

APPLICATION CASE STUDY : INSULATING POULTRY HOUSES FOR AIR SEALING/ENERGY EFFICIENCY

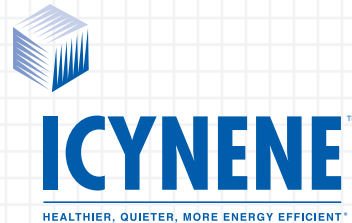
Synopsis:

- ✓ Reduced energy costs by 25%
- ✓ More consistent temperature throughout the house
- ✓ Fewer fans required to achieve desired static pressure

The Problem

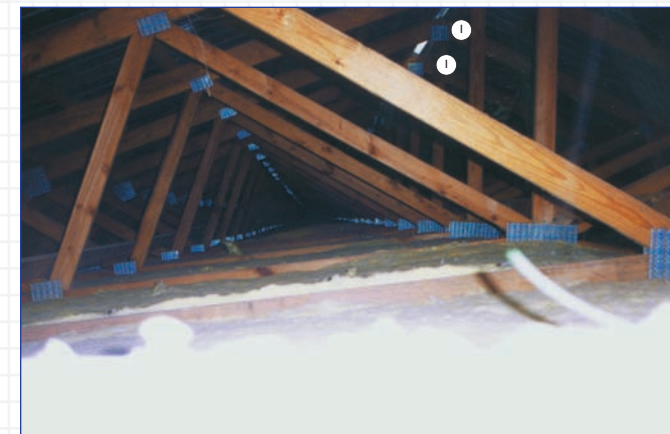
"The more control producers have over air temperature, air quality and energy usage, the more control they will have over their paycheck at the end of the growout. In order to control air temperature, air quality, and energy usage, it is crucial to control how much fresh air enters the house as well as how it enters the house. This means the house must be tight, because in a loose house, it is very difficult to control anything."⁽¹⁾

The University of Georgia's College of Agricultural and Environmental Sciences conducted a study on a broiler farm to demonstrate the effects of air sealing and improved house tightness. The study was conducted on a farm with two 40' x 400' broiler houses. The amount of air leakage was estimated by conducting a static pressure test. The side wall and tunnel inlets were closed, then one 48" fan was turned on and the static pressure was measured. The static pressure created by the one 48" fan was found to be approximately 0.03" in both houses (as measured by the vent opening), indicating that there was well over 20 square feet of leakage in each house.



For more information, contact your local Icynene Licensed Dealer:

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(1) Cracks in the ridge vents allow air leakage into the poultry house.



(2) The gaps between these boards allowed substantial air leakage.



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THE ICYNENE® ADVANTAGE : A Closer Look at Air Superiority in Action

The Solution – Air Sealing with Icynene®

An examination of the houses determined that the primary sources of leakage were the gaps around the boards in between the trusses on the side walls and cracks along the ridge of the house.

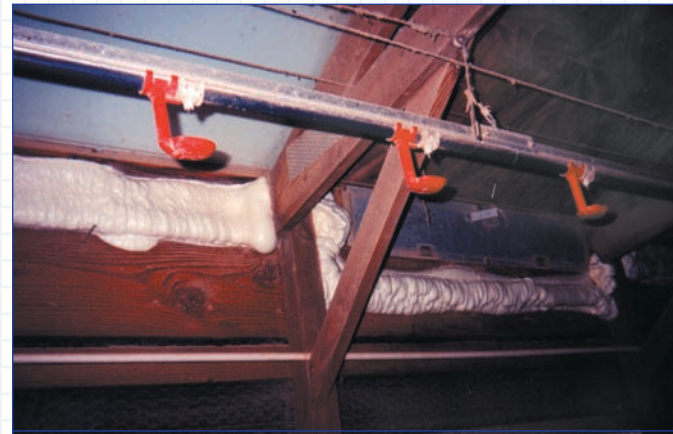
The area between the trusses at the top of the side walls, as well as the ridge were treated in one of the houses with approximately a two foot wide swath of Icynene® insulation foam.

Testing was then conducted to determine:

- Reduction in air leakage
- Reduction in heating fuel consumption
- Temperature variation between pad and inlet ends of the houses
- Number of fans required to achieve a 2" opening in the vents



Sealing of the ridge vent with Icynene® Insulation to prevent air leakage.



Sealing of the side wall gaps/cracks with Icynene® to prevent air leakage.

The Results

	<u>Non Icynene® House</u>	<u>Icynene® House</u>
Vent opening created by one 48" fan operating <small>(uncontrolled leakage into the house prevents the fans from creating enough pressure to open the vents and create the desired air movement.)</small>	0.03" = 20+ sq. ft. leakage	0.18" = under 5 sq.ft. leakage
Fuel Usage: <small>(Sept. – Nov. 1999) (one growout)</small>	720 gallons	540 gallons
Air Temp. Variation:	8 degrees	4 degrees
Achieve 2" Opening In the vents (2)		
- Prior to Icynene®	2 x 48" fans + 1 x 36" fan	2 x 48" fans + 1 x 36" fan
- After Icynene®	Not applicable	1 x 48" fan

The Icynene® Insulated House:

- ✓ Saved money with lower energy costs. A 25% savings in this case.
- ✓ Maintained a more consistent temperature throughout the house
- ✓ Saved money by reducing the number of fans required to achieve desired static pressure.

"With fuel savings in the winter and cooler houses during the summer, there is little doubt that growers with loose houses can significantly increase their profit by improving house tightness" (3)

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 or PBDEs. There are no detectable VOCs after 30 days. 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.

Footnotes:

1. The University of Georgia, Cooperative Extension Service, College of Agricultural and Environmental Services, Poultry Housing Tips, Volume 11 Number 10.
2. Data supplied by Robert Jernigan of Cagle, Bowden Georgia
3. The University of Georgia, Cooperative Extension Service, College of Agricultural and Environmental Services, Poultry Housing Tips, Volume 11 Number 10.