

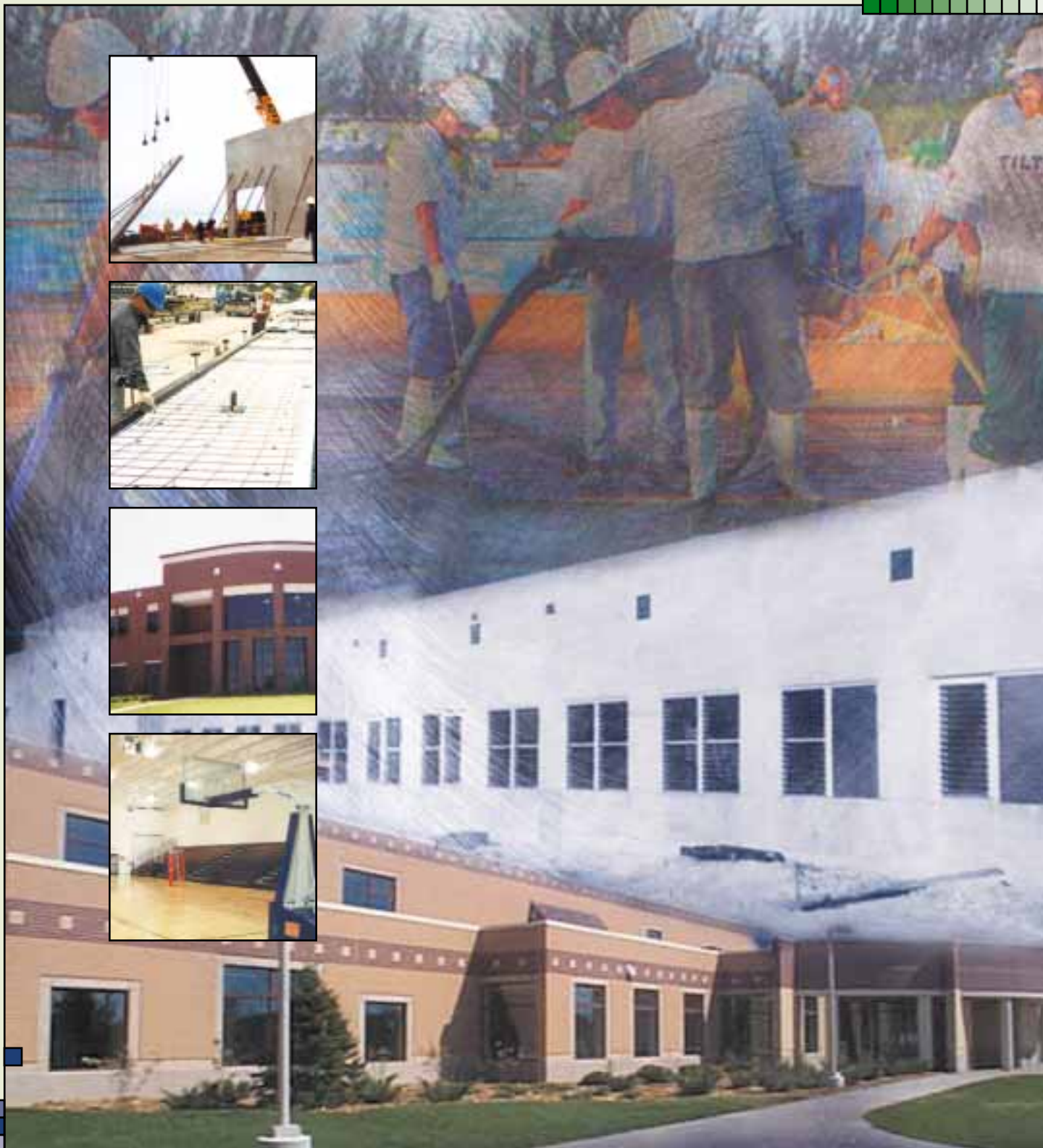


THERMOMASS[®]

BUILDING INSULATION SYSTEMS

By Composite Technologies Corporation

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www.thermomass.com

THERMOMASS®

■■■■■■■■■■ BUILDING INSULATION SYSTEM

THE SYSTEM



Composite Technologies Corporation (CTC) was founded in 1980 by Robert T. Long. His innovative thinking and vision led to the development of the THERMOMASS® Building Insulation System. At the heart of the THERMOMASS® system is a patented continuous fiber composite connector, which is used to structurally tie two layers of concrete together through predrilled, prefabricated, extruded Dow brand insulation products. The non-conductive, chemically resistant, fiber composite connector allows the creation of an uninterrupted envelope of insulation throughout the exterior walls of the building. This creates a highly energy efficient building system that is virtually maintenance-free and has the ability to not only resist mold, but stand up to fire, earthquakes, hurricanes and tornadoes as well.



