



Fans and blowers

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Equipment description

Fans and blowers provide ventilation and air movement for animals enclosed in shelters. Proper ventilation, cooling air, and dry bedding are critical to their survival. Blowers are also used on grain bins to maintain or decrease moisture content. The vast majority of fans used for this purpose are electric-motor-driven and constructed with aluminum propeller blades. These may be installed in many ways. They can be permanently installed in exterior walls, hung from ceiling mounts, or mounted upright on pedestals. Purpose-built animal housing facilities incorporate fans that are wall-mounted. Air velocity and volume requirements vary dramatically for different types of animals. Because of this, mixed-use facilities can present increased risks to some of the animals.

Livestock, such as poultry and swine, are generally managed within indoor facilities where airflow and temperature can be controlled. For many species, deviations of core body temperature in excess of 4°F to 5°F cause disruptions of performance, production, and fertility. This can limit an animal's ability to produce meat, milk, or eggs. Deviations of core temperatures of 9°F to 12°F often result in animal mortality. In hot climates with low humidity, evaporative coolers or "swamp coolers," containing water spray nozzles, may be used to provide significant cooling.

Blowers can provide higher air pressure than fans when required for specific animal care such as snout cooling for piglets. One energy-efficient use of blowers entails using fans for heating and cooling from "earth tubes." The earth tubes are sections about 100 feet long made of 8-inch plastic piping and buried about 10 feet below grade. The heat is exchanged with the cooler underground temperature. The air that is conditioned to the constant underground temperature is then supplied to the animal shelter area using geothermal cooling

in the summer and heating in the winter. This system eliminates additional heating and cooling energy costs.

Maintenance tips

- Clean all exposed parts with gentle cleaner recommended by the original equipment manufacturer (OEM).
- Check the OEM for chlorinated cleaners recommendations. Many OEMs recommend these should not be used because they can result in release of toxic/fatal fumes.
- Regularly check all fan mounting bolts and fan blade mounting bolts for proper torque.
- Check gear reducers for oil leakage.
- Clean intake and exhaust grilles and registers to minimize wasted energy.
- Follow the OEM recommendations for lubrication maintenance.
- Always keep fan blades clean.

Failure/loss prevention tips

- Ensure motors and drive assemblies are not exposed to water during inclement weather.
- Check operating conditions of available power supplies during peak summer periods to avoid low-voltage damage to motors.
- Check contactors every season for arcing damage which can cause motor failures.

Failure examples

- Belt-driven fans can be out of service from belt deterioration caused by poorly aligned sheaves or pulleys.
- Dust accumulation on moist fan blade surfaces will cause fans to operate "out of balance," resulting in premature fan bearing wear or failure.
- Fan motors are often the "open drip proof" type and are subject to dust loading as well. Maintain enclosures with proper screening materials.
- Wall or post-mounted fans installed with loose guy wire supports can allow vibrations to magnify into early failures. Ensure all guy wires and mounting bolts have proper tension and torque.

Energy savings/conservation tips

- Provide thermostatic controls to reduce fan speeds and number of fans operating during non-peak conditions.
- Conduct air flow testing to ensure intake flows are only slightly higher than exhaust flows.

Safety tips

- Provide proper screens on fans to protect against finger injuries.
- Verify all fans and guards are mounted at least 11 feet above floors or operational platforms for safety.
- Make sure fan housings are also supported with safety cables to prevent damage or injury if the fan is struck by equipment or a vehicle.
- Always disconnect the unit from the power supply before performing any maintenance activity or when reaching into the equipment. Use proper lock-out and tag-out procedures, prior to servicing.
- Use equipment in the manner described in the owner's manuals.

