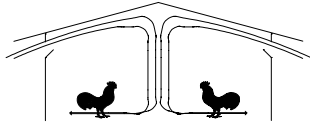




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**Cooperative Extension Service**

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# Poultry Housing Tips

## Keeping Poultry House Heating Costs to a Minimum

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Keeping heating costs to a minimum has always been a goal for poultry producers during the winter months. This year with propane prices already well over a dollar a gallon, producers will have to work harder than ever to keep their heating bills manageable while at the same time trying to maximize bird performance.

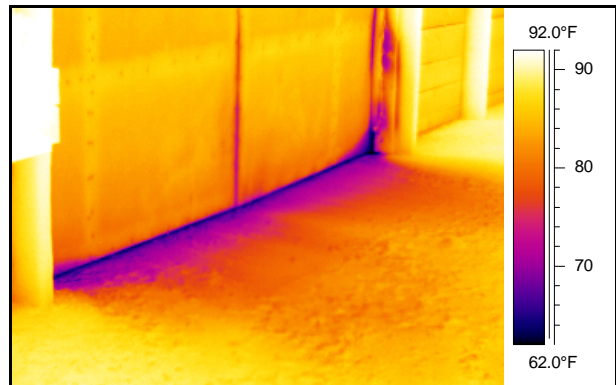
Over the past sixteen years dozens of “*Poultry Housing Tips*” have been written on reducing poultry house heating costs. The following is a summary of a few of the past newsletters on a number of different aspects of minimizing fuel usage during cold weather. Copies of the summarized newsletters as well as others, can be found at [www.poultryventilation.com](http://www.poultryventilation.com)

### 1) Minimize air leakage.

*House Tightness, Environmental Control and Energy Usage. November, 1999*

*Poultry House Tightness. January, 1992*

The tighter a house the easier it is to keep a house warm and fuel costs down. A tight house enables the producer to control how much fresh air is brought into a house as well as where it comes in (i.e., inlets as compared to cracks in the side and end walls). By bringing cold air in through planned side wall inlets, temperature stratification, bird chilling and litter caking can be kept to a minimum.



One way to gauge house tightness is to see how much static pressure can be obtained in the house by turning on one 48" fan, or two 36" fans, with side wall inlets and curtains closed. The higher the static pressure obtained the

## PUTTING KNOWLEDGE TO WORK

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tighter the house is and the better able the producer is to control heating costs. To achieve maximum control over fuel usage as well as environmental conditions, a producer must be able to obtain a static pressure of at least 0.13". If a static pressure of 0.20" or better is achieved, this indicates that there is essentially no leakage, which is the ultimate goal.



**2) Install curtain pockets to increase curtain tightness.**

***Curtain Pockets. December, 1996***

When exhaust fans are off, a significant amount of heat can be lost from the house if the side wall curtains are not held tightly against the side wall. A 12" to 18", single hemmed curtain, attached to the side wall above the side wall curtain, will form a protective pocket for the curtain to slide into when the curtain is fully raised. Field studies have shown 10 to 15% fuel savings by installing such a curtain pocket.

**3) Seal the bottom of your side wall curtains.**

***Sealing the Bottom of Side Wall Curtains. December, 2000***

Stripping the bottom of side wall curtains with a piece of two inch lumber has shown to be a relatively inexpensive method of increasing house tightness as well as reducing drafts at floor level. Another advantage of stripping the bottom of the curtain is the elimination of ice forming between the curtain and the side wall which dramatically decreases house tightness on cold days.

**4) Install curtain pockets on your tunnel curtains.**

***Tunnel Curtain Pockets. January, 2003***

Loose fitting tunnel curtains is a problem on many farms. Installing an inexpensive tunnel curtain pocket for the tunnel curtain to fall into has proven to lead to significantly warmer temperatures in the vicinity of the tunnel curtain as well reduced fuel usage and litter caking.

**5) Take a look at installing tunnel doors on your totally-enclosed houses.**

***Insulated Tunnel Doors...A First Look. December, 2002***

For producers with totally-enclosed houses keeping the birds warm in the vicinity of the tunnel curtain can be a challenge. It is not uncommon on a



cold morning to find the brooders/furnaces in the vicinity of the tunnel curtain operating nearly constantly while those in other areas of the house are running only occasionally. Tunnel doors have proven to significantly reduce heat loss in the vicinity of the evaporative cooling pads leading to fuel savings of 10% or more as well as drier litter.

