



# ICYNENE™

HEALTHIER, QUIETER, MORE ENERGY EFFICIENT\*

## *THE ICYNENE® ADVANTAGE*

### **APPLICATION CASE STUDY: FROM BROWN TO GREEN – A Brownfield Site Revitalized to LEED Green Building Standards**



#### **Synopsis:**

- ✓ Helps create a healthy, productive work environment
- ✓ Contributes toward the building's achievement of credits/ points under the LEED Program
- ✓ Increases thermal comfort and energy efficiency
- ✓ Facilitates sustainable design goals





**Overview:**

Size

47,000 sq. ft. (manufacturing facility – 30,000 sq. ft., storage building –12,000 sq. ft., office building – 5,000 sq. ft.)

Location

Saxonburg, PA

Owner

Castcon-Stone, Inc., a leading manufacturer of precast concrete stairs. Experienced in both design and fabrication of structurally compatible stair and landing systems, Castcon experts work closely with architects and engineers to create effective construction solutions.



*Castcon-Stone, Inc.'s new manufacturing facility is a 47,000 sq. ft. monument to sustainable design principles*



*ICYNENE LD-C-50™† insulation and air barrier was installed because it contributes to the achievement of LEED credits, such as energy performance and thermal comfort.*

LEED Rating

2.1 Silver (anticipated)

Completion Date

March 2003

Team

Perkins-Eastman Architects, PC • RAY Engineering • Atlantic Engineering Services • Gabriel Enterprises • Tudi Mechanical Systems • Olsen Engineers • HF Lenz Company • Clearview Project Services Company • Sustainaissance International • University of Pittsburgh • Green Building Alliance

**Building Overview:**

This state-of-the-art precast concrete manufacturing facility incorporates sustainable technologies into the building and site, establishing Castcon-Stone as an industry leader in environmental advocacy. This mixed-use development consists of a new manufacturing facility, office building, storage facility, and sitework. In accordance with the U.S. Green Building Council's LEED (Leadership in Energy & Environmental Design) program, the project employs



Formerly the site of a steel sintering plant, this designated Brownfield site has been revitalized to LEED standards and now features a healthy, productive workplace for Castcon employees.



In keeping with the philosophy of green design, all concrete and metal scrap was recycled.

sustainable design goals, anticipating a LEED Silver rating. Features include a highly efficient shell designed through energy modeling, sustainable site development, high-performance insulation, efficient lighting, daylight strategies, natural ventilation, and toxic-free materials.

**Green Building Envelope Design:**

Castcon-Stone, Inc. was constructed on a designated Brownfield site that housed a steel sintering plant 30 years ago. The new facility highlights a number of green features such as: improved indoor air quality through Icnene insulation and air barrier material, daylighting through low-E glass windows and clerestory panels, natural ventilation from operable windows, energy recovery wheels used to preheat or pre-cool the outside air, and storm water collection from the parking lots into a bioretention pond. The pond passively treats the chemicals and gasoline that have mixed with storm water drained from parking lots and eliminates the need for extensive underground PVC piping.

The goal of striking a balance between sustainable design goals and fiscal responsibility served as a useful design determinant. *“It’s not enough to do green design for philosophical reasons; it has to be financially feasible from a return on investment standpoint,”* says one owner, Laura Huch. *“It was our goal to not have this green facility cost any more than a well-built conventional one, and this was just the appropriate way for us to go.”*

**Results:**

Sustainable Sites

- Redevelopment of former USX sintering plant
- Interdisciplinary team engaged in a day-long charrette resulting in a comprehensive green master plan for the site
- Native landscape
- Placement of drainage ponds resulted in over \$150,000 savings and eliminated the need for storm-water piping

Water Efficiency

- Xeriscaping and rainwater collection eliminate irrigation costs





*Features of sustainable design include high-performance Icynene insulation, efficient lighting, daylight strategies, natural ventilation, and the use of toxic-free materials.*



*Icynene effectively seals the building envelope to protect against energy-robbing air leakage and outdoor pollutants.*

#### Energy & Atmosphere

- Icynene insulation, lighting sensors and energy recovery wheel generate an expected 6-month payback
- Mechanical systems were able to be downsized partly due to the air sealing properties of Icynene insulation
- Energy savings for heating and cooling the building (which is 2.5 times larger than the previous building) is roughly \$35,000 per year<sup>1</sup>.

