United States Department of Agriculture
NRCS Natural Resources Conservation Service

Building Envelope Improvement

(Insulating Poultry Houses)

Alabama Job Sheet No. AL672

Definition

Proper exterior insulation of a poultry house provides an improved bird rearing environment and ensures minimal heat losses, thereby saving the poultry farmer on their utility bill. Proper insulation can also add to the "tightness" of a poultry house; improving ventilation, moisture control, and bird health.

General Information

The ceiling of a poultry house should be the first consideration during an insulation retrofit. Ceiling insulation problems must be corrected first.

Sidewalls of older poultry houses can have very little insulation (curtain houses) or minimal insulation (lumber). Techniques have been developed to insulate these type walls to provide insulation values in the R-8 to R-12 range.

Farmers cannot receive federal funds from two sources to pay for insulation.

Installation

For older high-ceiling, open truss poultry houses make sure the ceiling is tight. Foaming the ridge cap and the underside of the exterior eave juncture and repairing missing or damaged board insulation are probably the only affordable retrofits. In drop ceiling houses, insulation may have shifted or settled resulting in excess heat loss. For these houses it is imperative to get a complete blanket of insulation (blown fiberglass) in the ceiling that gives a minimum R-19 protection.

Replacing un-insulated curtains with solid insulated sidewalls can be a complicated process. It is especially difficult in steel truss houses with post supports on 10 ft. centers. Dropped ceiling houses with posts on 4 or 5 ft. centers make it easier to create cavities in the wall for insulation. When insulation batting is used, exterior metal siding must be installed over the curtains. Insulation batting is placed in the wall with a 4-6 mil vapor barrier and covered with pressure treated wood, OSB (not in contact with the litter), or plastic sheathing (blown cellulose in wall is not recommended since it can slip down over time). A newer option is to secure the curtain that is in good repair with lumber, apply 1 to 1 ½ inches of spray-on closed-cell polyurethane foam insulation (minimum 3 lb./cu.ft.) to the interior of the curtain

and sidewall lumber from floor to ceiling. With the spray foam option, protection must be provided around the base against pecking, beetle damage, and physical equipment damage. This is best accomplished by installing treated lumber boarding (scrape boards) at the bottom of the wall with clean gravel backfill between the boards and 3 lb. spray foam. If scrape boards and gravel are not allowed, the 3 lb. spray foam must be coated using a higher density (6 – 10 lb.) spray foam at the bottom of the walls.

Insulation of end walls may be needed too. Always ensure that cracks and leaks are properly sealed.

Poultry houses that are properly sealed and insulated should be able to achieve a static pressure of 0.15 inches of water when vacuum tested.

Operation and Maintenance

Ceiling insulation should be visually inspected at least yearly for shifting or excess settlement. Infrared cameras (if available) can pinpoint problems with insulation. Occasional vacuum checks on the house can insure house "tightness" and help pinpoint leaks.

References

NRCS AL Conservation Practice Standard, Code 374 – Farmstead Energy Improvement

Poultry House Energy Retrofits for Fuel & Cost Savings, Newsletter no. 43, National Poultry Technology Center, Auburn University, September 2006.

Controlling Sidewall Energy Losses, Newsletter no. 46, National Poultry Technology Center, Auburn University, March 2007.

Is Shifting Ceiling Insulation Running Up Your Gas Bill?, Newsletter no. 63, National Poultry Technology Center, Auburn University, January 2010.

Choosing Sidewall Insulation, Newsletter no. 75, National Poultry Technology Center, Auburn University, January 2012.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer. *11/14*

Insulation

Poultry Farmer:_____ County:_____ Date: _____

Integrator:_____ Number of houses:_____

Farm No.: _____ Tract No.:_____ Assisted By:_____

House One

Ceiling:

Approximate area of attic with no insulation: _____ sq.ft. (A1)

Approximate area of attic needing _____ inches (I) of additional insulation: _____ sq.ft. (A2)

Ceiling Area Equivalent = _____ (A1) +((_____(I)/5.5) x (_____ (A2)) = _____sq.ft.

Walls:

Area of side walls to be insulated: _____ sq.ft.

Are all houses the same ( ) yes ( ) no. If no, make same calculations for each house.

Total insulation:

Ceiling: _____ sq.ft.

Side Walls: _____ sq.ft.

****

<u>Farmer Certification</u>:

I certify that I am not receiving other federal funds for insulation (USDA RD Rural Energy for America Program) for these poultry houses.

_____ _____

Name Date

<u>Installation Certification</u>:

I certify that the insulation installation in the poultry houses on this farm was completed according to sound industry standards.

_____ _____

Name Date