



Farm Energy News

Summer 2020



Understanding the next evolution in motor efficiency

More businesses are using a technology for smaller load motors, 1 horsepower or less, that is much more efficient than the standard motor on many farms. The electronically commutated (EC) motor takes the place of a permanent split capacitor (PSC) motor. This technology has been used and proven in the HVAC and commercial refrigeration markets for the past decade.

PSC motors use non-polarized capacitors and brushes to deliver electricity to the rotating parts. The brushes are known to wear out over time. EC motors do not use brushes, which reduces maintenance and extends service life.

To use the analogy of driving a car, PSC motors operate on-off, like a driver who is either pushing the accelerator or brake pedal. Conversely, EC motors control their speed to the load, like a car on cruise control, which only requires incremental adjustments to maintain a steady speed.

EC motors are used to replace a wide variety of existing small motors, including condenser and evaporator fans, HVAC motors, water circulation pumps, and any other small motor load. EC motors provide the same output as comparable shaded-pole and PSC-induction motors, while using less electricity and maintaining their efficiency at a wide range of operating speeds.

If you have questions about EC motors, talk to your refrigeration expert or motor supplier. Many of these applications will be most cost-effective if the motor fails or needs to be replaced. Focus on Energy offers an incentive of \$25 per motor replaced on a dairy refrigeration compressor.

For motors running more than 12 hours a day, our energy efficiency adviser can estimate a payback for replacing a working motor and coordinate any paperwork for Focus on Energy incentives.

Safety tips for **forage** **harvesting**



Harvesting forage includes being aware of the various safety hazards associated with this work. The harvesting equipment has numerous moving parts. If safety precautions are not in place, chains, gears, belts and other moving parts can result in fingers being amputated or caught in equipment. Accidents can happen quickly due to the speed of the moving parts.

Reduce the risk of accidents by taking these steps:

- When repairing equipment, disengage the power takeoff (PTO), shut down the tractor and remove the keys before working on equipment to prevent equipment from accidentally being started.
- Walk around the tractor instead of taking the shortcut and stepping over the PTO.
- Check equipment to ensure the proper shields/guards are in place for chains, gears and belts.

The chopper itself also has many moving parts and sharp knives that could pinch fingers or cause severe cuts. Take these precautions to reduce accidents:

- Reduce speed to reduce the frequency of plugging the head.
- Make sure chopper head is disengaged when unplugging or removing metal.
- When removing shields to sharpen knives, always wear safety glasses and keep hands away from the opening.
- When replacing knives, block the cutter head so it does not move.
- When servicing the chopper, be mindful of the cutter bar as it can cause severe lacerations.

It is important to take precautions when transporting forage back to the farm. Drivers may be distracted and not realize slow-moving equipment is traveling ahead of them. Drivers' vision will be reduced closer to dusk and at night. Follow these tips when transporting forage:

- Check that all equipment (tractors, wagons, semis, etc.) have working flashing lights and reflective material.
- Check that all equipment has slow-moving vehicle (SMV) signs.
- Use a locking hitch pin and a safety chain between the tractor and wagon.
- Check your blind spot for passing vehicles when making left-hand turns.
- Check that truck brakes are properly adjusted and in good condition.

Before harvesting, spend time with employees discussing the safety hazards associated with forage harvesting. Also, thoroughly look over equipment and make any necessary repairs ahead of the busy season. A proper maintenance program reduces down time and injury risk.

Lower energy costs and **increase efficiency** with compressed air system maintenance

A low-cost way to increase efficiency is to maintain your compressed air system. By taking the following steps, you save money on your energy bill and reduce system runtime.

- ✓ Run your compressor at the right pressure. Energy use increases 1% for every 2 pounds per square inch (PSI) the system is operating at above the required pressure.
- ✓ Make sure the compressor is stored in a room with adequate ventilation. Compressors generate a lot of heat, and excess heat will increase the likelihood of motor failure.
- ✓ Make sure any heat exchanger or cooling fins are clean and clear of debris.
- ✓ Change or clean filter regularly.
- ✓ Change oil regularly and use synthetic lubricants when acceptable for your application to increase efficiency by about 5%.
- ✓ Check for leaks in the distribution system. Most systems have between 20 to 30% loss in efficiency due to leaks. An audible leak at 100 PSI will cost about \$500 annually in a system that is always pressurized. Leaks are most commonly found in shut-off valves, pipe joints, quick connection fittings, unions, gauges and pressure regulations. Focus on Energy provides incentives for leak surveys.
- ✓ Shut down system when not in use. It costs on average \$0.10 per hour/hp to run an air compressor.
- ✓ Drain condensation from the system. Many systems have a time condensation drain or a manual valve to drain water. Focus on Energy provides an incentive for a no-loss condensation drain. These efficient drains have a typical payback of two to three years.
- ✓ Tighten all fasteners and connections. Thread tape may be needed to ensure a tight seal.
- ✓ Make sure your compressor is on a level surface and, for permanent installations, make sure bolts that secure to the floor are tight.
- ✓ Always wear safety glasses when blowing off parts and bleed the system of air before performing maintenance. Never use compressed air to clean your body; at 12 PSI, you can lose an eyeball.



Contact our energy efficiency adviser with questions about additional savings opportunities or Focus on Energy incentives.



RECIPE CORNER

Brunch Fontina-Blueberry Bread

BREAD INGREDIENTS

½ cup butter, melted
1 cup sugar
2 large eggs
Zest and juice of 1 medium lemon
6 ounces (1 ½ cups) fontina cheese, shredded
1 ¾ cups all-purpose flour, divided
2 teaspoons baking powder
½ teaspoon salt
½ cup sour cream
1 cup fresh or frozen blueberries

LEMON GLAZE INGREDIENTS

1 cup confectioners' sugar
3 tablespoons lemon juice

COOKING DIRECTIONS

Heat oven to 350 F. Beat the butter, sugar, eggs, lemon zest and juice in a large bowl until smooth. Stir in fontina. Combine 1 ½ cups flour, baking powder and salt in another bowl; gradually add to butter mixture alternately with sour cream, beating each addition until combined. Toss blueberries with remaining flour. Fold in berry mixture. Transfer to a greased 8 x 4-inch loaf pan. Bake for 40 to 45 minutes or until a toothpick inserted near the center comes out clean. Cool for 10 minutes before removing from pan to a wire rack. Cool completely.

Lemon Glaze: Stir confectioners' sugar and lemon juice in a small bowl until smooth; drizzle over bread.



Wisconsin Public Service

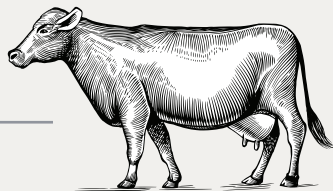
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UPCOMING EVENTS



*Save these dates for the
2021 WPS Farm Show:
March 30, 31 and April 1*



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