The continued development of this system represents a dramatic advancement in building technology for many types of temperature and atmosphere controlled facilities throughout the world and offers unsurpassed advantages over block/brick, steel and insulated metal panel construction.

A HISTORY OF SUCCESS



For over 20 years, THERMOMASS® has been the industry leading system for concrete sandwich wall construction. Extensive testing, research and development of innovative technologies keeps CTC at the forefront. With a track record of over 100,000,000-sq. ft. of sandwich walls in the US and around the world in use today, we have more experience than all other building insulation systems combined.

The energy efficiency of the finished building combined with the ease and speed of construction has made our building system the preference of industries ranging from education and correctional facilities to freezers, coolers, distribution centers and retail facilities. They keep returning to the THERMOMASS® Building Insulation System because it provides them with unparalleled construction quality, aesthetic versatility and energy savings.



WHO WE ARE



A FAMILY OF COMPONENTS



The THERMOMASS® Building System is a technologically advanced system that delivers exceptional construction with superior insulation effectiveness.

Connectors

Our family of continuous fiber composite connectors is made from a resilient composite matrix and possesses incredible strength and durability. They are far superior to steel and or plastic connectors in sandwich wall panels because they are non-corrosive, chemically resistant and have low thermal conductivity with unsurpassed structural strength.

Insulation:

Dow brand insulation products are a "closed cell" structure, that means no gaps or voids between cells. The rigid board construction resists all forms of water penetration including water vapor transmission. The high thermal resistance and high compressive strength make it a valuable component in the THERMOMASS® Building System.

Dow insulation used in the THERMOMASS® Building System:

