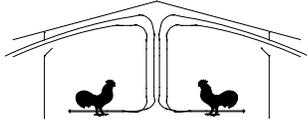




The University of Georgia
Cooperative Extension Service

College of Agricultural and Environmental Science/Athens, Georgia 30602-4356



Poultry Housing Tips

Circuit Breaker Overheating

Volume 10 Number 10

September, 1998

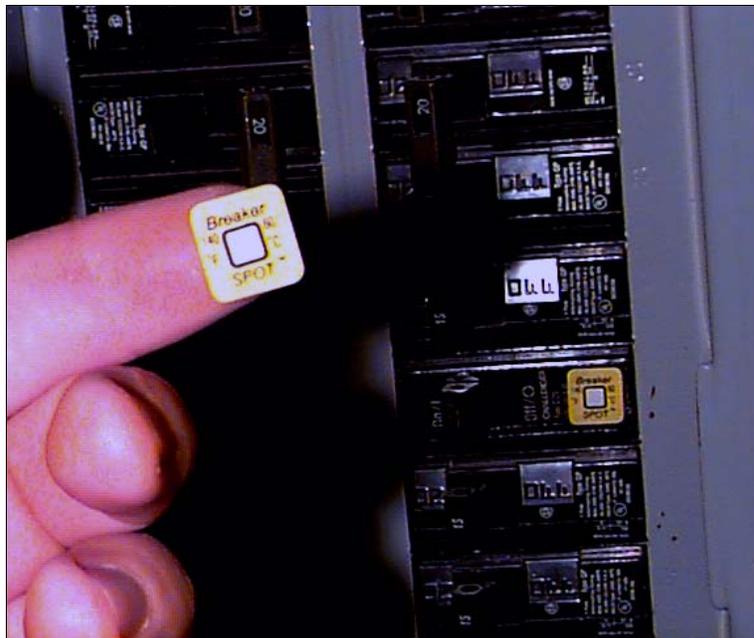


Figure 1. Circuit breaker temperature indicator.

One of the biggest fears for the owner of a tunnel-ventilated house is having big birds and losing electrical power on a hot summer day. They know if the power goes out and the side wall curtains on their houses do not fall, all their birds will probably be dead in less than 30 minutes. They also realize that even if their side wall curtains fall like they are supposed to, a bird which is acclimated to an “effective” air temperature in the mid seventies (85°F actual house temperature - 10°F windchill effect = 75 °F effective temperature) is very likely to die if it is suddenly subjected to air temperatures in the mid nineties. To minimize this potential for disaster, as well as insure against the accompanying economic loss, many producers with tunnel-ventilated houses have purchased standby, automatic transfer generators.

It is important to realize that even with a standby generator, power loss is still a potential problem. In fact, every summer a number of producers lose birds, not because they lose power coming into their farm, but because a main circuit breaker in one of their house’s electrical panel is “tripped”. Though a main circuit breaker can trip due to circuit over loading, thus keeping a house from burning to the ground, the sad fact is that in many cases the cause of the tripped main breaker is lack of proper electrical panel monitoring/maintenance.

Basically, an electrical circuit breaker operates on temperature. As the flow of electrical current through a breaker increases, so does the temperature of the circuit breaker. Each circuit breaker is rated for a specific current flow. If the current exceeds a circuit breaker's rating, it will warm up to a point where it will "break" the circuit, cutting power to the device and preventing a fire (you can usually tell what devices in your house are using the most electrical current because their circuit breaker will be the warmest).

If a house has been properly wired, main breakers rarely trip due to excessive current flow. This is because if there is an electrical short or a problem with an individual circuit (i.e., bad fan motor), its circuit breaker is supposed to trip so you only lose power to that one device instead of the entire house. Though the main circuit breaker rarely trips due to excessive current flow, it is important to realize that there are a number of other maintenance related factors that can cause a main electrical circuit breaker to heat up and trip. These include:

- 1) Poor electrical connections where the electrical circuit wires attach to the circuit breaker.
- 2) Poor electrical connections where the circuit breaker attaches to the main panel.
- 3) A faulty circuit breaker.
- 4) Inadequate room ventilation where the main panel is located. If the room is unventilated and reaches temperatures over 100°F, breakers can trip at current flows significantly lower than their rated value.

So, how does a grower know if he has a potential problem? Simply by monitoring the temperature of the main circuit breaker. Generally, the temperature of a circuit breaker should not exceed 140°F. If it does, it means the circuit breaker is in danger of "tripping out" due to overloading or maintenance related problems.



Figure 2. Temperature indicators should be installed on each line of a 240 volt circuit breaker. The temperature indicators on the top, right circuit breaker have turned black, indicating a high temperature condition has occurred.

One of the best ways of monitoring circuit breaker temperature is with a heat-activated indicator sticker. These small ½" X ½" self adhesive indicators can be placed on all your important circuit breakers. When the circuit breaker reaches 140°F the indicator permanently turns from silver to black in color indicating a potential problem.

One of the biggest advantages of this method of monitoring circuit breaker temperature is that it is monitoring your breaker 24 hrs a day, 365 days a year. Also, if you ever have a problem, there is a permanent record of it. Once you know you have a potential problem you can contact your local licenced electrician to check out your circuit breakers, wiring, connections, etc., to determine what is causing your circuit breaker(s) to overheat.

The indicator stickers come in packets of 30 for about \$25 and have about a three year life. Considering the relatively low cost of these temperature indicators, you should consider placing them on your individual fan, evaporative cooling, and well pump circuit breakers as well as the main circuit breaker.

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Provided to you by:

You can find your nearest local electrical supply company which carries the Breaker Spot_{T.M.} Early Warning Indicators by calling NSI Industries, Inc. at 1-800-321-5847. Breaker Spot_{T.M.} Early Warning Indicators can also be purchased from Davis Instruments at 1-800-543-3615 (Catalog No. BRS140)

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