Providence, RI. The first three projects were completed during the fall of 1969 in Rhode Island. The fourth project was a HUD project in New Bedford, MA. This project had wrinkling of the EIFS at the floor lines and had to be replaced. This was the first USA detail, which required expansion joints at the floor lines of wood frame construction.

Startup - 1969 to 1976



The initial period of EIFS use was from 1969 through 1976. There was only one producer, and sales were below \$2,000,000 nationally. The system was promoted to architects for use on commercial construction primarily in the northeast US. (Stucco was seldom used on residential construction in this part of the country, therefore there was little reason to promote to the residential market.) The promotion of the system to architects assured that there would be specifications and appropriate details showing how the architect wanted the materials to be used. There were fewer details in these years and many were changed as time went along. The entire construction chain of command learned in this period of time how to use the system. Backwrapping was invented, sealant systems were improved, testing and standards were developed.

Recent controversy about Exterior Insulation and Finish Systems (EIFS) has created a great deal of attention. Brands such as Dryvit, STO, Senergy, Parex, Fullermite, Finestone, Thermatex, Energex, Retro-Tek, and Texas EIFS may now be familiar EIFS product names. Several class action suits have surfaced throughout the US, led by North Carolina, but just how many homes are really effected and why?

How Many Homes Were Really Affected - And Why

The answer to this question requires a history lesson in the EIFS industry.

Dryvit, of course, was the first American manufacturer of EIFS, beginning in 1969. Emphasis was focused on the commercial market. It stayed through the 70's and most of the 80's. Commercial projects must comply with fairly stringent building and fire safety codes. The products specified must also meet those requirements.

Next, the architect must be willing to specify and detail the product into the scope of the project. The general contractor is then responsible for building the project according to details and specifications. To that end, the general contractor assigns a project manager to oversee construction. The project manager assigns a job superintendent to handle the day-to-day responsibility of supervising all work done by the subcontractors (one of which is the EIFS "installer"). The EIFS installer may have his own project manager as well as superintendent and crew foreman. This chain of command, from architect to EIFS mechanic, is the built-in quality assurance that a product, such as EIFS, is installed according to the Manufacturer's and architect's specifications and details.

Problem 1 - Building on a Weak Foundation



There was a generally accepted theory amongst EIFS manufacturers in the 80's that it cost as much to sell a small job as it did a large one, therefore, why waste the time on the residential market. Other than large custom homes, the larger EIFS manufacturers (with national code compliance reports) paid little attention to the residential market. However, small emerging "copycat" EIFS companies (without code compliance) focused all of their attention on the home market. This market did not have the strict code requirements of commercial projects.

All through the 80's, these small EIFS companies successfully hammered away at the residential market. The word "successfully" is used with tongue in cheek, because many of these small companies manufactured products which may not have been able to pass the tests required by model codes such as BOCA, SBCCI, and ICBO. Their details, specifications, and application instructions were designed to make the use of their products cheap and easy to install, often with little regard to sound engineering practices, performance testing, or applicator training.

Further, a general contractor's chain of command does not exist in residential. There is seldom an architect, no specifications, generically produced drawings with little or no details, no job super, and the builder is usually the construction manager. Thus, the residential market's indoctrination into EIFS, a "proven product" in commercial projects, was based on cheap, fast, and "idiot proof" results with GREAT curb appeal. Murphy's Law states: Make something even an idiot can use and only an idiot will want to use it.

Problem 2 - Building on a Weak Market

Rapid growth of residential EIFS began in the late 80's principally in the expanding Southern suburban market and vacation property. Prime examples are the North Carolina coastal and booming metropolitan expansion. In 1991, fueled by the Savings and Loan Industry's scandals and Ponzi schemes, the bottom fell out of the commercial market. Defaults and foreclosures on commercial loans rocked every market from Baltimore to Carlsbad. The Federal Government liquidated assets to cover insured savings. Commercial vacancy rates rose to over 20% in DC, Atlanta, Chicago, Houston, Dallas, Miami, LA, and most major cities.

The Feds decided the best way to boost a desperate economy was to channel funds into the housing market. They supported SBCCI's (Small Business Investment Companies) new residential construction on the premise it would have the greatest positive effect across the board. But what about the large EIFS companies whose gross industry sales were fast approaching \$400,000,000 per year? Their commercial market was cut in half, with some areas of the country coming to a complete standstill (DC). They did the only thing they could. They went where the money was – the residential market.

Enter the Dragon



The major EIFS manufacturers each have a minimum of 50 distributors located throughout all 50 states, generating from a low of \$25,000 to a high of \$10,000,000 per year in sales. The distributors on average employ two EIFS salesmen and there are 10 major manufacturers, for a combined sales force of some 1000 people swooping down on the home builders. At this same time, commercial EIFS contractors began laying off mechanics. They needed to work. The more ambitious started their own companies. Then they too swooped down on the home builders.

The smaller regional EIFS manufacturers had a competitive advantage with lower overhead and little or no R & D expense. The larger manufacturers were desperate to maintain sales and growth so they cut prices, developed beautiful brochures, joined local home builder associations, and were successful in exploding the residential EIFS market almost overnight! By 1994, a startling 35% of new homes were being clad with EIFS. In 1995 nearly 50% of new homes in the Virginia Beach area had at least some EIFS on them. This was consistent with markets in the Carolinas, Florida, Tennessee, Texas, and so on. The greatest expansion of use of EIFS in the residential market was from 1991 to 1996.

