

Maintenance Critical to Backup Generator Reliability



Poultry farms require a constant supply of electricity to operate efficiently and keep birds alive. Loss of power can have disastrous results on a house of broilers nearing harvest age. Fifteen minutes is all it takes to lose an entire house of chickens if conditions are right. To prevent such a catastrophe, most poultry farms today have some type of automated and “fairly” reliable **backup generator system**. Note we say “fairly” reliable because every year chickens are lost to some form of generator failure (no fuel, dead battery, weak starter, and so forth).

The backup generator system is fascinating in that it can monitor incoming line power and recognize when utility power is lost. It can then automatically start the generator within less than a minute and transfer power supply from the incoming utility line source to the generator source, thus restoring power in a timely manner. Once the utility company has restored power, the generator system recognizes this, automatically switches back to utility power, and shuts the generator down.

Most systems have a built-in **exercise run cycle** that starts the generator once each week for 30 minutes to an hour, switching the power source from the utility line to the generator and forcing the generator to provide power to the farm for this time period. After this time period has elapsed, the generator system automatically switches back to utility line power and shuts itself off. This process reassures the grower that the generator will start when needed and that the automatic transfer switch will actually transfer power from the utility line to the generator. It also forces the generator to work under load, letting the grower know it can do the job if called upon.

You can recognize the transfer of power from utility line to generator and back again because each time the power switches, the lights blink and power is lost for a few brief seconds. The run cycle is programmed to occur at the same time each week (e.g., 8 a.m. every Monday) to help you monitor its occurrence. It is a good idea to be on site when this happens just to verify everything operates smoothly. However, chicken house controllers usually sense the momentary loss of power, so you can check with your controllers to see if they documented this event and assure yourself the generator actually ran if you were not on the farm at the time.

This short power loss on a weekly basis may be good for the birds. They will become adapted to being in the dark for a few seconds each week when the switchover happens, so if a natural outage occurs, they will be less likely to panic.

This exercise run cycle is a vital and reassuring part of the overall generator system, but don't let it give you a false sense of security. The system may run fine for 30 minutes each week, but what if it had to run 24 hours a day for a week, or 2 weeks or even longer in an emergency situation? Maintenance is critical to having a system that will perform effectively over an extended period if called upon to do so.

One of the most important things you must remember is to **check the fuel supply** on a regular basis. A typical 100 to 130 kilowatt generator can burn 5 to 8 gallons of diesel fuel per hour, depending on how heavily it is loaded. If the generator only runs its 1-hour weekly exercise cycle, that's not a lot of fuel, even over a period of several months. However, suppose a storm blows through and knocks power out for 24 hours. In that case, the generator may need to burn nearly 200 gallons of fuel in a 24-hour period.

Many generator systems come with a 300-gallon fuel tank, so you could possibly burn two-thirds of a tank of fuel in 24 hours. How many growers keep 200 gallons (or even 100 gallons) of fuel in the tank at any one time? In the event of an ice storm, tornado, or some other disaster that knocks out power for an extended period, how long will it take to get additional fuel? Will you even be able to get additional fuel if fuel stations are without power?

You may think that a dependable generator system is less critical in some seasons than others, but that's not the case. Spring and fall can bring wind and storms associated with seasonal weather patterns, winter has potential for snow and ice storms, and summer is always a critical time because of high temperatures and the possibility of hurricanes and associated tornadoes.

A good rule of thumb is to **have the tank filled whenever it reaches the half-full mark**. Some suppliers will not deliver less than 100 gallons of fuel, but most will deliver an order that is 100 to 150 gallons or more.

Plenty of fuel in the tank will be of little value if the **fuel filter** is clogged and the generator won't run. Fuel filters today can filter as low as 2 microns compared to the 20- to 30-micron filters of 5 to 10 years ago.

In addition, if the fuel tank is several years old and has never been cleaned, there is likely sediment buildup in the bottom. When additional fuel is added to the tank, this sediment gets stirred up and becomes suspended in the fuel. If this happens when the generator is running, this sediment is then pulled into the fuel filter and shortens the life of the filter.

To help reduce sediment aspiration, fuel pick-up lines should not extend to the bottom of the tank. If lines only extend to within about 6 inches from the bottom of the tank, there is less risk that sediment will be pulled into the filter when the tank is low on fuel. However, you will not have access to that bottom 6 inches of tank space, so remember this loss of fuel when you check tank fuel levels. Spare filters are cheap compared to losing a whole flock of birds because the generator is starved for fuel. Therefore, always keep spares on hand for emergency purposes.

Other somewhat inexpensive items (compared to a flock of chickens) on generators can cause a disaster if they fail to perform when needed. **Starters and batteries** are both notorious for going bad with little or no warning. If you listen to your generator start itself each week, you can sometimes tell by the sound when one or the other is about to go bad. Nevertheless, because this is not always the case, check both items routinely.

Even though you may buy a 60-month battery for your generator, it's probably best not to push it more than about 2 years. Put a new one on the generator and put the old one on your tractor or pickup for the remainder of its projected life. Better to be safe than sorry!

Generators also need regular maintenance service that may require a skilled technician. Refer to the owner's manual for a schedule of required maintenance. Manufacturers usually recommend additional services if the generator goes through an extended run time of 48 hours or more, just to be safe.

Routine maintenance is more than just checking the radiator fluid every now and then and changing the oil once a year. The automatic transfer switch, wiring, electronics, belts, hoses, fuel lines, and other parts all need to be inspected by a qualified technician. Keep this person's contact information on hand at all times. It may be beneficial to post contact information in your poultry house or control room, in case someone else may be checking your farm and cannot reach you during a generator malfunction.

There are things that you can check yourself, as well. Birds like to build nests in the generator exhaust pipe. A pair of dedicated starlings can completely fill the pipe with nesting materials and eggs between weekly generator exercise cycles. If this becomes an issue, consider installing a cap over the exhaust pipe.

Various other animals, such as rats, mice, and even stray cats, may want to make your generator their home. This can kill the animal and damage the generator if it starts suddenly and there is no way for the animal to escape. Even smaller creatures can be a threat to the generator system. Mud daubers can build nests that, because of their weight, may eventually break or pull loose electrical control wires.

A good habit is to do a thorough weekly visual inspection of the generator system. This could reveal minor issues before they become major problems.

Because a backup generator system is a necessary and expensive part of growing chickens today, it must not be neglected. Your generator system is only worth what you paid for it if it works when you need it.

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By **Dr. Tom Tabler**, Extension Professor; **Jessica Wells**, Extension Instructor; and **Dr. Wei Zhai**, Assistant Extension/Research Professor, Poultry Science.



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