Styrofoam® Brand Extruded Polystyrene

ISOCAST R Polyisocyanurate

ProPEL® Extruded Polypropylene



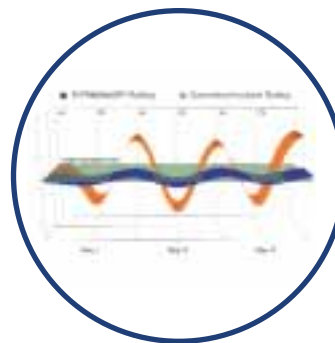
WHO WE ARE



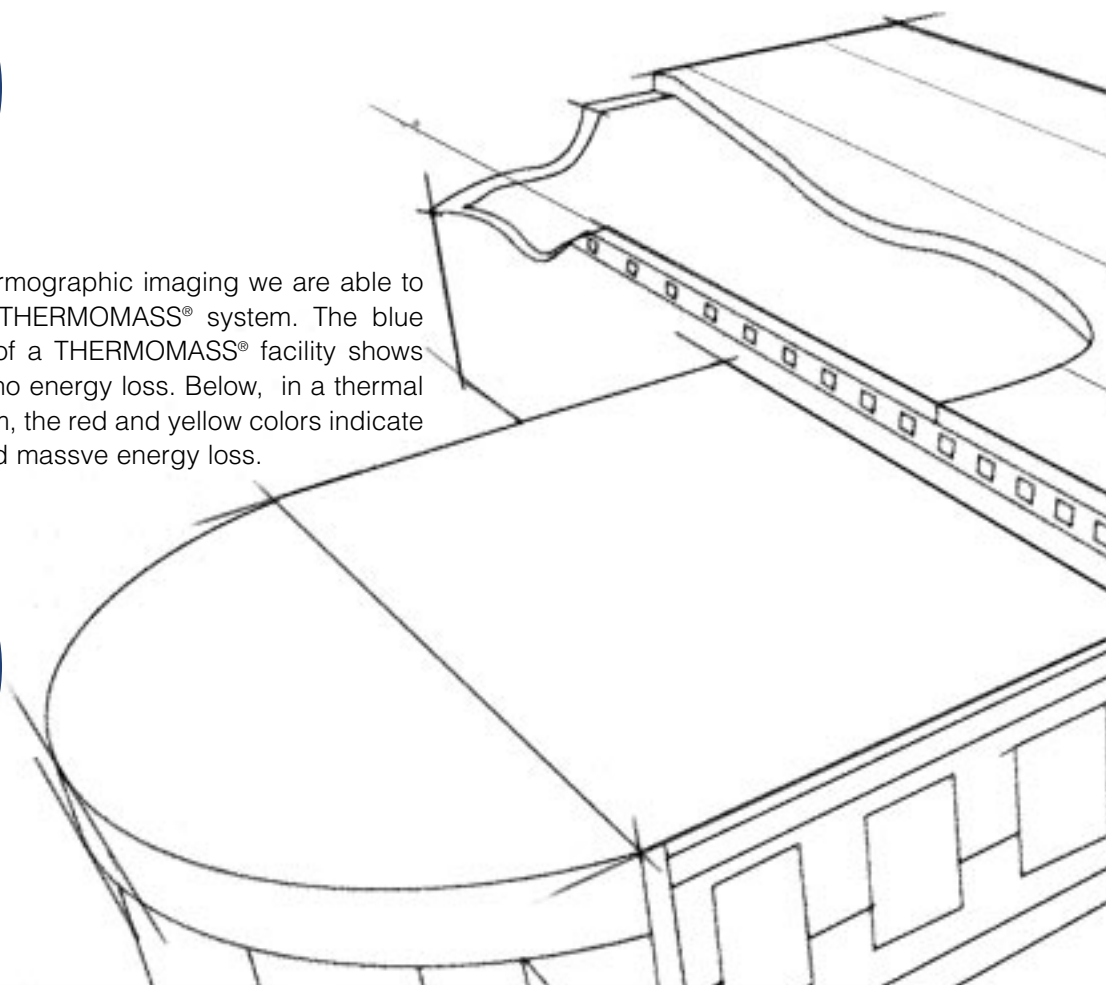
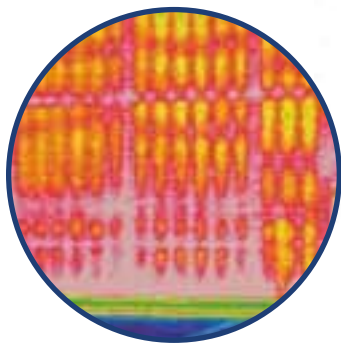
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The ability of concrete to store energy and dampen the effect of temperature change on heating and cooling systems is known as the “**Thermal Mass Effect.**” Due to the mass effect created by the THERMOMASS® Building Insulation System the performance R-value of the system can be two to three times greater than that of the material R-value. Resulting in energy cost savings up to or exceeding 50%.



Through the science of thermographic imaging we are able to prove the benefits of the THERMOMASS® system. The blue color in the above image of a THERMOMASS® facility shows zero thermal bridging and no energy loss. Below, in a thermal image of a traditional system, the red and yellow colors indicate severe thermal bridging and massive energy loss.