#### Indoor Environmental Quality

- Open, day lit office to create a bright, comfortable and productive space
- Indoor Air Quality plan
- 100% water-blown Icynene insulation, containing no harmful emissions
- VOC-free finishes, Carpet and Rug Institute Green Label Carpet Recycled and recyclable materials used
- Local and regional materials used

#### Materials & Resources

- \$150,000 of slag buried on the site was unearthed and reused for site grading
- As manufacturers of precast concrete stairs, CastCon used flyash content and glass aggregate during construction
- All concrete and metal scrap is recycled.
- Selecting products that provide longevity, such as Icynene, eliminates the need for the installation and/or reinstallation of additional material in the future. Because Icynene does not off-gas, there is no loss of R-value over time. The material maintains its efficiency and provides total thermal comfort without the need to replenish the material, as is often the case when using conventional insulation.
- Reuse of storage building from previous location
- Elimination of many interior finishes

#### Awards

AIA Design Award Winner, Green Citation (2003)



### **Icynene Improves the “Greenness” of Building Design**

- ✓ Helps create a healthy, comfortable and productive environment to help reduce staff absenteeism due to illness
- ✓ Contributes to the achievement of the following LEED prerequisites and credits: energy performance, construction waste management, local/regional materials, thermal comfort, and innovation in design
- ✓ Helps reduce building energy consumption
- ✓ Increases thermal comfort while reducing heating and cooling loads of the mechanical system
- ✓ Reduces risk of remedial measures (to contend with sick building syndrome, environmental contaminants, moisture-related mold and mildew, or other possible threats to occupants' health)
- ✓ Decreases the use of ozone-depleting chemicals

### **Icynene Insulation**

Icynene foam insulation products are sprayed into/onto walls, crawlspaces, underside of roofs, attics and ceilings by Icynene Licensed Dealers. They expand in seconds to create superior insulating and air-sealing results. Every crevice, crack, electrical box, duct and exterior penetration is effortlessly sealed to reduce energy-robbing random air leakage. Icynene products adhere to the construction material and remain flexible so that the integrity of the building envelope seal remains intact over time.

Icynene is ideal for residential, commercial, industrial and institutional indoor applications. The products are:

**Healthier:** Icynene spray foam products are CHPS (Collaborative for High Performance Schools) EQ 2.2 Section 01350 Compliant, meeting nationally recognized requirements as Low-Emitting Materials (LEM) and Environmentally Preferable Products (EPP). Icynene spray foam products are 100% water-blown and contain no HFCs or PBDEs. Icynene seals out dust, pollen and other allergens from entering the structure. As air barriers, Icynene products minimize the potential for airborne moisture build-up and related problems such as mold and mildew.

**Quieter:** By air-sealing the building envelope, Icynene effectively minimizes airborne sounds. Icynene is perfect for reducing unwanted noises from home theaters, plumbing runs and playrooms.

**More Energy Efficient:** Icynene delivers up to 50% more energy savings versus traditional insulation.

Information about Icynene insulation can be obtained by calling Icynene Inc. (800-758-7325), visiting the website [Icynene.com](http://Icynene.com), or contacting your local Icynene Licensed Dealer.

† The Icynene product installed and addressed in this project example is Icynene's classic formula, ICYNENE LD-C-50™.

Source: Green Building Alliance, [www.gbapgh.org](http://www.gbapgh.org), September 22, 2004  
Photographer: Linda Jeub

Endnotes:

\*Building Solutions Summit 2004, Presentation, Castcon-Stone, Inc. Corporate Headquarters.



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