



# Cheeps & Chirps

..... Points for Poultry Profitability

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## WELCOME FROM THE EDITOR

Welcome to the first issue of *Cheeps & Chirps*, part of a new KPF project funded by the KY Ag. Development Board. Our goal is to provide you with informative news and useful material about Kentucky poultry production. Let us know how you like it and how we can make it better.

Melissa G. Miller  
Editor

## INSIDE THIS ISSUE:

Fuel Saving Tips 2

What do you want to read about? 2

What's in your attic? 3

USDA Energy Project Funding 4

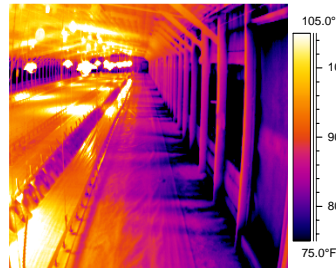
INSIDE LEAFLET: RESOURCE GUIDE

## Poultry House Evaluation Service

One part of a new Kentucky Poultry Federation project (funded by the Kentucky Agricultural Development Board) is called a "Poultry House Evaluation Service." That portion of the project, which will be conducted by personnel from the University of Kentucky Biosystems and Agricultural Engineering Department, will focus primarily on conducting on-farm energy assessments at each integrator complex. Objectives of the Poultry House Evaluation Service program are to assist growers in the following areas:

- Improving production efficiency by properly operating and maintaining the equipment they have,
- Reducing energy costs by adopting energy saving practices and installing effective upgrades,
- Evaluating the cost effectiveness of potential barn improvements, and

- Sharing with all growers, through an educational workshop, information obtained from poultry house evaluations.



Thermal Image Shows Floor Level Drafts.

Approximately 7 to 12 sites within each complex will be selected for on-farm assessments from applications submitted by interested growers. After collecting some basic data about the barns, equipment, and previous utility bills, the assessment team will meet individually with the se-

lected growers and plan specific details for the assessment.

At the farm, the team will examine the building envelope, heating system, lighting, ventilation system, cooling and tunnel ventilation, and electrical service. Other equipment, such as incinerators, may also be included as appropriate. Each participating grower will receive a written report that outlines potential housing improvements, and estimated payback for these improvements.

After completing the on-farm assessments within a complex, results will be presented to all complex growers through one or more educational seminars. These seminars will focus on typical problems that have been found, energy efficiency practices that have been recommended, and cost effective upgrades that could be implemented.

## Hidden Hills Poultry Hosts Educational Seminar

Hidden Hills Poultry in Fulton County, owned and operated by Donald, Loraine, and Stacey Buckingham, played host for an educational seminar held October 18<sup>th</sup>, 2007. This was the first in a series of workshops made possible through a grant from the Agriculture Development Board.

The KY Poultry Federation combined forces with the local Tyson Foods Obion County Complex Integrator Educational Advisory Committee to bring this workshop directly to the community where the growers live and work, thereby reaching many who would otherwise have found it

impossible to reap the educational benefits of such a program.

Auburn University Extension Engineer Jim Donald, and Jess Campbell, Auburn Poultry Housing Technician presented a fast paced information-packed program on energy savings. A large

## Educational Seminar Continued . . .



Fans must remove stale air and excess heat to keep birds growing efficiently.

*“ . . .bring this workshop directly to the community where the growers live and work, whereby reaching many who would otherwise have found it impossible to reap the educational benefits of such a program.”*



Clean, well maintained heaters help stretch the fuel budget.

gathering of growers and complex personnel heard a variety of topics, including methods of tightening up and insulating existing poultry houses, various heating and ventilation systems, proper utilization of and advantages derived from vent doors and controllers, and use of cold cathode lighting in poultry housing. On site smoke testing and power point presentations further reinforced the need to address

deficiencies most poultry growers face.

In addition, Jones-Hamilton representative Debbie LeGette presented an informative program on the use of Poultry Litter Treatment in broiler houses. Each grower received a laminated guide sheet showing the step-by-step process necessary to derive the greatest benefit from the chemical.

Thanks go to Rob Brown, Obion County Complex Broiler Manager; Melissa Miller, KY Poultry Federation Executive Director; and the Ag Development Board for making this program possible.

