



ICYNENE[™]
HEALTHIER, QUIETER, MORE ENERGY EFFICIENT*

THE ICYNENE[®] ADVANTAGE

APPLICATION CASE STUDY:

Cathedral Ceiling Insulation Retrofit

Product Comparison:

ICYNENE LD-C-50^{™†} vs. Fiberglass



Synopsis:

- ✓ Icynene lowered heating energy costs by 24% in a 12% colder climate period
- ✓ Icynene provided a more consistent temperature
- ✓ Icynene corrected a mold and mildew problem



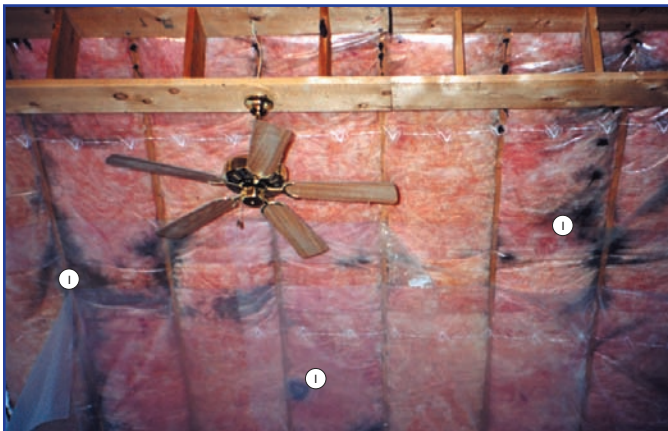


The Challenge:

Mr. Johann Eyolfson of Grindstone Point, Manitoba (approximately 90 miles north of Winnipeg, Manitoba, Canada) was unhappy with his high electric heating bills and inability to maintain a consistent comfortable temperature.

The home was 2,236 square feet and utilized forced air electric heat with heat recovery ventilator, and mechanical ventilation. The house was only occupied on weekends and holidays. When not occupied during the week, all thermostats were set at 10° Celsius (50° F.)

The structure had a web truss roof and R50 fiberglass insulation that had been in place for 3 years. The walls featured 2” x 6” construction with 6” fiberglass batt insulation. Both the walls and ceiling included 2 layers of 6 millimeter polyethylene which had been caulked and taped. Post and pad foundation was present and there was an insulated pony wall around a heated crawlspace.



(1) Black mold in 3 year old fiberglass R-50 batt insulation



(2) Hot humid interior air had leaked past the poly, through the batt insulation, and come into contact with the cold air in the venting, thus causing condensation and mold.

The Solution – Retrofit with Icynene:

The R50 fiberglass insulation was removed from the cathedral great room and two adjacent wings (1,660 sq.ft.). The home owner wanted to insulate and seal the ceiling so that the warm moist interior air remained contained in the living space of the home.

Removal:

R50 fiberglass insulation (1,660 sq. ft.)

Retrofit:

- with R-20 (5.5 inches) of Icynene insulation sprayed on:
 - underside of roof deck
 - gable ends
 - soffit vents, now sealed
 - gable vents, now sealed



The remaining portion of the attic floor space, approximately 576 sq. ft., was left intact with the original R40 fiberglass batt insulation.

The Results:

	Sept. 1999 – Jan. 2000 <u>Before Icynene</u>	Sept. 2000 – Jan. 2001 <u>After Icynene</u>
Heating degree days* ⁽¹⁾	3,071	3,441
Kilowatt hours used ⁽²⁾	14, 540	1,170

*(*Heating Degree Days = Each degree that the average daily temperature is below the base temperature (65°F) constitutes one heating degree day. This data was supplied by Environment Canada)*

The time period in which the electricity consumption was measured for Icynene was approximately 12% colder than the time period for the R-50 fiberglass insulation.

Electricity consumption was reduced by 24% due to the retrofit with Icynene. The reduction in electricity consumption due to Icynene would have been even lower if the heating degree days were the same between the two measurement periods.

The electricity consumption would have been reduced further if the fiberglass had been removed from the remaining portions of the attic and walls. The homeowner was aware of the potential added benefit of completing the project but did not want to be involved in further renovations.



Icynene is sprayed directly on to the roof deck. There are no air vent channels.



Icynene is sprayed to a depth of 5 1/2 inches and adheres directly to the roof deck.



The Icynene Insulation Retrofit:

- ✓ **Saved money with lower energy costs. A 24% savings in this case.**
- ✓ **Maintained a more consistent temperature throughout the house.**
- ✓ **Eliminated the mold and mildew problem in the cathedral ceiling.**

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, 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™.

Endnotes:

- (1) Data supplied by Environment Canada.
- (2) Data supplied by Manitoba Hydro.



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