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Poultry Housing Tips

Simple Fixes Often Result in Substantial Fuel Savings

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Leaky tunnel fan shutters can prove to be very costly during cold weather. Cold air leaking in through fan shutters not only results in excessive fuel usage and wet litter problems in the vicinity of the fans but also leads to problems throughout the house. For instance, excessive fresh air entering through leaky tunnel fan shutters can essentially rob the remainder of the house of fresh air resulting in air quality issues for birds far from the fans. Furthermore, when the tunnel fan end wall area is cool due to excessive shutter leakage, bird density in this area of the house tends to be lower, often resulting in an insufficient number of birds to sufficiently activate feeder control pans.

The good news for growers with tunnel fans with interior shutters is that there is a simple and inexpensive solution for this problem. Simply remove the fan shutter, place a piece of plastic sheeting on the exterior surface of the shutter (approximately one foot taller and wider than the fan shutter), and replace the shutter. Within seconds you will have virtually eliminated fan shutter leakage...at essentially no cost.

This simple fix can lead to fairly dramatic results. Recently on a farm near Athens, a producer was having problems with the radiant heaters nearest the tunnel fans running nearly constantly since he turned the birds out into full house three days prior. The house had solid side walls and was very tight other than the nine tunnel fan shutters. On January 6th at 1:00 pm a 6' X 6' sheet of 1.5 mil plastic sheeting was installed on seven of the house's nine 48" slant wall tunnel fans (the house's five 36" side wall exhaust fan shutters were not covered). Within minutes the air temperature near the tunnel fan end wall increased approximately seven degrees, and the radiant heaters shut off and only cycled on only occasionally (Figure 1).

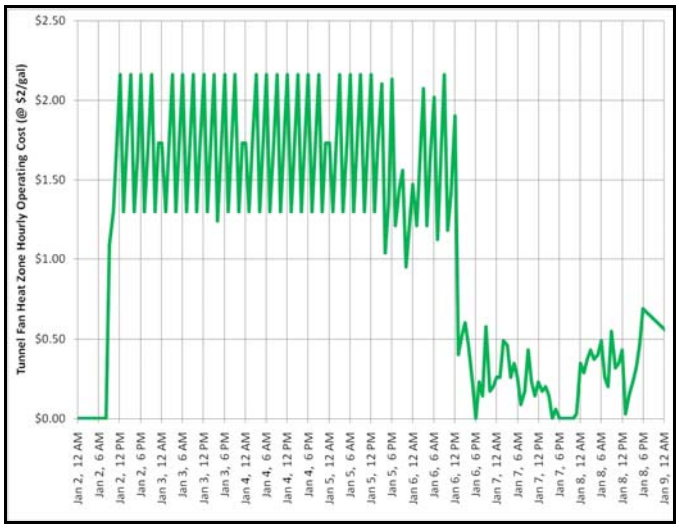

Figure 1. Tunnel fan heat zone hourly operating cost before and after installation of plastic sheeting on tunnel fan shutters (1:00 pm, January 6).

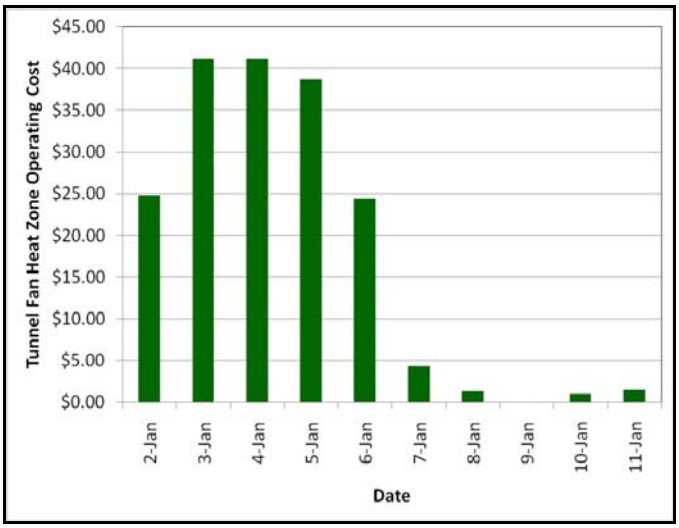

Figure 2. Daily tunnel fan heat zone operating cost before and after installation of plastic sheeting on tunnel fan shutters (@ propane cost of $2.00/gallon).

After installing the plastic sheeting the daily operating cost of the radiant heaters near the tunnel end wall dropped to less than $3 a day from approximately $40 a day. Over the course of the next five days it is estimated that the $5 worth of plastic sheeting installed saved well over $100 in propane usage (Figure 2).