Problem 3 - Management Overload

The year 1996 and Wilmington, North Carolina will go down in EIFS history as the time and location of the epicenter of the EIFS industry's fall from fame. The quality of residential EIFS application had been built around visual and "curb appeal." The building inspectors in Wilmington, prompted by complaints, began to probe deeper. Their findings:

- Barrier EIFS installed without flashing
- Not a drop of sealant
- Poor quality windows with casements allowing water to FLOW behind the EIFS, causing moisture to be trapped resulting in mildew, wood rot, insect infestation and, in some cases, structural damage. The high relative humidity of the coastal area further retarded evaporation within the walls, exacerbating the problem.

The EIFS industry, motivated by residential sales and a rebound of the traditional commercial market, didn't recognize a problem when their products, traditionally installed for \$5.50 - \$7.00 a square foot, could be installed for \$3.50 - \$4.50 a square foot in residential construction

Problem 3 - Management Overload continued



Also overlooked was the absence of the chain of command on residential construction projects. The builder relied on the manufacturer or his representatives, whom he incorrectly assumed were the applicators, to install the EIFS correctly.

It sure looked good, and it sure generated tremendous curb appeal. Who knew the windows leaked? Commercial windows don't leak. The roofer should have known about kick-out flashing. Why wasn't the builder watching this stuff? Murphy's law again: "Friends come and go, but enemies accumulate."

Experts started coming out of the woodwork. Anyone with a moisture meter professed to know everything there was to know about EIFS problems. Repairs were made, then made again, and again and the house still had the same problems it started with. EIFS Class action suits became the "get rich scheme" of every underemployed attorney. The EIFS industry is responsible for feeding, clothing, and sheltering a small army of plaintiffs and defense lawyers to the tune of more than \$3,000,000 a month.

Problem 4 - No One Made a Final Inspection

The applicator finishes his work and wants to get paid. But, who said he did an OK job and everything is hunky dory? The answer is nobody did. The result - now there is an inventory of EIFS homes which have to be inspected after the fact. So let's get to it.

Just how many EIFS houses are there? There are estimates of from 45,000 to over 1 million. Our estimate, based on industry sales from 1970 to present, fluctuating degrees of concentration in residential construction, (very few EIFS homes before 1985), consulting, manufacturing, and distribution experience over the past 25 years in the EIFS industry, is a maximum of 500,000 homes. The number has been adjusted for apartment and elderly housing, but includes owner occupied, vacation, single family, and condos. The average EIFS per unit estimate of 1500 sq. ft. results in a total of 750,000,000 square feet of residential EIFS in inventory. A material cost average of \$1.00 per sq. ft. retail comes to a total of \$750,000,000 in material sales into the residential market over the last 29 years. Allowances are also made for PM systems and one coat stucco with traditional EIFS finish. Total EIFS industry sales for the last 45 years in all categories are estimated at \$7.7 billion. This is broken down as follows:

- 1970 - 1979 \$64,000,000
- 1980 - 1989 \$250,000,000
- 1990 - 1998 \$400,000,000
- 1999 - 2010 \$3,000,000,000
- 2011 - 2015 \$4,000,000,000

These numbers reflect retail sales to applicators. About 11% of all EIFS sold in the USA has been for residential use, which coincides closely with individual manufacturer estimates of 10%.

EDI – Exterior Wall cladding: 3rd Party & Moisture Analyst Inspector Certification Course - Level I

Module 01 – Introduction to EIFS
2 HISTORY of EIFS by Ray Lynch - Word Text

Opportunity 1 - Get Qualified to Inspect EIFS

Our estimate on the number of EIFS homes that have been inspected by a certified EIFS inspector or professional engineer is less than 315,000. That leaves 590,000 homes yet to be done!

Increased demand from relocation companies, code bodies, litigators, real estate professionals, buyers, sellers, lenders, and insurers is putting an enormous demand on our supply of certified third-party inspectors.

Code bodies are now stepping up requirements of independent third-party inspection of new construction – both residential and commercial. It is not enough to simply buy moisture meters. EIFS inspectors need specific training in both new construction and existing EIFS homes to be able to professionally meet the rising demand.

Opportunity 2 - Don't Present a Problem without Presenting a Solution

We have been studying the supply and demand crisis—along with added future demand of inspection of all new EIFS installations—and know, as a certifying organization, that we cannot train enough inspectors in a seminar-type format. This problem leads to the development of this computer-based training program.

Last and Most Important

A properly trained EIFS inspector may be the only solution homeowners have in determining the condition of the exterior of their home. Failure to detect problems can result in serious financial loss to the homeowners. This inspection service, while it generates revenue for the inspector, can generate peace of mind for the customer.

EIFS manufacturers have been embroiled in litigation. Building inspectors do not address the issue except, in the case of ICBO, who requires a third party EIFS inspector on new construction. Home inspectors disclaim the EIFS portion and refer homeowners to a trained EIFS inspector. Many real estate professionals will not list an EIFS home, or the home under-valued because of unknowns. The only positive solution is inspection of all new EIFS installations and complete inspection of existing inventories of EIFS buildings. Take a closer look at what's going on. You can become a part of the solution! We'll help you get trained, stay current, and give you the support you need to maintain the highest technical and ethical standards.

Respectfully submitted,
Ray Lynch