Written by:  
Lorain Buckingham  
Hidden Hills Poultry  
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## Fuel Saving Tips

Today's fuel prices present a major challenge to controlling winter heating costs. On the flip side, even small fuel savings are more valuable now than they were in times past. So, take another careful look at your barns before winter. Items overlooked or not worth doing before could save a few more dollars now. Following are some things to check that do not involve major cost or building remodeling.

- Seal as many leaks as possible. Cold air that leaks through holes, under the sill plate, around doors, through unused fans, and other places usually goes directly to the floor where it chills birds and litter. Then more heat is needed to keep the birds warm and dry. A tight house forces more fresh air to come in through the controlled vents

where it can properly mix with warm room air before reaching the floor and the birds.

- Cover unused fans, preferably with some insulating material. Caulk or seal openings around fan housings and wall framing.
- Close and seal tunnel curtain inlets as tightly as possible. Install curtain pockets if not already present.
- Check temperature sensors for temperature accuracy and be sure they are not located in a cold draft or in the direct heat pattern of a brooder or forced air heater.
- Make sure that the heater and ventilation controls do not conflict with each other.
- Resist the temptation to under ventilate. Allowing moisture to build up leads to wet litter, poor bird performance, and more heat to dry the build-

ing later.

- Ask your gas supplier to check the gas pressure at your heaters when they are operating. Low pressure causes inefficient combustion and low heat output.
- Adjust ventilation timers to match bird age and weather conditions. Timer control systems require frequent adjustment as birds grow and weather fluctuates.
- Consider adding mixing fans along the center of the building.
- Replace sidewall inlet cables with steel rod to improve the uniformity of inlet opening.
- Repair or add insulation where possible

Written by:  
Doug Overhults,  
University of Kentucky

## What do you want to read about?

Welcome to our first issue of Cheeps & Chirps. We want to know what you want to read about. Please e-mail topics of interest to [melissamiller@kypoultry.org](mailto:melissamiller@kypoultry.org).

# What's in your attic?

Maybe we don't really want to know! But lately there seems to be a buzz in the broiler industry about "*attic inlets*." So let's take a quick look at an idea that might save some heating fuel and perhaps provide drier litter and better air quality as additional benefits.

Although new to the broiler industry, attic inlets are a ventilation concept that has been around for quite a while in livestock housing. Rapidly escalating fuel costs have prompted a serious look at attic inlets in broiler barns. Some are already being installed even though many questions remain to be answered before we know if they are really cost effective. In general, the idea is fairly simple – just change the air inlet system so that minimum winter ventilation air is pulled out of the attic in the center of the building instead of directly from outside over the eaves.



On sunny winter days, the attic can be 20 to 30 degrees warmer than outside air for a few hours and may average about 15 degrees warmer over a 9-hour day. The barn roof functions as a very

large solar collector. Some of that solar heat is captured when attic air is used for minimum ventilation needs. Of course, there is little or no heat in the attic at night or on cloudy days, so attic inlets provide no substantial benefit at those times.

**Basic principles** – Four fundamental rules apply to attic inlets.

1. Attic air is heated only when the sun shines.
2. Attic air enters the bird space only when the fans operate.
3. **Attic inlets will not operate properly in a house with a lot of air leakage.**
4. Attic inlets are not a year around system. At certain times they can actually supply too much heat and can not be used.

**Installation** – An inlet commonly used is a four sided box, about 2 feet square, with a counter-weighted blade (similar to a shutter blade) that covers a 3-inch wide opening on each side of the box. The blades open and close with fan operation and direct air outward in all four directions. Inlets are usually installed at or near the center of the barn and spaced evenly along its length. If mixing fans are installed along the centerline, move them 2 feet off center. Where fans can not be moved, place inlets 2 feet off center on alternating sides of the centerline. The number of inlets suggested for a 40' x 500' house ranges from 10 to 14, assuming

that two 36-inch or one 48-inch fan is used for minimum ventilation. Unless the house is extremely tight, it is probably best to use 10 or 12 inlets. Too many inlets reduce static pressure below that needed for good air distribution and mixing. For this purpose, a house should be tight enough to produce a static pressure of around 0.15 inches of water (or more) when the barn is completely closed and two good quality 36-inch fans are running. If a house does not meet that criterion, place priority on sealing air leaks before adding attic inlets.