EDUCATION



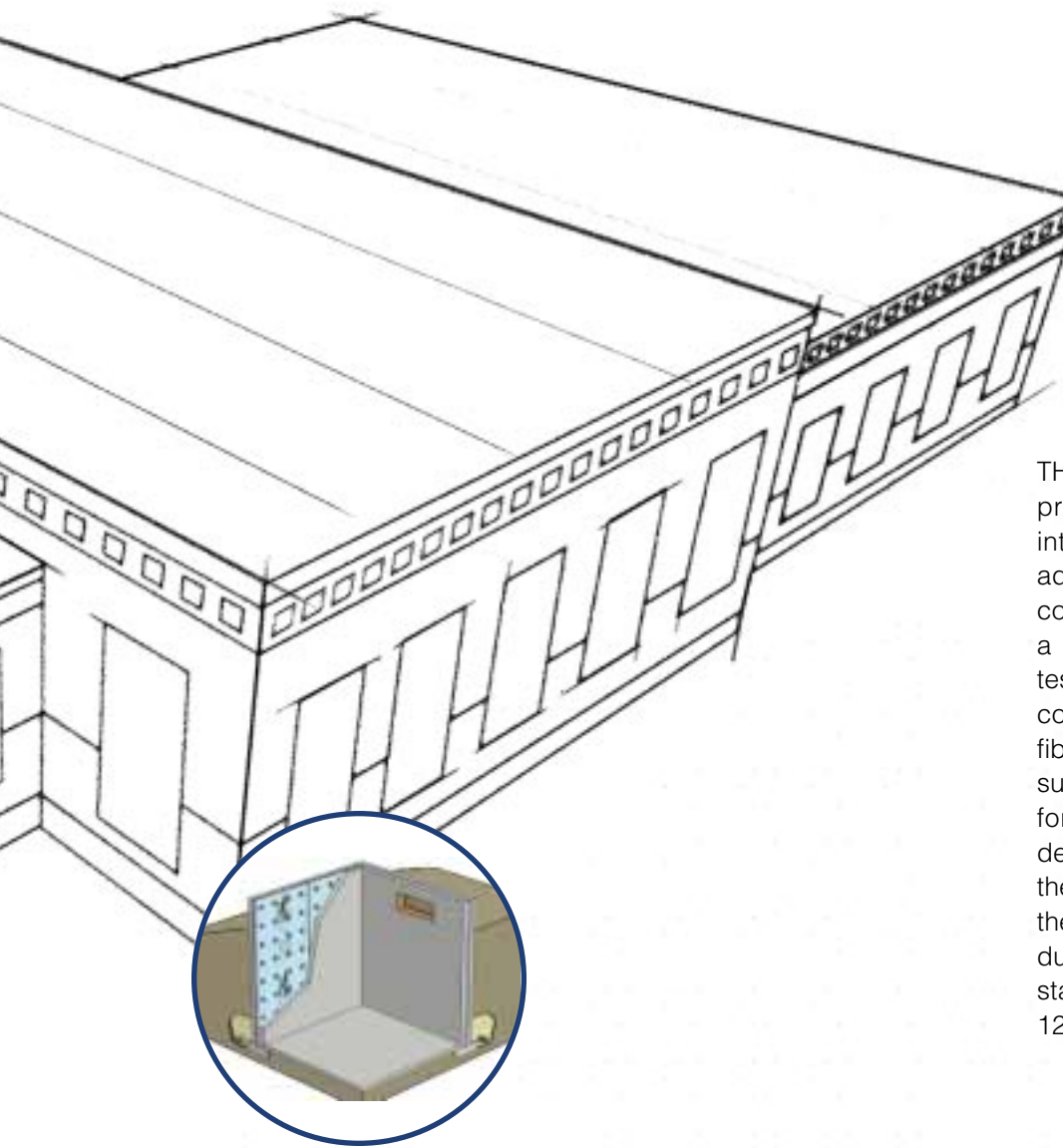
School in New York State,
photo courtesy Oldcastle Modular group

The durability of insulated concrete will have a dramatic effect on your operating budget. With the money saved in building maintenance, some school districts have reallocated the funds toward extra text books, computers and teachers.

Your maintenance department will also have appreciation for the durability of insulated concrete and the rugged interior and exterior finishes.



The THERMOMASS® Building Insulation System can be used with any type of forming system, with or without form liners. Finishes can include; natural concrete, paint, skim coat plaster, sandblasting, exposed aggregate, thin brick or most forms of concrete treatment. Other materials may be secured to the wall with concrete anchors. You can add embossed logos, mascots – there are no limits to the design possibilities.



THERMOMASS® insulated walls provide incredible structural integrity and security plus an added measure of fire safety. Our connectors have been tested by a leading United States fire testing agency where a panel constructed with THERMOMASS® fiber composite connectors was subjected to 1093 °C (2000 °F) for four hours with no degradation. The temperature of the surface of the wall opposite the fire rose only 20.8 °C (37.6 °F) during the testing period. The standard for passing this test was 121 °C (250 °F).

Using edge to edge insulation and opening to opening insulation, walls insulated with THERMOMASS® eliminate thermal bridges and take away the possibilities of moisture build-up within a building's walls. Excess moisture inside the walls can lead to mold growth and the ensuing health problems that may follow.



