



# Electric generators

HSB, a Munich Re company, is a technology-driven company built on a foundation of specialty insurance, engineering, and technology, all working together to drive innovation in a modern world.

## Equipment description

Electric generators are machines that are back-ups for a regular power source. A generator is constructed with a mechanical input shaft that is usually rotated by a fuel-powered engine shaft. Operating the engine/generator set at a fixed speed converts the engine power into electrical power for use on the farm. The ability to produce local electricity is invaluable during utility power outages or for providing power to remote farm work locations that do not have utility power. Depending on the consequences resulting from an unexpected utility power loss, farm generators of proper size and capacity can back up entire farm electrical loads or selectively back up only the critical process loads.

Where there is a high probability or frequency of losing utility power, a generator can be permanently installed and designed to automatically transfer the load during an outage. A permanent generator is sized for the predetermined farm loads and the electrical system voltage/phase requirements. In less demanding situations, a portable generator can be purchased, or rented and manually connected to loads. These generators are usually easily transportable for use in multiple locations. Most permanent farm generators are powered by gasoline, diesel, or natural gas-fueled engines. Propane or methane may also be used.

Portable generators can be powered by gasoline or diesel engines or by using the power take-off output shaft on an existing farm tractor. Tractor-powered generators are towable and effective for field or temporary outbuilding electrical requirements.



## Maintenance tips

- It is important to understand and follow the operation and maintenance guides provided by the original equipment manufacturer (OEM). Copies can usually be obtained from the OEM at no charge.
- Keep fresh fuel in generator fuel tanks; use a fuel stabilizer where recommended.
- Make sure starting batteries are maintained with proper distilled water level and clean terminals.
- Generators should be test-run under load to verify they are in working order.
- Test transfer switches on permanent generator installations to verify proper operation.

## Failure/Loss prevention tips

### 1. Generator is damaged while in storage

- Prevent water and corrosion damage by storing the generator in a watertight shed or barn or install a waterproof frame and cover over the generator.
- Prevent physical damage by storing the generator in a shed or barn location that is separated by physical walls and doors from other farm equipment.
- Prevent rodent damage to the generator wiring and hoses by repairing all access holes, misaligned doors, broken windows, or floor openings that could allow rodent access.

### 2. Generator is not protected from inclement or extreme weather while in use

- Prevent rain or snow damage when the generator is in use by erecting a portable, open-sided, tent or frame and tarp protective cover over the equipment.
- Prevent overheating of the engine and generator from intense sunlight by operating the equipment in a tree-shaded area if available or under a frame and tarp cover.
- Prevent airflow blockages to the cooling system from snow or leaves by using snow fencing and performing frequent inspections while in operation.

### 3. Overcurrent protection on generator is modified or bypassed

- Prevent fire or shock hazards and maintain original design specifications by replacing defective electrical components with parts from the original equipment manufacturer.
- Prevent “improvised” emergency repairs to the generator by maintaining a supply of critical spare parts and fuses.
- Maintain the original safety feature functions by replacing defective safety switches rather than “jumping-out” or “bypassing” these safety controls.

### 4. Fuel system is not maintained while in use and in long-term storage

- Prevent carburetor fouling by using the recommended fuel stabilizers or drain the fuel while in storage per the manufacturer’s recommendations.
- Avoid unexpected fire hazard or engine shutdown by replacing flexible fuel lines when showing cracks, or splits in the lines.





- Prevent engine stalling problems by keeping water and dirt away from the refueling process and using a mesh screened funnel when refueling.

5. Engine oil, coolant, hoses, spark plugs, and filters are not maintained in a ready state

- Prevent engine overheating by keeping the air-cooled fins clean and the coolant at the proper dipstick level.
- Prevent major engine damage and seizing by keeping the oil level at the proper mark and of the proper oil specifications. If equipped, oil filters should be changed based on the OEM defined service duties and number of runhours.
- Prevent unexpected engine shutdown and loss of electrical service by replacing age-cracked or worn/contaminated ignition wires.

### Energy savings/Conservation tips

- The generator will consume engine fuel based on the size of connected electrical loads and the hours of operation. The runtime and the connected loads should be monitored during an outage condition to make sure only necessary loads are being supplied, and only for the time actually required.
- Shut down the generator engine after the critical processes have ended to save fuel.
- Turn off any unnecessary loads such as excess lighting or fans to conserve energy.
- A heavily or fully loaded generator uses more fuel than a lightly loaded generator; minimize the connected loads during use.

### Safety tips

- The OEM operator's manual provides information on safety concerns and mitigation procedures. Avoid personal injury by reading all instructions provided by the OEM before using a portable generator.
- Never run an engine generator indoors or near the doors or windows of habitable buildings due to the potential for carbon monoxide poisoning. Carbon monoxide is colorless and odorless, and poisoning accidents kill many people every year.
- Always keep guards in place over rotating shafts and couplings to prevent entanglement. It is very easy for someone to be severely injured when loose clothing or long hair gets caught on a rotating shaft without a guard.
- Avoid coming into contact with hot surfaces such as engine mufflers and blocks. Even a short contact with these surfaces can cause second or third degree burns.
- Refueling of portable units should be done only when not in operation, and only after hot surfaces have cooled below the fuel flash point.