Instead of towing a wagon or other trailing equipment, Mark Lyon's unusual looking single axle tractor actually "self-propels" whatever it's hitched up to.

His tractor requires a whole new way of thinking in order to understand how it can be used, says Lyon.

Single Axle Tractor "Self-Propels" Tractors, Farm Equipment

Mark Lyon's single axle tractor requires a whole new way of thinking in order to understand how it works. Instead of towing a wagon or other trailing equipment, it actually "self-propels" whatever it's hitched up to. Lyon calls it a "single axle power unit", or SAPU for short.

"Conventional tractors have never really changed since they were first developed," says Lyon, a horse trainer by profession. Conventional tractors need weight for traction. Powerful tractors have to be heavy. However, add too much weight to the toolbar and the front end gets harder to steer. With the SAPU, the heavier the load, the better the traction and the steering.

The prototype SAPU has a 25-hp. motor with a hydraulic pump that powers 2 steerable hydraulic wheel motors. It also has 2 hydraulic valves offering 10 to 15 gpm flow at 3,000 to 5,000 lbs. pressure, as well as a hydraulic-drive pto.

"It has automatic brakes," says Lyon. "When the hydraulic pressure comes on and you engage the wheel motors, the brakes go off. When the pressure comes off or the engine dies, the brakes automatically come on."

When not attached to a trailer or other attachment, a set of arms with stabilizer wheels keeps the single axle unit upright. Once the SAPU is attached to an implement, the stabilizer arms can be raised off the ground and folded back out of the way.

"The stabilizer arms can also be fitted with a blade, bucket or forks," explains Lyon.

The SAPU's 2 by 2-in. steel tube frame is left open at a number of joints to accept receiver hitches. There are openings at the front and back, as well as on the sides and corners.

"These allow implements to be attached offset if desired," explains Lyon. "The operator's seat is also mounted to a 2 by 2-in. steel tube so it can be mounted on the side, at any corner, or on the top. Likewise, a ball for attaching a gooseneck trailer can be slipped into one of the top receivers."

To hook up a trailer or implement, Lyon designed and patented a hitch pole that bolts to the underside of the implement with U-bolts.

"The hitch pole provides a solid connection between the SAPU and trailing equipment," says Lyon. "At the same time, it includes a rotating function that allows flexibility on uneven ground."

Screw-adjustable top link arms also run back to the implement, creating a 3-pt.-like connection between the 2 units.

Multiple SAPU tractors can be hooked together, either front-to-back or side-by-side, like draft horses.

Another feature of the SAPU is the traveling hitch. The center-mounted receiver hitch rides on a track under the power unit. This can shift the center of gravity forward for even greater traction. Moving it forward also shortens the wheelbase between the 2 units for even tighter turning.

"The hitch can be pinned in place at 6 different spots at 8 to 10-in. intervals front to back," says Lyon. "It can also be equipped with a hydraulic ram for automatic positioning at any point."

While front and back are used to describe the SAPU, in fact it has no forward or reverse, merely a directional change. This allows units to be hooked head-to-head, head-to-tail or alongside each other, much as draft animals could be. When hooked in series, Lyon uses the adapter pole between the 2 machines' receiver hitches.

Levers on the machine control the throttle, pto, engine speed and front lift arms. A wireless remote controls movement, direction and steering, which allows Lyon to sit on the unit or walk alongside. The steerable drive wheels offer an extremely tight, 85-degree turning radius.

"It can almost pivot on itself, depending what it is attached to," says Lyon.

The remote control lets one person do jobs that might normally require 2 people. For example, with the remote in hand, the SAPU operator can walk to a gate, open it, keep livestock away, and direct the unit through while he is closing the gate.

The remote is equally useful when hitching the SAPU up to an attachment or backing up an attached implement or trailer.

"You have full visibility because you can move around the unit," says Lyon.

Lack of skilled operators is one reason Lyon developed the SAPU. Not only is it easy for a new operator to use, but also speed and acceleration can be preset.

While the prototype is only a 25 hp. unit, Lyon suggests it can handle jobs normally requiring twice as much power. He envisions large horsepower versions with similar potential and versatility.

"A farmer may only need a high horsepower tractor once a year for tillage or to run a big baler," he says. "With SAPU's, he can have several, smaller power units that he hooks together for high power use. The rest of the year he has multiple units sized right for lower power jobs."

Lyon says he has about $6,000 in parts and testing in his 25 hp. prototype. Since the design requires half the weight and roughly half the parts of a conventional tractor, Lyon expects SAPU's could be built for half the cost, regardless of size.

"I have patents on the SAPU and am looking for someone to license or build it," says Lyon.

You can see a video of the SAPU in action at www.farmshow.com.

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Shop Vac Helps Run Wire Through Conduit

"After purchasing a new grain bin, I had to run electrical wire through about 50 ft. of flexible conduit. It can be difficult to fish the wire through so I came up with a method to make it easier," says Roger Gutschmidt, Gackle, N. Dak.

"What I did was to use a shop vac to suck baler twine through the conduit and then tied the twine to the wire to pull it through. I just hooked the shop vac to one end of the conduit. In about 15 seconds I had the twine fished through. It was so fast and slick I couldn't believe how easy it was to wire the aeration fans on my hopper bin. I have a new 5,000-bu. bin to wire this summer.

"I'm sure electricians have better ways to do it but this sure worked well for me."

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Roger Gutschmidt used a shop vac to suck baler twine through a length of flexible conduit, then tied the twine to electrical wire to pull it through.