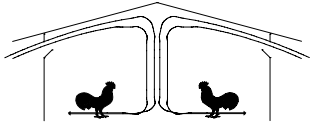




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Poultry Housing Tips

Preparing for Cold Weather - House Tightness

Volume 17 Number 10

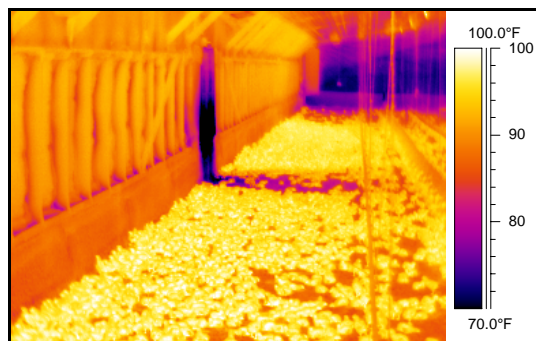
September, 2005

With cold weather right around the corner and predictions of record high fuel prices, now is the time to get your houses ready for cold weather. There are a number of things you can do to your houses that do not cost a lot that can help to keep your fuel bills to a minimum, the most important of which is making sure your houses are as tight as possible. The tighter a house is the less expensive it will be to heat. Increasing house tightness not only minimizes the amount of heat loss when the wind is blowing but it also helps to insure that when you are ventilating, all the cold fresh air is entering through your inlets and not through cracks in the walls and ceiling. Air entering through cracks does not tend to mix with the warm air next to the ceiling which can lead to low temperatures and drafty conditions at floor level. Furthermore, since cold air cannot hold as much moisture as warm air it is less effective at removing excess moisture from the litter leading to caked litter and ammonia.

A quick way to evaluate house tightness is to turn on a couple of 36" fans, with the curtains rolled up tight and air inlets closed, and measure the resulting static pressure (*Poultry Housing Tips* - November 2004). The higher the amount of pressure you can generate with the two fans, the tighter your house is and the lower your heating costs will be. In 400' to 500' houses you are looking to be able to generate a static pressure of at least 0.10". Anything below this will tend to result in excessive high heating costs. The ideal static pressure is 0.20" or better indicating that for all practical purposes your house is perfectly tight.

If you discover your houses are loose the following are a few things you can do that can help to increase the tightness of your houses which cost very little but can save a lot in heating costs:

- 1) Place polyethene film over unused exhaust fans and tunnel fans. A surprising amount of air can enter through closed fan shutters. If the fan has an interior shutter, the shutter can be removed. Polyethene film can be placed over the fan intake, and then the shutter replaced. For fans with exterior shutters the polyethene film can be placed on the outside of the fan shutter. For fans with discharge cones there are cone covers made to seal the fan from the outside.

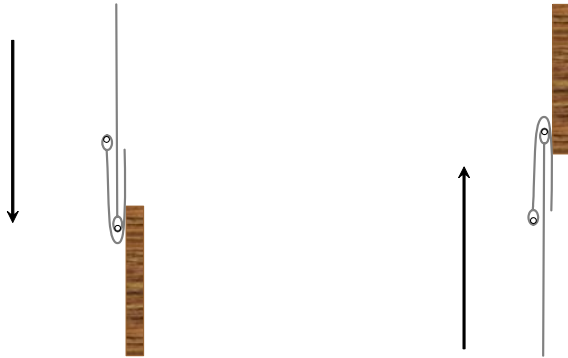


PUTTING KNOWLEDGE TO WORK

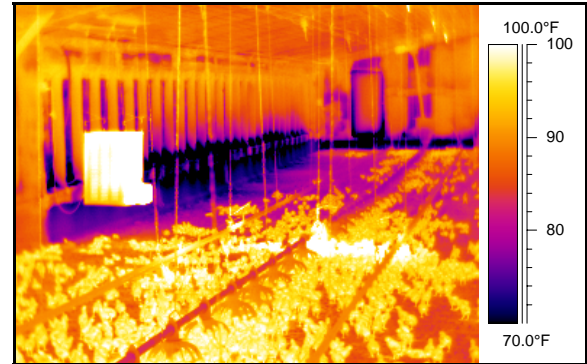
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- 2) Install tunnel curtain pockets. Tunnel curtains are a common source of air leakage in tunnel-ventilated houses. One cause of leakage is that the tunnel curtain does not overlap the side wall sufficiently. If your tunnel curtain opens from the bottom a small curtain pocket can be made with a folded 18" piece of curtain material for the tunnel curtain to slide into. If your tunnel curtain opens from the top, a curtain pocket can be installed at the top of the tunnel curtain opening.