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A SOUND INVESTMENT

- Building a better facility doesn't always cost more. Concrete is low in cost and one of the most durable and flexible construction materials available. Couple that with the added features and benefits of the THERMOMASS® Building Insulation System, and you surely will not "break the bank" on the project. In fact, it's a common misnomer that block/brick and stick built construction methods are less expensive than using insulated concrete. To build a high performance educational facility, there is no more economical way than sandwich wall construction and the THERMOMASS® Building Insulation System.

MEETING THE SCHEDULE

- Educational facilities built with insulated concrete sandwich walls utilizing the THERMOMASS® Building Insulation System are able to meet the project's schedule or sometimes even come in with time to spare. Whether the project is tilt-up, precast, modular precast or poured-in-place THERMOMASS® is the overwhelming choice of educators and contractors worldwide. By sandwiching the insulation between the two layers of concrete, the facility's walls are built and insulated in one operation. Greatly reducing construction time and getting the project finished on time.

LEED™ -ING THE WAY IN GREEN BUILDING

- The THERMOMASS® Building Insulation System can make a significant contribution toward the construction of a Green Building. Through its highly energy efficient and thermally efficient properties, THERMOMASS® aids architects and engineers in achieving points toward LEED™ certification. LEED™ is a point system used to quantify the use of "green" building materials, designs and products. This rating system contains several sections and sub-sections in which points are allocated toward LEED™ certification of a building. The THERMOMASS® system can be effective in attaining up to 21 points in five of the six sections of LEED™.

EDUCATION



"As in all business decisions, school boards need to be assured our insulation panels have the long term stability, with proven materials. The Thermomass system provides them with the historical, and structural data, required to fulfill this requirement."

Shawn Hickey, Vice President
SiteCast Construction Co.

SiteCast is Canada's leading provider of Tilt-Up technology. Since 1990, SiteCast has produced quality award winning SiteCast Panel™ construction solutions for the Ontario market, and have been proactive in developing and expanding this technology for our numerous clients.



THE HEALTHLY CHOICE



Health experts know that mold and mildew is a serious problem in public buildings and have been identified as health hazards. These organisms thrive in moist areas caused by temperature fluctuations usually located near places where the outside climate influences the interior walls. The THERMOMASS® System keeps the outside weather outside. Our composite connectors are so low in conductivity that there is no heat transference from the outside. This translates into no temperature fluctuation inside so there is no moisture condensation. No moisture means no mold or mildew which means no problems!

TECHNICAL DESIGN ASSISTANCE



- Determination of system compatibility with your project
- Recommendation of design modifications to assure the integrity of the project
- CAD generated panel layouts that simplify and speed up the construction process
- CAD generated panel and joint design and construction details

CONSTRUCTION ASSISTANCE



- Pre-Construction meetings
- On-site installation training and assistance
- Ongoing project assistance

ANALYSIS SOFTWARE APPLICATION TOOLS



With our State-of-the-art analysis application suite, we can produce studies and testing on the transfer of of moisture, heat migration and humidity levels on panel wall systems. By using these software applications, we can accurately predict reactions to weather from both external and internal climate conditions. Our analysis application suite includes:

- | | |
|--|--|
| ■ Isothermal analysis | ■ Dewpoint analysis, Moisture and WUFI |
| ■ Mass Performance analysis | ■ Thermographic analysis |
| ■ Energy Efficiency and Cost Reduction analysis | ■ Finite Element Analysis |
| ■ Construction Cost Estimates and Building Life Cycle Paybacl analysis | |





Dr. Michael M. Krop High School
Miami, FL



Jesuit Middle School
Omaha, NE



Lee's Summitt North High School
Lee's Summitt, MO



Cumberland Elementary School
Cumberland, Ontario, Canada



Lorenzo de Zavala Middle School
Irving, TX



Southlake Church & Academy
Charlotte, NC



Basalt High School
Basalt, CO



Aim High Gym
Lansing, MI



Korte Recreation Center
Highland, IL



Valley Christian Fellowship
Redding, CA



Richmond Elementary School
Redding, CA



Abraham Lincoln Elementary
Medford, OR



Dade County Compliant

Approved by Department of
State Architects, California



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