**6) Use a 48" fan for minimum ventilation when half house brooding.**

***Half House Brooding Ventilation. November, 1992***

In tight houses with side wall inlets, 48" fans can be used instead of side wall 36" fans for minimum ventilation. By using 48" fans, heat can be drawn under the half house curtain into the nonbrooding end of the house during brooding. This eliminates problems with ammonia being drawn from the nonbrooding end into the brooding end and helps to preheat the nonbrooding end. When using a 48" fan for minimum ventilation it is important to keep in mind that if the nonbrooding end is cooler than 50°F or the relative humidity of the air on the brooding end is above 70%, significant condensation problems can occur on the non brooding end of the house.



**7) If you are heating with natural gas check to see if switching to propane might reduce your heating costs.**

***Comparing Heating Costs - Natural Gas Vs. Propane. March 2004***

Producers using natural gas to heat their poultry houses have the option to switch to propane at a relatively minimum expense. With the deregulation of the natural gas industry in many states, it is important for producers heating with natural gas to evaluate if it would be less expensive to heat their houses using propane.



**8) Use some emitters to evaluate house tightness and inlet performance.**

***Using Smoke Emitters in Poultry Houses. September, 2003***

Smoke emitters are one of the best tools to determine where costly air leakage is occurring in a poultry house. The process is quite simple. With a fan or two operating and inlets closed one person moves a smoke emitter over the outside surface of the side and end walls while someone inside checks to see where most of the leakage is occurring. Smoke emitters can also be used to verify if the air entering the inlets during cold weather is making it to the ceiling at the center of the house.



**9) Considering replacing your inlet cables with steel rod.**

***Using Steel Rod Instead of Cable for Air Inlets. December, 2001***

***The Importance of Proper Inlet Adjustment. November, 2000***

In order to minimize fuel usage it is important that all the inlets in a poultry house open the same amount. Just a difference of one inch between inlets can lead to warm stuffy conditions on one end of a house and low temperatures on the other end. The use of steel rod has proven to dramatically reduce inlet opening variation by eliminating stretch and twist leading to much more consistent house air temperatures and quality.



**10) Make sure your controller temperature sensors are in the proper location.**

***Environmental Controller Sensor Placement. November, 2001***

Environmental controller's temperature sensor placement can have a significant effect on both bird performance as well as energy usage. If placed too high or too close to a brooder, bird chilling can occur. If placed too close to a side wall, brood curtain, end wall or in the vicinity of where the air entering through an inlet moves to the floor excessive fuel usage can occur.



**11) Replace ten-minute-timers with five-minute-timers.**

***Ten-Minute vs. Five-Minute Interval Timers. February, 1995***

House temperature decreases half as much each time the minimum ventilation fans come on with five-minute-timers as compared with ten-minute timers. If the house

temperature drops half as much, heaters are less likely to come on. Furthermore, moisture and ammonia levels are kept to a minimum because fans stay off half as long.

**12) Make sure your controller is set to minimize fuel wastage.**

*Programming Environmental Controllers to Minimize Fuel Wastage. September - October, 2000*

*Operating a Modern Broiler House During Cold Weather. February - March, 2003*

Environmental controller settings can have a significant effect on fuel usage during cold weather. Changing heating system and/or fan settings just a couple of degrees can reduce fuel usage significantly without adversely affecting bird performance.

**13) Install 18" circulation fans to reduce temperature stratification.**

*1/15 hp Circulation fans. November, 2003*

*Circulation Fans in Houses with Radiant Brooders. January, 2001.*

Hot air is lighter than cold air, and as a result, tends to accumulate near the ceiling. In houses with open ceilings the air near the ceiling can be 20° or warmer than the air near the floor during brooding. Using small 18" 1/3 or 1/15 hp fans can help push the hot air off the ceiling down to the floor improving air temperatures at bird level, and increase litter drying while at the same time reducing heating costs 10% to 30%



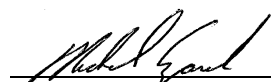
**14) Use a relative humidity gauge/sensor to adjust minimum ventilation settings.**

*Benefits of Controlling Relative Humidity. March, 1997.*

*Controlling Litter Moisture. October, 1997.*

*Litter Treatments and House Moisture. January, 1998.*

Though there are general guidelines for minimum ventilation rates for different age birds to keep fuel costs to a minimum it is important that these rates are fine tuned for the conditions that exist in each house. Using a relative humidity gauge to maintain a relative humidity between 50% and 70% will help to insure that a house is not over or under-ventilated.



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