

Big Single-Phase Motors Solve Power Supply Problems

"We are the only company in the world that makes large horsepower, single-phase motors," says Ben Morris, Single Phase Power Solutions (SPPS) in Cincinnati, Ohio. "Our 15 to 100 hp. motors are ideal for farmers and ranchers without access to 3-phase power. They are a more economical alternative to large, stationary, diesel, propane or natural gas-powered motors."

Ronnie Barber, co-inventor of the company's "Written-Pole" technology, describes it as adding a layer of permanent magnets around the rotor surface. They are magnetized as the motor comes up to speed. Once it reaches full speed, the motor runs as a permanent magnet motor. This reduces energy loss in the motor to zero, making it more efficient than a 3-phase motor, even if 3-phase power is available.

Morris points out that when 3-phase power is not available, bringing it in can typically cost \$30,000 or more per mile. In addition, a 3-phase motor has its own costs.

Barber explains that induction motors (single or 3-phase) can require from 6 to 8 times the running current at start-up. That can create a voltage sag or flicker in the neighborhood and result in extra demand fees from the utility.

"Our Written-Pole motors require a starting current that is less than 2 times running

current," says Barber. "That allows us to put larger horsepower motors on line than you could with any induction motor design."

High horsepower 3-phase motors can run on single-phase lines with a Variable Frequency Drive (VFD) or with phase converters that imitate 3-phase power. Both create harmonic distortion on the utility line, which can destroy electronic equipment on the line.

"Increasingly, utility companies are requiring a harmonic filter be used with a VFD or phase converter," says Morris. "That can add \$10,000 to the cost of a \$3,000 phase converter. Some co-op utilities won't even allow them to be installed due to the harmonic distortion."

"Our motors, with their synchronous mode of operation, actually absorb harmonics off the line," he adds.

Diesel-powered generators can cost \$12 an hour to run without counting maintenance time and cost. "Our motors can save up to 70 percent what a diesel will cost," says Morris. "They are also more dependable."

He cites a Texas customer's 40-hp. motor that was under 10 ft. of floodwater for 7 days when the Red River flooded in 2015.

"When it dried out, we sent him a new control card for the panel, and he turned it on," says Morris. "It ran and has been going



"Our large horsepower, single-phase motors are ideal for farmers and ranchers who don't have access to 3-phase power," says Ben Morris, Single Phase Power Solutions.

strong ever since."

In addition to dependability, Morris notes that Belle motors have instant restarts after a momentary power interruption. They are capable of sustained starting conditions for greater duration than conventional motors without overheating.

SPPS sells its motor with a proprietary control panel as a system. Morris says the motors in their cast iron frame are designed to take a beating.

"Our motor is one your son will still be running years from now," he says. "Motor

and control panels are designed for outdoor use as well as indoor."

SPPS Belle motor systems are priced from \$11,000 for a 30 hp. motor to \$26,000 for a 100 hp. motor. Maintenance consists of twice a year greasing of bearings.

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Giant Power Tool Helps Put Up Hot House Tunnels

Canadian handyman Reid Allaway built a gigantic battery-powered hand tool that he says may be the world's heaviest cordless "drill". Made from a forklift steering motor that's powered by the same lithium battery packs, workers use the powerful tool to install about 200 ground anchors twice a year on 300-ft. long caterpillar tunnel greenhouses.

Allaway's super drill's big DC motor runs through a 43:1 gear reducer. The frame is made out of pieces of 1-in. pipe. The electronics include a 50A mini-ANL fuse and fuse holder, a reversing contactor (2 x DPST), a reversing switch to select direction by choosing which coil of the contactor to energize, and a push-button trigger switch.

The output drive has an adapter that Allaway built to securely connect with the

eyelet screw-in ground anchors. He might eventually make a chuck-type adapter for it so he can use the drill for other tasks. But the main reason for building it was to handle the job of placing and removing the ground anchors, which Allaway says has always been a real drag to do by hand.

"This rig is a hard-working tool that really takes the back-breaking labor out of anchor placement," he adds. "Whoever uses it has to be strong enough to manage a 50-lb. cordless drill."

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Giant cordless "drill" is made from a forklift steering motor powered by lithium battery packs. Workers use it to install ground anchors on 300-ft. long hot house tunnels.

Where To Find Vintage Deere Tractor Parts

"New Paris Tractor Parts might be the world's foremost supplier of used, replacement and OEM parts for any Deere tractor built from 1924 to 1979," says owner Rich Brown. "We source parts from about 2,500 salvage tractors on 17 acres of land and inventory parts in 100,000 sq. ft. of buildings. We sell parts to customers across the U.S., Canada and internationally 24/7 on our website and eBay, and by phone during business hours."

Brown says he got into the parts business because he always liked tearing tractors apart. "I went to college for a semester right out of high school, but my callouses were dropping off, so I quit and went to work as a teardown mechanic for Dennis Polk Equipment." That was 25 years ago, and when the opportunity came to buy the business 3 years ago, Brown was all in.

Brown says the business, which employs 3 teardown specialists and two office people in addition to himself, doesn't have a fancy computer system to manage its inventory. "Basically it's all between my ears and those of the employees," says Brown. "We know what we have, where it's located and we

can find parts in a short time and ship them quickly." They sell parts for hundreds of models, though a large percentage are for A and B Deere tractors. More than 400,000 of those tractors were produced between 1934 and 1952.

Tractors purchased from auctions, individuals and estates constantly replenish the company's parts supply. Brown says it's a rare occasion when they can't locate something from their used and new inventory parts supply or from an OEM supplier. "Winter months are the busiest because people are restoring tractors when they can't be outside. We're seeing an influx of younger people working on ageless iron, and that's a good sign that tractor restoration is still important," Brown adds.

Customers say the New Paris website is superior to many other parts sites because several pictures and a description are given for most parts. The high definition pictures let the viewers see the condition from many angles and a brief description such as "good core, spins freely, will likely need a rebuild, has light rust," is very beneficial to someone



New Paris Tractor Parts helps farmers find vintage Deere tractor parts. They sell parts for hundreds of different models at their huge salvage yard.

who knows what they need.

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