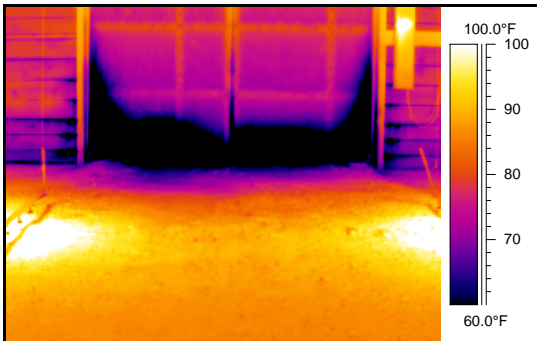


Tunnel curtain pockets

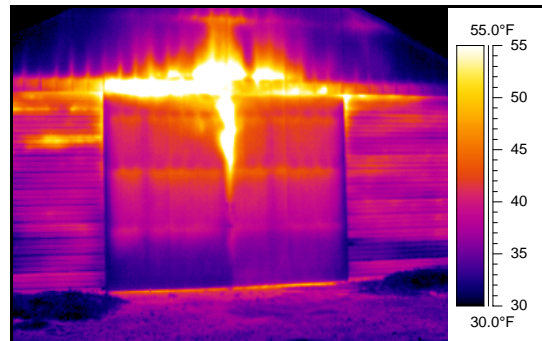


Leakage around loose fitting tunnel curtain

- 3) Put polyethene film over end wall doors. If you have ill-fitting end wall doors simply placing polyethene film over the outside of the doors can dramatically reduce air leakage. To be the most effective the polyethene film should be held in place through the use of 1" X 2" wooden strips.

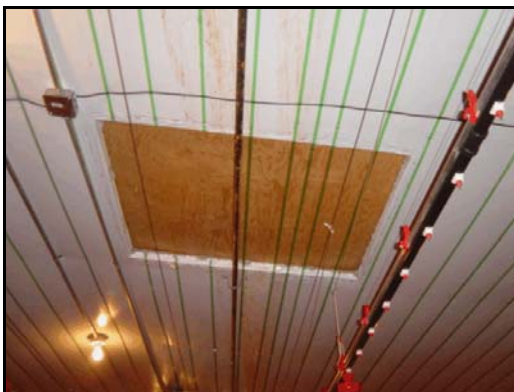


Cold air leakage around the inside bottom end wall door

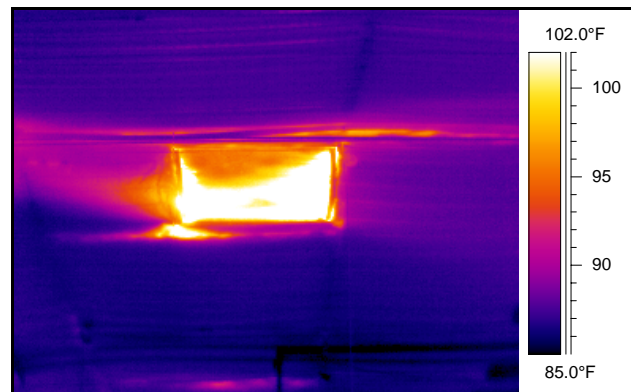


Hot air leaking outside of the top of end wall doors

- 4) Patch holes in dropped ceilings. Even small holes can allow a substantial amount of hot air to leave a house. Make sure you check your attic space access panel for leakage. Many panels made of plywood tend to warp over time resulting in large gaps for valuable hot air to leave your house.

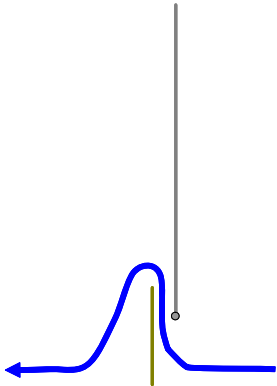


Attic space access panel



Hot air leaking into house from attic space (summer)

- 5) Make sure your brooding curtain is tight. Even if you use fans on the nonbrooding end of the house to ventilate during brooding it is important that air does not move from the nonbrooding end to the brooding end of the house when the fans are off. If you are using bird boards the ideal height should be two feet. The bird boards should be positioned so the brooding curtain rests firmly against them which can be accomplished by positioning the bird boards not directly under the brooding curtain but shifted six inches to a foot towards the non brooding end of the house.

