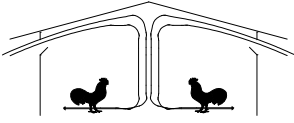




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Poultry Housing Tips

Hot Circuit Breaker? A Fan is Not the Solution

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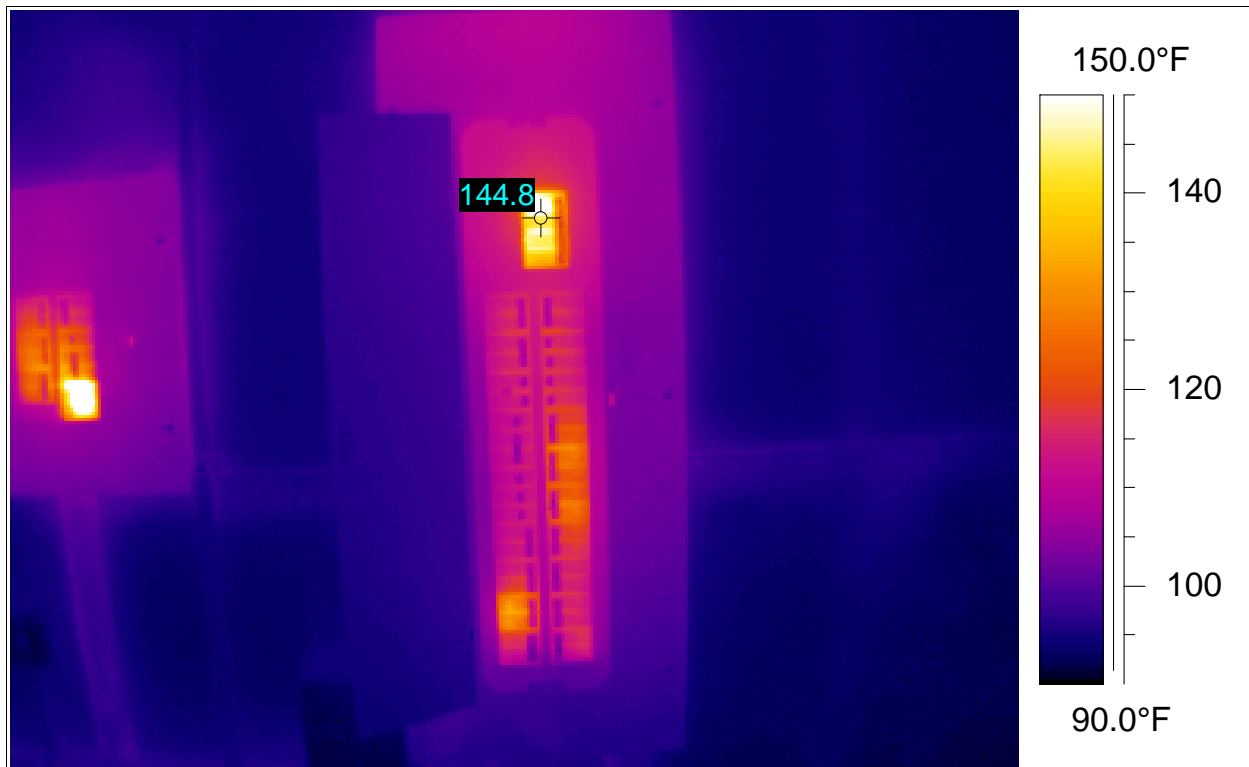


Figure 1. Excessive main circuit breaker temperature.

With market age birds the last thing a producer wants is for the main electrical panel circuit breaker to trip. Though it often seems like it may happen without any warning, the truth is that in most cases there is a very clear indicator that an electrical breaker will trip sometime in the near future, namely because the breaker is hot. 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/devices to prevent an electrical fire. In addition to excessive current flow, circuit breaker overheating can be the result of poor quality electrical connections. Poor electrical connections increase the resistance to the flow of electrical current, resulting in the generation of heat. Potential problem areas include where the wires connect to the circuit breaker, where the circuit breaker connects to the main panel or possible electrical connections within the circuit breaker itself. Generally, the temperature of a circuit breaker should not exceed 140°F. If it does, this means the circuit breaker is in danger of tripping. A good "rule of thumb" is that if you can't hold your finger on the plastic part of the circuit breaker without getting burned, it is too hot.

