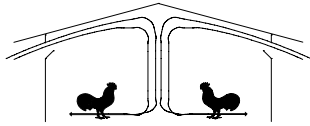




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Poultry Housing Tips

Evaluating Tunnel Ventilation System Performance...Are You Ready for Hot Weather?

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Quite often producers' ability to keep their market age birds cool on a hot summer day has more to do with what they did before the chicks rather than what they are doing that particular day. The fact is that much of the basic maintenance required to insure maximum bird cooling in a tunnel-ventilated house is difficult to do once the birds are placed, especially once they reach market age. The following provides a guide as to how to evaluate the maintenance status of a tunnel-ventilated house in between flocks so that potential ventilation system problems/weaknesses can be uncovered before it is too late.

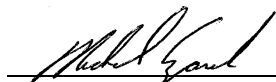
- 1) Check that all tunnel fans are clean and properly maintained. Are the fan shutters, screens, and blades clean? Do the fan shutters open easily? Are the fan belts worn? Does the motor pulley show signs of wear? Does it still have a "V" shape to it or does it have a smooth, mirror-like finish and have more of a "U" shape? If so it may need to be replaced. Consider purchasing an electronic tachometer to verify the fan blades are rotating at the proper speed (Electronic Tachometers. *Poultry Housing Tips*. Vol17, No 6).
- 2) Close the tunnel curtain and air inlets and conduct a static pressure test. Turn on one tunnel fan and measure the resulting static pressure. The ideal static pressure is 0.20"; this indicates that for all practical purposes the house has no leakage. To insure maximum bird cooling the static pressure should be at a minimum 0.13". Not having a tight house can dramatically reduce your ability to keep your birds cool. For instance, let's say that it takes two of a house's eight tunnel fans to obtain a static pressure of 0.10". This basically means that when tunnel ventilating that two of the house's eight fans are pulling hot air through the cracks and not through the pad system. This not only reduces overall bird cooling but can lead to large temperature differences between the pad and fan ends of a house.
- 3) Repeat the static pressure test with each of the house's tunnel fans. If the pressure decreases, it means the fan being used is moving less air than the first fan tested and is in need of maintenance. If the pressure increases, it is an indication that the previous fan(s) tested is/are in need of maintenance.
- 4) Open the tunnel curtain fully, turn all the tunnel fans on and measure the static pressure in the center of the house. Typically this will run between 0.08" and 0.10". If the pressure is higher than 0.10" it indicates that the tunnel fans are being restricted. It may be as simple as your tunnel curtains not being fully opened. It also could be an indicator that the pads may need cleaning or possibly replacing. A very low static pressure can be an indicator that the fans are not moving the air they should or the house has issues with excessive leakage.

PUTTING KNOWLEDGE TO WORK

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- 5) Take a close look at the house's evaporative cooling pads. Are the pads in good shape? Are the flutes clean? Are pad surfaces free of cob webs and mineral build-up? In the center of the pad system, measure the air speed a few inches from the pad with all the fans operating. (This should be done when there is minimal outside wind) For a 6" pad the air speed should be between 350 and 400 ft/min, a 2" pad between 300 and 350 ft/min, and for a 4" pad between 225 and 275 ft/min. If the air speed appears low, take a five-gallon bucket of water and throw it at the pad (the water, not the bucket) where you were measuring air speed. Check the speed of the air coming through the pad once again. If the air speed increases, the pads are in need of cleaning. If the air speed is higher than values listed, you may not have enough pad on the house.
- 6) In houses with air deflectors, static pressure measurements (with all the tunnel fans operating) should be taken thirty feet past the last deflector with a magnehelic pressure gauge (Tools for Producers. *Poultry Housing Tips*. Vol 11, No 11). Ideally, this pressure should not exceed 0.12". If the pressure is too high, measure static pressure once more thirty feet past the end of the tunnel curtain opening. If static pressure is low near the tunnel curtain opening (i.e. 0.06") this is an indicator that the deflector curtains are too low and are causing a significant increase in pressure that the fans are working against. Consider raising the deflectors a foot or two. You will often find that raising deflectors will improve air speed significantly between deflector curtains. If the static pressure measured near the pads is also high, it typically indicates that your pads are dirty and are in need of cleaning.
- 7) Around 100' from the tunnel fans measure the air speed five feet off the floor roughly half way between the side wall and the center of the house. Make sure the air velocity meter you are using has an averaging feature and wait at least 30 seconds before noting the air velocity. Turn the meter off and back on and repeat the measurement. Repeat this process on the other side of the house and average the four readings. This should provide a fairly accurate measurement of average house air velocity. Ideally, the average air velocity in a tunnel-ventilated broiler house should be between 500 and 600 ft/min. If it is low, and you have taken all the above steps, you may not have enough tunnel fan capacity to obtain optimal bird cooling. In houses with air deflectors, air velocity measurements should be taken half way between deflectors roughly 100' from the tunnel fan end of the house.
- 8) If you have a 6" pad system turn off the water running to the pad system reservoirs. Empty the reservoirs in all the houses. Turn the water back on to all the pad system reservoirs. Can you maintain 40 psi where the water comes into the house? If not you may have not have sufficient water capacity or the size of the pipe running from the well/street may not be large enough (Broiler Farm Water Usage and Pipe Sizing Rules of Thumb. *Poultry Housing Tips*. Vol 19, No 6).
- 9) With the pad system reservoirs full, turn the circulation pumps on. Check to see if the water is spraying up the proper height at the end of the distribution system (Does Your Evaporative Cooling System Circulate Enough Water. *Poultry Housing Tips*. Vol 14, No 4). If it doesn't, make sure the filter and water pump impellers are clean and valves are wide open. If it is still low you may need to consider changing the type of filter used or upgrading your circulation pumps (Getting More Out of Your Pad System's Circulation Pump. *Poultry Housing Tips*. Vol 14, No. 5)
- 10) Last but not least, have your standby generator serviced. You may also want to have an electrician check your farm's electrical system each spring to check for any potential problem areas.



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