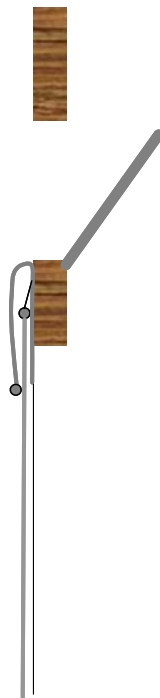


Leakage around brooding curtain from non brooding end of the house



Tight fitting brooding curtain

- 6) Make sure the top of your side wall curtains seal tightly against the side wall of your houses. In many houses there is a minimum amount of side wall below the side wall inlet for the side wall curtains to seal upon. In this situation curtain tightness can be dramatically increased through the use of a full curtain pocket. A single hemmed two foot tall curtain is attached to the side of the house to form a pocket for the curtain to slide into. Ideally the curtain pulleys would be inside the pocket but it is possible to place the pulleys above the pocket and put a small slit into the top of the pocket for the curtain strings to slide through.



Side wall curtain pocket



Wooden strip to seal bottom of side wall curtain

- 7) Seal the bottom of side wall curtains with 1" X 2" wooden strips. During cold weather condensation forming on curtains tends to move down the curtain and then freeze once it goes down below the curtain opening. The accumulation of ice tends to push the bottom of the curtain off the side of the house allowing large amounts of cold air to enter the house. Installing 1" X 2" wooden strips at the bottom of the curtain opening eliminates the possibility of ice formation as well as increases the overall tightness of the curtain.
- 8) Seal all cracks in the side and end walls with spray foam insulation. A 1/4" crack along the top of both side walls in a 500' house adds up to more than 20 square feet of opening. Twenty square feet is the same amount of opening as ten conventional side wall inlets left wide open.

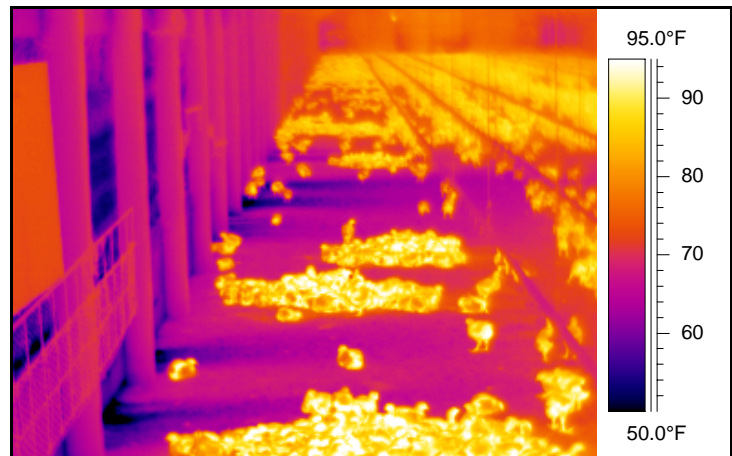


Spray foam insulation filling small crack

- 9) Patch holes in side wall metal. Holes in exterior metal can allow cold air to enter the house at floor level causing very harmful drafts. Though long term the metal should be replaced, a temporary measure is to push dirt up against the side of the house to eliminate cold air leakage.



Holes in side wall metal siding



Lower side wall air leakage

The following are a few past newsletters that provide more details on reducing energy usage during cold weather by increasing house tightness. These newsletters as well as others can be found at www.poultryventilation.com.

House Tightness, Environmental Control and Energy Conservation (November, 1999)

Reducing Side Wall Curtain Leakage (December, 1996)

Using Smoke Emitters in Poultry Houses (September, 2002)

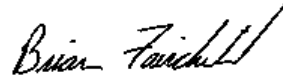
Tunnel Curtain Pockets (January, 2003)

Air Leakage and Litter Caking (December, 2004)

Static Pressure Testing (November, 2004)



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Color copies of the newsletters as well as others can be downloaded from www.poultryventilation.com

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