

Race Car Superchargers Adapted For Farm Use

Farmers looking for more efficiency from stationary engines have a new ally in Vortech Engineering of Oxnard, Calif. Vortech, which is known for its horsepower-boosting superchargers for high performance automobiles, dragsters and tractors used in pulling competition, has started adapting products to fit conventional production agriculture applications.

Vortech's product manager Bob Endress says that using Vortech's centrifugal compressor rather than a traditional axial fan in grain dryers can produce better operating efficiency using less electricity. Endress says that a dryer with Vortech's compressor could use a 5 horsepower motor rather than a 10 horsepower size needed for an axial fan with similar output.

"The dryer will generate more uniform air flow with the centrifugal compressor and use half or less than half the power," Endress says.

Vortech also improves the efficiency of big diesel engines like those used to run irrigators or generators. Their centrifugal supercharger compresses combustion air before it enters the cylinder, which increases density. This allows more air and fuel to be burned in the combustion cycles for a dramatic increase in torque and horsepower.

Vortech has more than 20 years of experience with thousands of production superchargers manufactured. The compressor's internal components such as the diffuser, impeller

and volute are carefully matched with much iteration tested and verified until maximum efficiency is achieved. Efficiency is up to 80 percent with some units.

Their partner company, Comp Pro Systems, has found that many of the stationary diesel and gas engines used on farms and ranches run dirty and have a short duty cycle. Comp Pro sells its MES600 engine family, which is based on the Ford Series 385 engine. The engines have been tested on a wide range of alternate fuels including LPG, CNG/LNG, E85, E98, NH3, H2, race fuel, Syngas and pipeline oilfield gasses. Endress says the engines are built to industrial standards using forged components, hardened valve seats, custom intake runners, priority oiling, special valves and coated pistons. The company targets 25,000+ hours of continuous operation. The engines run at low rpm's develop high torque and produce impressive energy. The 600 cu. in. model is rated at 200 to 250kW and the 732 cu. in. model is rated at 300 to 330kW. Both engines are fitted with a Vortech centrifugal supercharger. Using 105 to 115 high octane fuels raises compression to diesel levels and incorporates lean-burn technology, near diesel fuel economy, near zero emissions and extreme durability. Endress says "these features are getting more important because more states are facing stricter emission regulations." Base systems start at \$18,500 and Gen Set systems start at \$22,500.



Vortech Engineering, known for its horsepower-boosting superchargers for high performance race cars, has started adapting products to fit stationary engines used by farmers. Photo shows a Ford V-8 engine equipped with a Vortech Supercharger.

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Urethane Tires Never Crack Or Go Flat

Flat-free urethane tires for planters, seeders, mergers and balers beat solid rubber and semi-pneumatic rubber tires for most agricultural uses, says Rich Ilg, Forklift Tires, Inc. After years of making and selling rubber tires for forklifts and multiple ag uses, he has become a urethane tire advocate.

"Rubber tires exposed to the sun crack, check and fall apart, and regular plastic tires also get brittle after a few years," says Ilg. "Urethane tires can lay out in the sun for 10 years and stay as resilient as the day they were made. They are also lighter weight and can handle higher speeds than solid rubber tires."

Ilg was first exposed to urethane tires at a trade show 3 years ago. While directly competitive with the rubber tires he made, he quickly saw their superiority and started promoting them to customers.

"I saw urethane tires that had been made for other uses, and I immediately realized they'd be great for many ag uses," he recalls. "Lawn mower tires would fit hay mergers or balers, and hand cart tires would fit a sling auger. We now sell a 16:34 urethane tire for drills. It has an edge that will last at least three times longer than a regular rubber tire."

Ilg notes that urethane tires don't go on wheels as easily as rubber tires do. However, with the right tools, they are more versatile and cost less than solid rubber.

"A urethane tire can go on an existing wheel, while solid rubber tires need special wheels," he says. "Just put your wheel on an 8-ton or greater shop press, slip the appropriate size mounting cone over the wheel and push the tire on over it."

Ilg points out that the whole process only takes a few minutes, and the mounting cones run around \$18. Customers without a press or needing large numbers of tires often find ordering wheels with urethane tires more efficient.

He admits pneumatic tires have an advantage in a couple of respects. They can handle even higher road speeds than urethane tires can, and tire pressures can be adjusted



Urethane tires never crack or go flat like rubber tires do and work great for many ag uses, says Forklift Tires, Inc.

for field conditions. However, he adds, that's often offset by disadvantages.

"Urethane tires offer 2 to 3 times longer life than pneumatic tires, which are often destroyed when air pressure is not maintained," says Ilg. "Urethane tires are also less likely to push mud in a wet field than pneumatic tires and won't go flat in the middle of the busiest part of the season. Where corn stubble will puncture a pneumatic tire, it just turns a urethane tire into a porcupine."

Ilg does warn that urethane tires are not for high-speed applications. "If you want to go 45 to 50 mph, don't buy them. They aren't made for that," he says.

Urethane tire prices are based on size and tread pattern. Tires for hay balers and mergers run from \$85 to \$100. Seeder tires are priced around \$60, while a gauge tire and wheel assembly is around \$195.

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New tie-down rail bolts onto the side rails of any shortbed or longbed pickup, except ones equipped with dually wheels. Inventor Dennis Baker says the system can be used with everything from tractor-trailer tie-downs to nylon straps and come-alongs.

Heavy-Duty Tie-Down Rails For Pickups

"They let you tie down a heavy load without damaging your pickup," says Dennis Baker, Newville, Penn.

His patented truck tie-down rails can be used with chains, ropes, nylon straps, and chain binders. They consist of a pair of 8-ft. long, 8-in. wide steel rails with angled sides that bolt down on each side of the pickup bed. A 1 1/2-in. wide gap between the rail's side and the pickup bed is used to attach hooks and straps. Large pre-punched holes in the side can be used to tie on ropes.

The rails bolt on using pre-punched holes on the top and inside edge of the rail (drilling holes into the side of the pickup is required).

"The rails provide a safe place to attach chains, straps and ropes. They're made from steel more than 1/4 in. thick so they won't bend. Even if you hit them with a sledgehammer they won't bend," says Baker. "I designed the rails for Ford and Chevy pickups but may expand to other brands. They won't work on pickups equipped with dually wheels because the wheel wells curve out too far to bolt the rails on from the inside.

They're made for 8-ft. long pickup beds, but you can use the rails on shortbed pickups by simply cutting them to length.

"I came up with the idea because I often attend hay sales, where I see a lot of pickups damaged by improperly tied-down loads of hay. Many people run ropes across the load and tie them down to springs under the pickup's wheel wells. But if the load shifts the pickup's rear fenders can get pulled in, and it can cost hundreds of dollars to repair the damage.

"There's a big square hole on back of each rail where you can install corner posts for hauling livestock racks, or install campers," he notes.

The rails are painted black and come with bolts, lock washers and nuts. A pair of rails sells for \$650 plus S&H. A diamond steel plate version is also available for \$750.

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