Though it may seem like a good idea if you find that your circuit breakers are abnormally warm (i.e. 120°F+), using a fan to cool them is not solving the problem. Blowing air over a circuit breaker may solve the symptom (a hot breaker), but it does not solve the underlying problem, namely that the circuit is overloaded or there are poor electrical connections. Case in point: the thermal image in Figure 1 was taken on a farm with seven-week old broilers during hot weather. The main breaker had a surface temperature of 145°F, indicating that the breaker could trip at any time. The producer decided to remove the cover on the electrical panel (not recommended) and install a circulation fan to help cool the main breaker. Initially, the circulation fan appeared to solve the problem. The temperature of the main circuit breaker decreased to less than 130°F (Figure 3). But in fact the underlying problem was not solved. A week later a second thermal image was taken of the same breaker under the same operating conditions. Even with the cooling fan operating, the main circuit breaker was significantly hotter than measured the previous week (Figure 4). It became obvious that the problem was getting worse. The next morning the main circuit breaker was replaced and there was a dramatic decrease in the temperature of the main breaker (Figure 5). The problem was solved.



Figure 2. Fan being used to cool overheated circuit breaker.

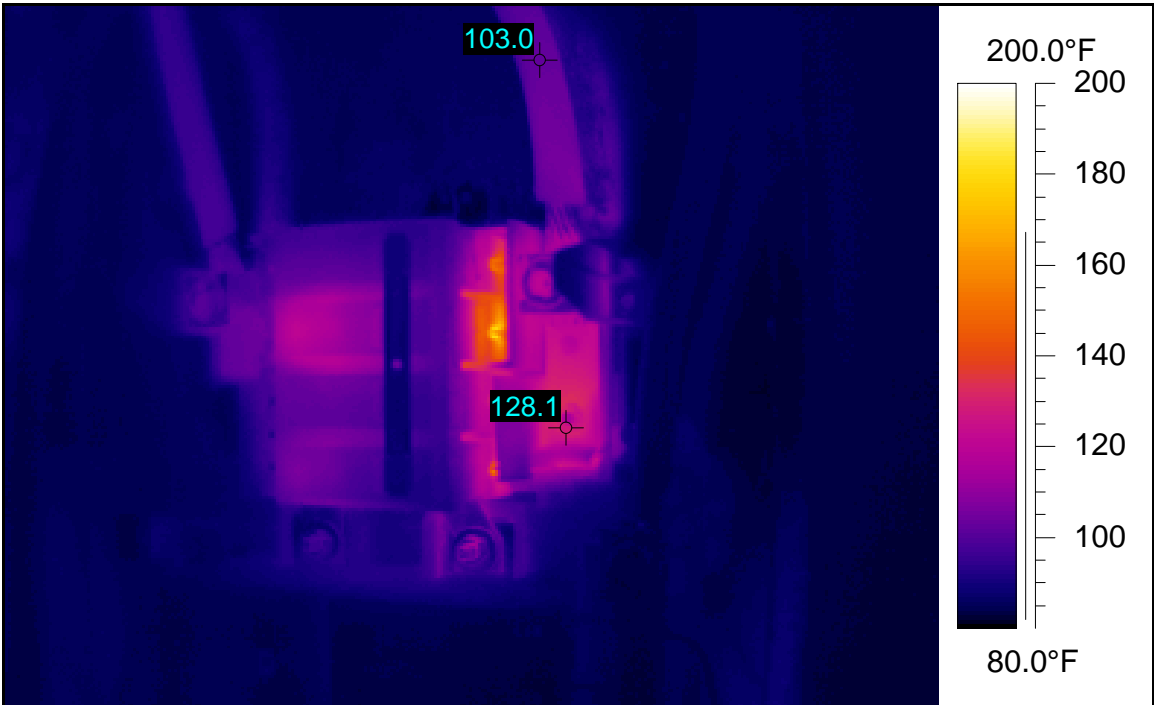


Figure 3. Thermal image of main circuit breaker after installation of cooling fan.