**What to expect** – One potential benefit from attic inlets is fuel savings. Some early reports suggest savings of 5 to 35% may be possible but few, if any, side by side comparisons have been made to measure actual fuel savings. Until more definitive information is available, it would be wise to expect fuel savings at the low end of that range. Remember, nights and cloudy days don't count for collecting heat.

Drier litter and less caking, especially near the sidewalls, also appears to be emerging as an important secondary benefit. Air from the attic inlets enters at the peak of the ceiling and begins mixing with the warmest air in the barn. Thus, the air is relatively warm and dry when it reaches the base of the wall and may have some enhanced drying capacity as it moves across the litter near the wall.

A third potential benefit is better house air quality. At various times, depending on temperatures outside and inside the barn, more heat may be drawn in through the attic inlets than is required to heat the barn. At those times, barn temperature will rise and fans will begin to operate on temperature control. It is even possible that additional fans will run and sidewall inlets will need to open until the barn is cooled below the control temperature set point. During the time of additional fan operation, both ammonia and humidity in the barn will be reduced, thus freshening the air and drying the litter without requiring any additional heating fuel.

**Future** -- Some other potential benefits, primarily in the summer, remain to be evaluated. Between flocks, heat from the attic might be used to heat the empty barn as an aid in driving some ammonia out of the litter. Likewise, heat from the attic may help pre-heat the barn before placing a new flock.

With potential for both fuel savings and improved house conditions, it seems likely that more and better attic inlet systems will be developed. Additional testing and experience will better define the costs, benefits, and operation thus giving growers a sound basis for future decisions and management.

Written by: Doug Overhults,  
University of Kentucky

**Cautions** – It's easy to get excited about potential benefits of a new idea, but there are always two sides to any story. First, let's look at the number of inlets to install. Several unknowns in regard to building leakage make it difficult to calculate precisely how many inlets are needed in a particular building. Basically, attic inlets are just holes in the building envelope and there is a bit of guesswork about how big those holes can be without losing

static pressure in the barn. Attic inlets must close when the fans are off. **Under no circumstances should warm, moist, ammonia laden air be allowed to migrate into the attic.** This can seriously damage insulation, roofing, and structural framing. Counter weighted blades are self closing but they must be checked regularly to verify proper operation. Inlets must be manually closed to stop drawing hot air from the attic. This

is accomplished by pulling a closure flap down over the counter-weighted blade. In mild weather that changes frequently between warm and cold, manually opening and closing inlets in several barns can be a challenging management chore. Under some conditions, excess attic heat could prematurely force the ventilation system into tunnel operation. Such a condition would increase electricity costs and could chill the birds at

certain growth stages. This can be avoided by careful adjustment of control temperature set points and by closing the attic inlets at critical times. Attic inlets installed as described above are generally adequate to handle two 36-inch or one 48-inch fan (approximately 18,000 cfm at 0.08 inch W.C.). When additional fans operate, sidewall vents also need to open. The static pressure controller will need adjusting to ensure that sidewall vents open when needed.



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## USDA Energy Project Funding

USDA Rural Development offers grants and guaranteed loans for Renewable Energy Systems and Energy Efficiency Improvements under Title IX, Section 9006 of the 2002 Farm Bill. The program was created to help farmers, ranchers and rural small businesses reduce energy costs and consumption while helping the nation meet its energy needs. The program will also enable agricultural producers and rural small businesses create new sources of income, to create new jobs, and new uses for agricultural products and wastes.

The key provisions tied to the program are as follows:

- Applicants may qualify for a grant, a guaranteed loan, or a combination of both.
- Grant request must not exceed

25 percent of the eligible project costs. Renewable energy grants can range from \$2,500 to \$500,000. Energy Efficiency grants can range from \$1,500 to \$250,000.

- Projects under \$200,000 total project costs qualify for a simplified application process.



- Loan guarantees can be for up to 50% of total eligible project costs.

Guarantees can range from \$5,000 to \$10,000,000 per project.

- Projects can qualify for a combined grant and loan guarantee, but the grant portion is still subject to the above limits and combined funding assistance cannot exceed 50% of total eligible project costs.

For more information contact the USDA Rural Development State Office in Lexington at (859) 224-7435. TDD for hearing impaired (859) 224-7422. The USDA website is <http://www.rurdev.usda.gov> or <http://www.rurdev.usda.gov/rbs/farbill/index.html>