

Poultry Housing Tips

Electronic Thermostats

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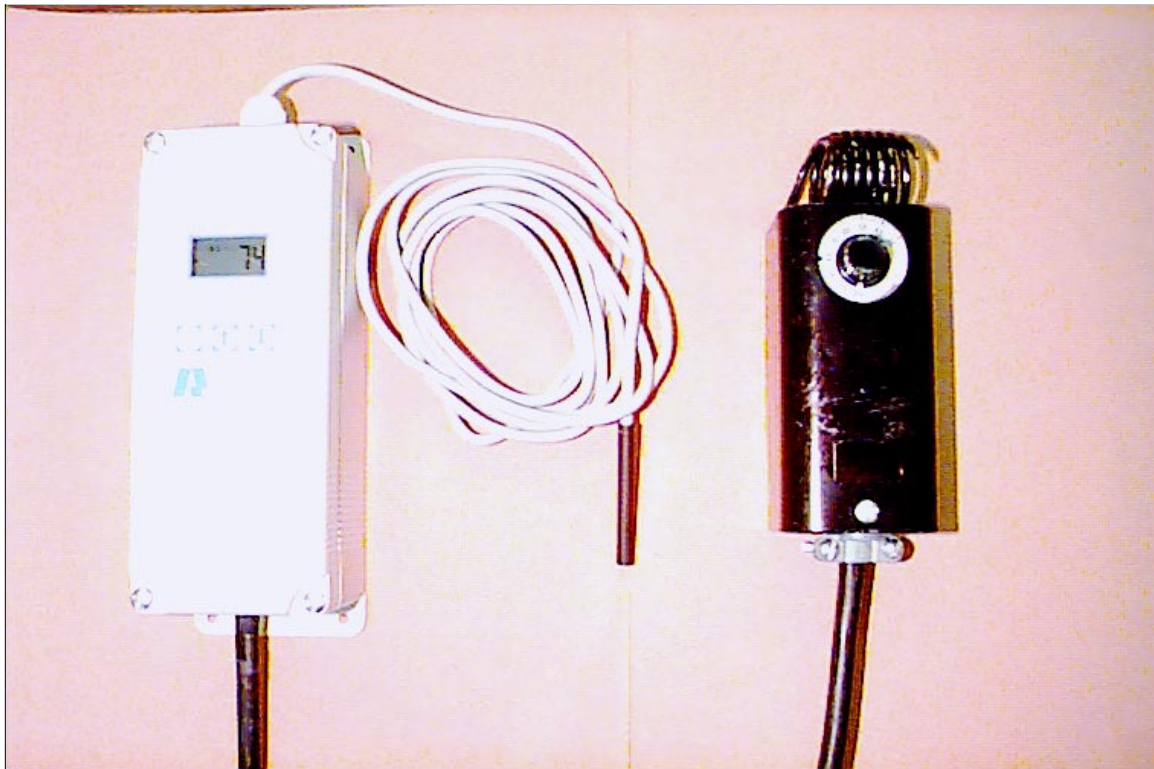


Figure 1. Electronic and Mechanical Thermostats

Maintaining the proper house temperature is essential in order to keep your birds healthy as well as to maximize weight gain and minimize feed conversion. At no time is this more important than during the first few weeks of a bird's life. Some experts have said that for every degree chicks are brooded below the ideal temperature, body weight is decreased by 0.01 pounds and feed conversion is increased by one point. Large variations in house temperature can also lead to production problems.

There are three main problems facing broiler producers when it comes to trying to maintain proper house temperature. The first is that the mechanical thermostats that are being used on many farms to control furnaces/brooders tend to have problems with accuracy. This is not news to most growers. In a typical broiler

house with six to ten thermostats it is not uncommon to find that one of two of them are often “off” as much as 10 degrees making it very difficult to set them properly. This has resulted in many growers using the “click method” of setting heating system thermostats. The grower looks at a thermometer hanging in the house, and if it is too low, he will turn the brooder/furnace thermostat dial until he hears the thermostat click and the heat comes on. Conversely, if the house is too warm, he will turn the dial down until the thermostat “clicks” off. A number of growers have gone years without ever looking at the dial on the their thermostats when they set them. A second potential problem is that most mechanical thermostats have an on/off differential of plus or minus two degrees or more. This means that if you set your furnace thermostats at 85°F, they will turn on at 83°F and off at 87°F. Though this is not a critical problem, it can lead to significant swings in house air temperature during brooding. The third problem facing growers during brooding is that they may not know whether the thermostats are doing a good job because their ability to accurately determine actual house temperature is questionable. In many instances, growers have no thermometers in their houses to let them know what the air temperature in their houses is. Even if they do have a thermometer, it is often a large dial type which is often off by five degrees or more.

One option, of course, is to replace heating and cooling thermostats with an electronic environmental controller. With the electronic environmental controller the producer could precisely set the temperature he wanted and the brooders/furnaces as well as exhaust fans would turn on and off at precisely the temperature he wanted. Furthermore, the electronic controller would display the temperature throughout the house so the grower would know how good of a job he was doing. Though this would help solve the problem of accurately controlling house temperature during brooding, it can be rather costly to rewire an existing house for an environmental controller.