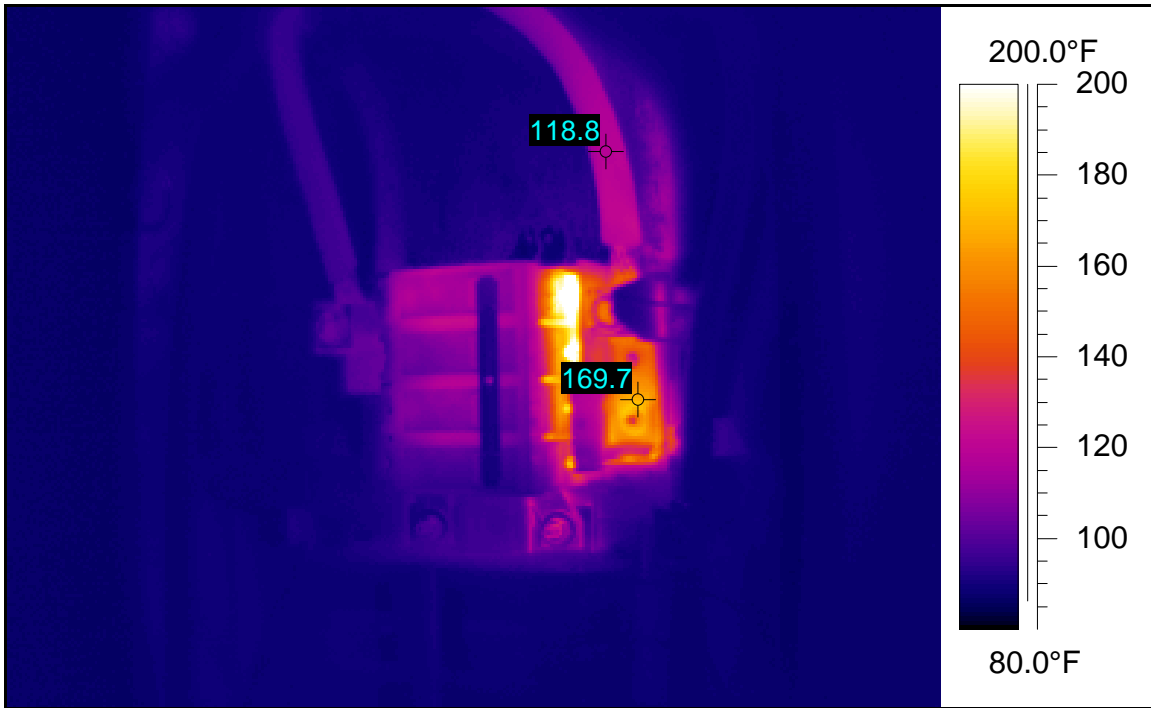


Figure 4. Thermal image of main circuit breaker a week after the cooling fan was installed.

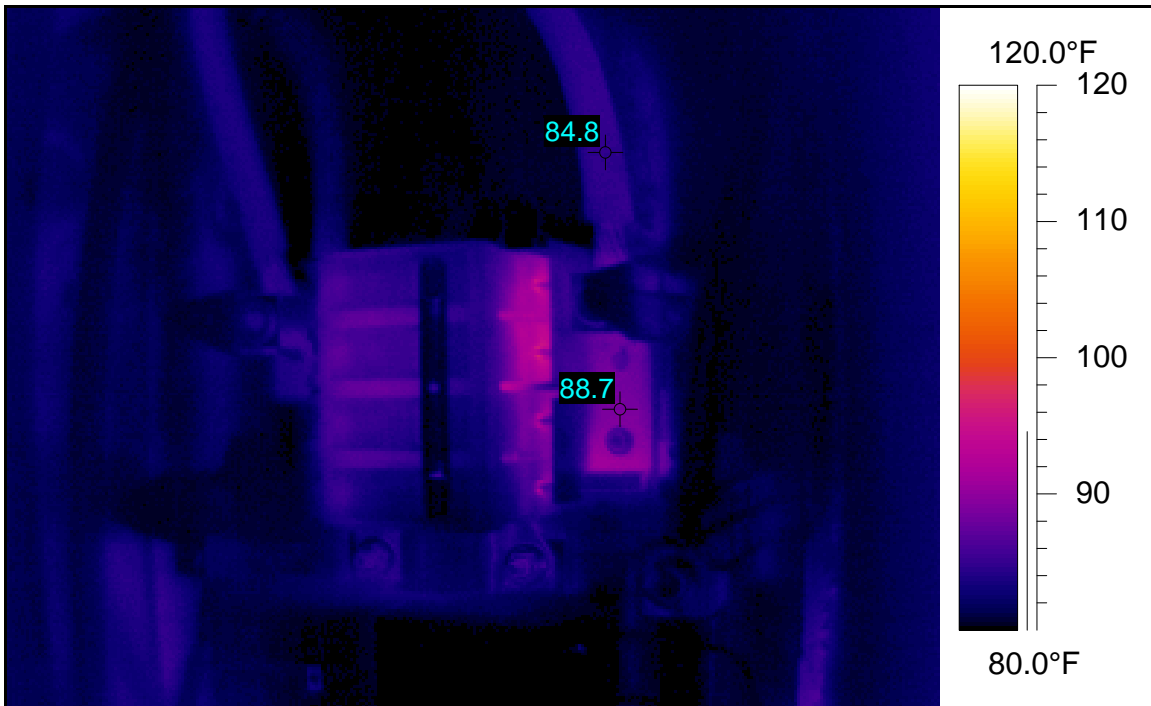



Figure 5. Thermal image of new main circuit breaker.

To put it simply, if your breakers are running hot there is a serious problem and a cooling fan is not the solution. An electrician should be called immediately to determine the cause of the overheating so it can be addressed immediately before there is a potentially disastrous loss of power.


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