Preparing your swine barn(s) for winter

Larry D. Jacobson, Professor
BBE Dept, University of Minnesota

With falling outside temperatures and predictions of snowfall in November, pork producers in Minnesota and the upper Midwest need to prepare their mechanically ventilated barns for the oncoming winter season. A few basic items need to be done now to ensure that the housed pigs and workers are provided with an acceptable environment that is conducive to growth and good working conditions without large expenditures of fossil fuel energy. These included the following:

- Make sure the barn is reasonably "tight" so that a sufficient static pressure can be maintained during subzero outside temperatures or minimum ventilation conditions.
- Check "winter" room inlets to make sure they are properly adjusted AND that sufficient attic or hallway inlets are present to supply air to these winter room inlets.
- Check operation of winter fans and heaters for proper operation and make sure the settings on the fan/heater controllers have a large enough offset so that heaters and second stage fans do not run simultaneously.

It is essential that mechanically ventilated barns, which includes so-called curtain barns, be sufficiently "tight" so a slight vacuum or static pressure (generally the target is 0.05 inches of water measured with a manometer) exist in the barn when only the continuous running exhaust fans are operating. For curtain barns, which are ventilated naturally in warm weather by adjustment of the sidewall curtains, this means that the sidewall curtains need to be closed and sealed as tight as possible. Typically, if there is sufficient exhaust fan capacity (say 50 cfm/pig for finishing barns as an example) in the barn, the curtain openings can be physically sealed (nailed shut with lathes or some other permanent sealing method) and there is sufficient ventilation to control inside temperature rise during a warm winter day. For regular tunnel or other year-around mechanically ventilated swine barns, the most common source of "leaks" in the winter is the louvers of large summer operating fans. It is strongly suggested that louvers on large fans that run only in warm weather be sealed with insulated panels or heavy plastic to prevent backdrafting of air through these fans in the winter. Other building leaks (around doors and windows) need to be sealed to prevent these "undesigned" openings from allowing air to enter the barn. Finally, every pig barn (or room) needs a manometer to monitor static pressure in the barn. If you cannot maintain a slight vacuum or static pressure in your barn (very minimum is 0.02 inches of water gauge when your minimum or continuous running fan(s) is operating) you will NOT be able to control the air exchange/quality in the barn.

Once the barn or room is sufficiently tight, producers or managers need to make sure air enters the barn or room where it is designed to enter which is typically through ceiling inlets. The inlets need to be operating properly, not be stuck or have excessive dirt, so they allow air to enter the room via the gravity or actuator controlled inlets. Also, if the inlets take air from the attic, you must have sufficient attic openings to "feed" air to the ceiling inlets. Typically these attic openings are eave inlets. Most buildings will have eave inlets on both sides of a mechanically ventilated building. During winter, it is suggested that only one side (south side if barns runs east and west) be left open which will allow enough inlet opening to feed the barn's winter air exchange and prevent snow "blow through" in the building attic during winter snow storms. Other attic openings can be used to supply air for the ceiling inlets (gable end louvers and ridge vents) but one must make sure there is more attic opening (recommendation is twice the area) than ceiling inlet area. The same guidelines for supplying inlet air apply to a tempered or headed hallway in farrowing or nursery barns.

Thirdly, the operation of the ventilation components need to be checked to make sure they are working properly. This includes exhaust fans, inlets, heaters and controllers. One should clean fan shutters to increase fan efficiencies and ensure adequate airflow rates to maintain good air quality inside the barn. Dirty or rusted/restricted shuttles can reduce airflow capacity of a direct drive fan by 40%. If you have large belt driven fans operating in the winter, make sure belts are properly tighten or airflow rates can be reduced significantly (50% or more). Gas-fired heaters need to be cleaned and adjusted so there is the proper mixture of fuel and air, plus the heated air from any heater (electric or gas-fired) need to be distributed in the room to reduce room temperature variations. Finally, make sure that the temperature controller (or thermostat) for the heater offset (temperature when heater shuts off and next stage exhaust fan turns on) is at least 2 degree F. This 2 F difference will typically prevent heater "overshoot" or when the spike in room temperature from having the heater operate, triggers the operation of the next thermostatically controlled exhaust fan to turn on. This can be very expensive since excessive amounts of heated air will be wasted if the heaters and large 2nd stage fans cycle and also result in wide temperature swings that are detrimental to pig growth and health.

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