A second less costly option, is to replace the existing furnace/brooder thermostats with new electronic thermostats. The new electronic thermostats, which have been on the market for a little over a year, have a digital display that not only can display the temperature at which the furnace/brooder turns on, but the actual house temperature as well. The differential can be set for anywhere between one and thirty degrees. Therefore, during brooding if you set the thermostat at 85°F with a one degree differential, the furnaces would turn on at 84°F and shut off at 85°F. If the differential was set at four degrees the furnace would turn on at 81°F and off at 85°F.

The thermostats comes with a six foot sensor wire that can be extended as long as 200' so the thermostats can be mounted on the side wall and the sensor can be placed in the center of the house down at bird level (Figure 1). If a grower wants, with a little extra wiring, all the heating/brooder thermostats can be placed in one location in the center of the house and the sensors placed near their corresponding brooders/furnaces

These electronic thermostats come in a 120/240 volt model for furnaces or fans and a 24 volt model for brooders and cost in the \$65 and \$75 range. Though installing the thermostats does takes a little more wiring than required for a conventional thermostat, it is still relatively easy to replace an existing mechanical thermostat with an electronic one.

For about the past year studies on the new electronic thermostats have been conducted on two broiler farms in Georgia. On one or two houses on each farm the mechanical thermostats controlling the furnaces/brooders were replaced with the new electronic thermostats. As expected the growers like the fact that could accurately set the new electronic thermostats and that the thermostats displayed actual house air temperature. Furthermore, they found that they could keep a much more consistent house temperature. Figure 2 illustrates house temperature during the second week of production in side by side broiler houses on one of the farms. In one house the furnaces were controlled by standard mechanical thermostats, and in the other the furnaces were controlled by the new electronic thermostats. In the house with mechanical thermostats the house temperature varied as much as five degrees while temperature varied less than two degrees in the house with electronic thermostats. The growers on the farms where the electronic thermostats were tested are planning to replace their mechanical thermostats controlling their brooders/furnaces in their other houses in the future.

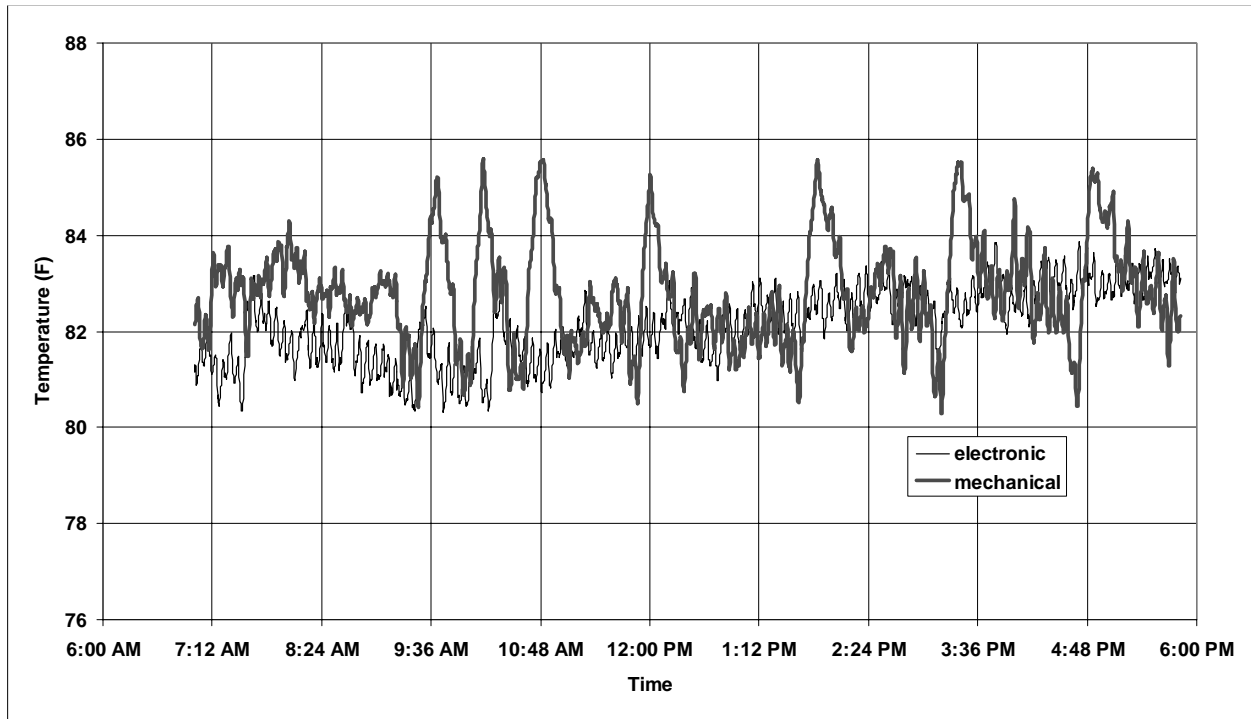


Figure 2. House air temperature in houses with electronic and mechanical thermostats

Though it is certainly possible to replace all the mechanical thermostats in a house with electronic ones, replacing furnace/brooder thermostats should be considered first considering the importance of maintaining the proper air temperature during brooding as well as conserving fuel. Other thermostats that you may want to consider replacing are those where precise temperature control is very important, for example those controlling the evaporative cooling system and/or timer fans. Keep in mind the more mechanical thermostats you replace the more cost effective an environmental controller becomes.

It is important to note that a down side of the new electronic thermostats is that they are more susceptible to lightning related problems than traditional mechanical thermostats.

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