United States Department of Agriculture
NRCS Natural Resources Conservation Service

Farmstead Energy Improvement

(Radiant Heaters in Poultry Houses)

Georgia Job Sheet No. GA374C

Definition

A propane or natural gas fired radiant heater burns gas and converts most of the energy into infrared rays that are directed downward into the floor of the poultry house. This newer type heater is much more efficient at converting gas into heat that is more beneficial to poultry at the floor level.

General Information

Old forced-air convection heaters (box heaters) and old pancake heaters do a good job at heating the air, but hot air rises from these units away from the poultry on the floor. New radiant heating appliances do a much better and more efficient job by converting the majority of the heat into radiant heat that is directed to the floor of the house. New radiant heating appliances consist of radiant brooders, radiant tubes, radiant mini-U-tubes, and Quadradiant (TM) units

Radiant brood heaters are usually hung about head-high in the poultry house while radiant tube heaters are placed near the ceiling. Usually, about 4 radiant tube heaters are needed in the brood end of a house while about 14 radiant brood heaters would be used. In the off-end of the house, usually about 3 radiant tube heaters are needed or about 8 radiant brood heaters.

Radiant tube heaters consist of a fire box connected to a metal tube, usually 40 – 50 feet long, running lengthwise in the house. The tube heater draws combustion air from outside the house with a small horsepower motor that pushes the heated air from the firebox into the tube. The tube then radiates that heat downward to the birds and the litter pack. Reflectors above the tubes protect the ceiling and bounce the heat rays coming from the top of the tube back toward the house floor.

The advantage of radiant tube heating over radiant brooders is that the heat source is mounted much higher in the house. This is very convenient, because the heaters are out of the way and do not have to be raised or lowered. The floor area being heated is much greater too. Birds are generally more spread out in a house with radiant tube heaters. However, a larger number of radiant brood heaters generally provide more opportunities for birds to find their most comfortable area.

Different integrators prefer different forms of radiant heat appliances depending on house style, bird size, etc., so it is imperative that the integrator be heavily involved in appliance selection.

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

Installation

Installation of new heaters often requires new plumbing of gas lines and electrical control. This work must be certified by the contractor performing the installation. Heaters must be properly located to ensure the radiant heat creates as uniform heat pattern on the house floor as possible. Thermostats or temperature sensors for the new heat system must be properly located. For radiant tube heaters, these should be placed about halfway between the outside water line and the feed line, lined up at the midpoint of the tube heater, and raised about a foot or so off the floor. It is preferable for each heater to have its own thermostat or electronic controller sensor.

Operation and Maintenance

Heaters and especially the reflectors must be kept clean. All clearance distances specified by the manufacturer must be maintained. The combustion air blower of tube heaters will need periodic cleaning.

References

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

Radiant Tube Heating – Questions and Answers, Issue No. 26 , National Poultry Technology Center, Auburn University, November 2003.

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Heater Replacement

Poultry Farmer:_____ County:_____ Date: _____

Integrator:_____ Number of houses:_____

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

House One:

Number of old pancake heaters to be replaced:_____

Number of old forced-air box heaters to be replaced:_____

Number of new radiant brood heaters to be used:_____
(generally 14 per brood end of house and 8 in the off-end of the house)

Number of radiant tube heaters to be used:_____
(generally 4 per brood end of house and 3 in the off-end of the house)

Other new radiant heaters: Type_____ Number _____

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

Total new heaters (all houses):

Radiant brood heaters: _____

Radiant tube heaters: _____

Other radiant heater: _____ Type _____

<u>Farmer Certification</u>:

I certify that I am not receiving other federal funds for new heaters (USDA RD Rural Energy for America Program).

_____ _____
Name Date

<u>Installation Certification</u>:

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

_____ _____
Name Date