

THE ICYNENE® ADVANTAGE

A Closer Look at Air Superiority in Action



ICYNENE™

Vol. 11, Issue 02

COMMERCIAL BUILDING INSULATION: MULTIPLE SAVINGS WITH ICYNENE®

Synopsis:

- ✓ Icynene® lowered energy costs by 43%
- ✓ Icynene® reduced the HVAC equipment size by 10 tons
- ✓ Icynene® reduced construction time

The Problem

American Outdoor Adventures was constructing a 20,000 sq. ft. freestanding structure in Albany, Georgia that would operate primarily as retail space with some offices located on the first and second floors. Within the structure, there would be 15,200 sq. ft. that would require heating and cooling. The owner, Mr. Shingler, originally planned to construct the building with 4 inch vinyl backed fiberglass insulation for the roof and R-19 fiberglass batts in the exterior wall assemblies.

Based on the original insulation specifications, the electric heat pump system was sized at 35 tons for the main sales floor area. Based on the data provided by Georgia Power Co. the average utility bill for this building was estimated to be \$1,600 per month.

Mr. Shingler then decided to evaluate methods of improving the energy efficiency of his building and reduce his utility expenses, as well as the capital cost of the HVAC system.



American Outdoor Adventures has 15,200 sq. ft. of retail and office space in Albany, Georgia.

THE ICYNENE® ADVANTAGE : A Closer

The Solution – Insulate with Icynene®

The local Icynene Licensed Dealer, Barnes Spray Foam Insulation, was contacted to review the project and asked to design an insulation system that would reduce the utility bills and HVAC size. The Shinglers had seen Icynene® in use on the television program, *This Old House* and were hoping that the product's benefits as seen in a residential construction project would also be applicable for their store.

Barnes Spray Foam recommendations:

- Approximately 4 inches of Icynene® be applied into the steel stud exterior wall cavity and interior side of the metal roof deck.
- Reduce the HVAC equipment for the main sales floor area (15,200 sq. ft.) from 35 tons to 25 tons, as recommended by the HVAC consultant to Barnes Spray Foam.

Why Icynene®?:

1. Insulating the building requires control of both conductive heat flow and convective heat flow (air movement). Icynene® foam insulation is both a conductive insulation and air barrier. The expanding characteristics of this spray applied foam insulation ensures that all penetrations in the building envelope are effectively sealed.
2. The tenacious adhesion characteristics of Icynene® will guarantee that the insulation in the steel stud wall cavities will stay in place without settling or sagging. There will be no gravity effect over time and the hollow area within the interior of the steel stud will be filled with Icynene® insulation.
3. External temperature changes will cause expansion and contraction in the metal roof deck. The flexible and soft characteristics of the Icynene® applied to the underside of the roof deck will allow it to move with the expansion and contraction of the roof deck and eliminates any concerns of de-lamination.
4. As an air barrier, Icynene® will block out any air borne noise from entering the store, thereby providing a more peaceful / controllable shopping environment.



Icynene® applied directly to the roof deck.
(1) Icynene® sprayed side, (2) unsprayed side.



Icynene® installed into the exterior wall cavities, prior to the installation of drywall. (1) Icynene® sprayed area, (2) unsprayed area, note the gaps where air can freely pass through the wall. Daylight highlights these gaps.

Look at Air Superiority in Action

The Results

1. Mr. Shingler sought out a second opinion on the HVAC downsizing attributable to the use of Icynene®. The mechanical engineering firm Driggers and Associates Inc. was retained to independently verify the proper sizing of the HVAC equipment if Icynene® was used. In the final report, Drigger and Associates concluded that:

"Icynene®, when sprayed on, eliminates the infiltration of outside air through various seals and metal laps, and eliminates the "fin" effect of roof purlin at insulation. The fin effect will reduce the "R" value at and near the purlin. The combination of the two above items, in my estimation, reduced the initial tonnage from 35 ton to 25 tons in the main sales floor."

2. Georgia Power estimated that the utility bill for this building would be approximately \$1600 per month. This would include the cost of running the electric heat pump and lights. In the warmer months with more daylight hours, the majority of electricity would be used for the air conditioning units. In the cooler months with less daylight hours, the electricity would be required for heating and the exterior 1000 watt lights. Actual power usage has been:

<u>Time Period</u>	<u>Days</u>	<u>KWH</u>	<u>Cost</u>
Aug. 22, 2001 – Sept. 18, 2001	28	5,240	\$ 604.19
Sept. 19, 2001 – Oct. 18, 2001	30	13,360	\$ 939.90
Oct. 19, 2001 – Nov. 14, 2001	27	14,000	\$ 881.67
Nov. 15, 2001 – Dec. 16, 2001	32	17,520	\$ 995.57
Dec. 17, 2001 – Jan. 21, 2002	36	20,440	\$ 1,100.83

3. Mr. John Reese, who is the owner of LRA & Associates (the company hired by Mr. Shingler to build the store) indicated that the installation of Icynene® was 1-2 days quicker than if they had installed the standard 4 inch vinyl backed insulation on the roof deck and fiberglass in the exterior walls.

Icynene® in a Commercial Application:

- ✓ **Saved money with lower energy costs – 43% in the first 5 months.**
- ✓ **Reduced the HVAC equipment required from 35 tons to 25 tons**
- ✓ **Reduced the time required for insulation installation from 9 days to 7 days**

THE ICYNENE® ADVANTAGE

A Closer Look at Air Superiority in Action



ICYNENE™

Vol. 11, Issue 02

ICYNENE®

ICYNENE® is a low-density soft foam insulation, which is sprayed into/onto walls, crawlspaces, underside of roofs, attics and ceilings by ICYNENE Licensed Dealers. Sprayed as a liquid, it expands to 100 times its volume in seconds to create a superior insulation and air barrier. Every crevice, crack, electrical box, duct and exterior penetration is effortlessly sealed to reduce energy-robbing random air leakage. ICYNENE® adheres to the construction material and remains 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 product is:

- Healthier:** Water is the only blowing agent. ICYNENE® contains no HCFCs, HFAs, HFCs, formaldehyde or volatile organic chemicals. It seals out dust, pollen and other allergens from entering the structure. As an air barrier, ICYNENE® minimizes the potential for condensation and the subsequent mold and mildew.
- Quieter:** By sealing the building envelope, ICYNENE® effectively minimizes airborne sounds. ICYNENE® is perfect for reducing unwanted noises from home theaters, plumbing runs, street traffic and playrooms.
- More Energy Efficient:** ICYNENE® delivers up to 50% more energy savings versus traditional insulation.

Information about ICYNENE® can be obtained by calling ICYNENE Inc. (800-758-7325), visiting the website www.icynene.com, or contacting your local ICYNENE Licensed Dealer.



ICYNENE™

HEALTHIER, QUIETER, MORE ENERGY EFFICIENT™

For more information, contact your local ICYNENE Licensed Dealer:



Visit our website: www.icynene.com
or call
1-800-758-7325

