



TAKE TIME TO DO MAINTENANCE

A well-designed maintenance program helps the building operate more efficiently and improve pig performance and comfort. A proactive maintenance program reduces the number of costly breakdowns that affect operational efficiency. Performing routine checks and maintenance of essential components throughout the barn can save a lot of headache and dollars in the end.

Attic, roof, and walls

Ensuring the structural integrity of the attic and roof is essential.

- Check trusses in the attic regularly, ensuring they are in good condition.
- Ensure there is no corrosion on brackets, truss plates, pins and rafters.
- Paint lightly rusted truss plates with a zinc-based spray paint and make sure they are tight.
- As the barn ages, an engineer should be brought in to evaluate the roof's integrity.
- Use light-colored rather than black steel on the roof and/or use a light-colored ceramic paint on the roof to reduce spikes in attic temperature on warm, sunny days.



Ensure there is no corrosion on brackets, truss plates, pins and rafters

Insulation

Pest management is important to maintain building integrity as birds and rodents can destroy the insulation within the walls and ceiling. Insulation is important in reducing winter heat losses and reducing radiant heat gains in hot weather. Good insulation also eliminates condensation, which improves the building life span. It is important to check the insulation and repair any holes in it as soon as possible. Make sure to seal all structural joints, holes from conduits and pipes, and the door trim and bottom sweep with a GE silicone or equivalent.

Feed system

The feed system is one of the most important components to regularly check and maintain. The main components are the bin boot, the auger / auger motor, switches, and feed line. Basic maintenance of the feed system includes regularly greasing boot bearings, checking oil level in the gearbox and changing it if necessary, and checking for overall wear and tear. Auger motors require monthly lubrication. One of the biggest mistakes with feed systems is overfilling it, causing system components to stretch, wear out and break down more often. Proper use of proxy and delay systems will avoid having the feed system always full.



The feed bin boot and auger with motor are important components of the feed system that need regular maintenance

Heating system

It is important to check components of the heating system after each room turn in addition to seasonally. For the heater furnace, open the main shut-off valve in Fall and close it in Spring - lighting the pilot light in Fall and turning it off in Spring. Inspect and clean heaters, checking wire connections between each room turn, including in the summer. When heaters are not in use, they can corrode and may not work when you need them in the Fall, this is one reason for running and checking heaters every three months, including in summertime.

Use a leaf blower to blow dust out of the heaters after each room turn. This avoids problems when starting the furnace in the fall.

Check controllers for the appropriate set-point temperatures, in addition to cleaning and calibrating thermometers and humidity sensors against a standard. Calibrate thermostats a minimum of two times a year. Controllers will not perform effectively if dust accumulates on the sensing elements, as the dust acts as an insulator and delays response. You can use compressed air or a cloth to clean thermostats or controllers. Large temperature fluctuations often point to dirty or worn-out controllers.

Gas leaks can be a major cause of increased energy costs. The most common point of leakage is where the line enters the barn, due to corrosion caused by the wide temperature differences. Make sure to do a high-pressure test of your gas lines once a year. Generally, your propane supplier can do this test at no charge.



You can use compressed air or a cloth to clean thermostats and controllers

Drinkers and pens

After cleaning pens, be sure to scrape up as much excess water as possible. Maintain leaking drinkers by cleaning or replacing valves, nozzles, jets, and hardware. A wet environment is detrimental to animal health and barn structure. Increasing ventilation rate will ensure a good moisture balance but increases the heating cost, resulting from the heat lost by increased ventilation. Energy to evaporate the water will be robbed from heat that otherwise would be used to keep the air space warm.

Ventilation system

A properly maintained ventilation system reduces energy loss, requiring maintenance and adjustment after each room turn and seasonally.

- For fans, check the direction of airflow or fan rotation, look for damage to the motor, housing or blades, and grease bearings.
- In addition, clean dust from blades through manual scrubbing or compressed air, otherwise dust on blades can lead to imbalance and vibration reducing the life of the motor. Clean shutters, louvers, and discharge cones with a wire brush or power washing. Dirty fans reduce airflow; causing higher stage fans to run earlier and use more electricity - in fact - dirty fans can reduce ventilation efficiency by up to 30%.
- Do not shut off minimum-stage fans between batches of pigs, even when there are no pigs in the room.
- In winter, install fan covers on fans not in use. Correct timing for the use of fan covers will depend on outside temperature. In the Spring and Fall, when large temperature swings occur, fan covers may need to be put on and taken off several times.
- Make sure inlets are adjusted and calibrated correctly. Check for seals to the ceiling or wall and inspect the system twice a year. Check to ensure attic inlets are functioning properly, not blocked with dirt or frozen shut. All inlets in use should open and close uniformly; check to see if actuators are functioning properly.
- Air leaks will reduce the efficiency of the ventilation system and can reduce inlet air intake. Check for and seal any air leaks through doors and external openings, fan housing and feeder or auger lines.
- Ensure dirt or ice is not plugging soffits and eaves, cleaning them if necessary. Adjust them according to the season, open in the summer and closed in the winter.
- For curtain-sided farms, put insulation into the curtains in the Fall and take it out in the Spring, exact timing is based on the weather forecast.

What's the cost?

Let's consider a variable speed 12" (300mm) fan operating at minimum ventilation rate in a 200 head grow-finish room. The fan has an airflow rate of 402L/s and requires 0.105 kW input power. Assume a minimum ventilation rate over a three-month period of 1.5L/sec/pig and an electricity cost of \$0.15/kWh. This fan runs 24 hours per day.

- The fan will cost \$25.38 to operate for the three-month period.
- If the fan blade and shutters are dirty, airflow can be restricted 30% as stated above.
- The fan will now cost \$36.32 to operate for the three-month period.
- This represents an approximate 43% increase in electricity costs over the three-month period.
- Remember that this example utilizes minimum ventilation rates. As ventilation requirements increase, the cost associated will also increase dramatically due to the effect of restrictions or drag on the exhaust fan.