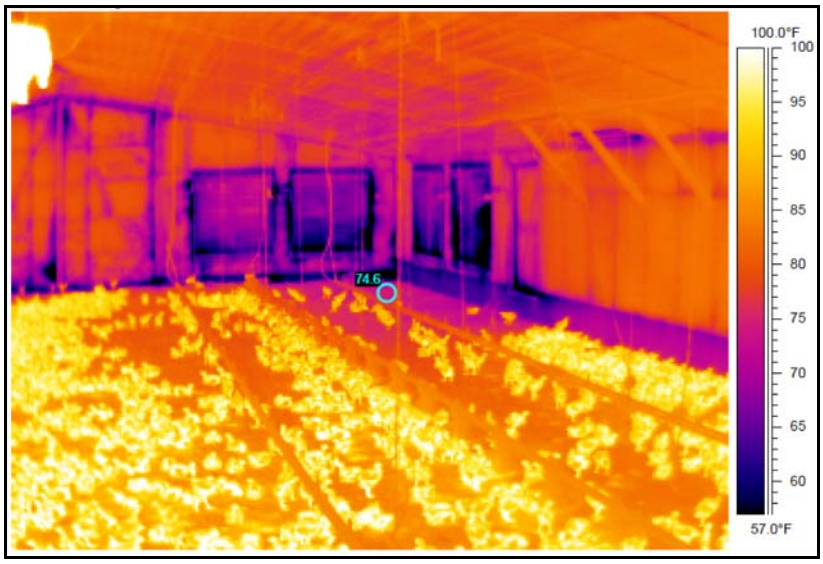

Figure 3. Thermal image of fan shutters with plastic sheeting.

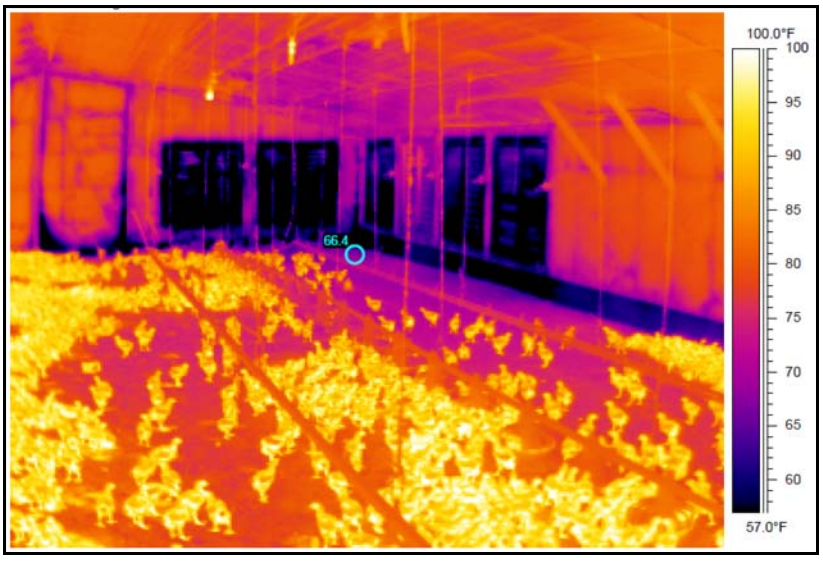

Figure 4. Thermal image of tunnel fans without plastic sheeting.

Two days after the installation of the plastic sheeting, thermal images where taken of the tunnel fan area of the test house as well as an adjacent house where no plastic sheeting was installed on the tunnel fans (Figures 3 and 4). Floor temperatures near the tunnel fans were found to be nearly ten degrees warmer in the house where the tunnel fans were covered. In addition, bird surface temperatures in the last 40' of the house where the fans were covered, were noticeably higher in than in the house with the uncovered tunnel fans.

Figure 5. Condensation from covered fan shutter.

Though the plastic sheeting proved very effective, ideally some type of insulated fan cover would have been installed to reduce fan leakage. The primary reason for this is to reduce formation of condensation on the fan shutters (Figure 5). During very cold weather the condensation which forms on the plastic sheeting and the shutters can turn into ice around the edges of the fan thus reducing the tightness of the plastic. Furthermore, condensation can run down the walls damaging side wall lumber and insulation as well as causing some limited litter caking. A proper insulated fan cover would not only solve the leakage problem but the condensation related problems as well.

Installing plastic sheeting over a portion of a house's unused tunnel fan shutters during cold weather is yet another example of how increasing house tightness leads to reduced heating costs. Though, it would have been better to install some type of insulated fan cover, the fact remains that 10 minutes of time and $5 dollars worth of plastic sheeting resulted in substantial fuel savings.

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