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## Self-Propelled “Power Plant” Runs Grain Augers

Today’s grain augers are so big – up to 16 in. in dia. and 100 ft. long – that it often requires a 150 to 170 hp tractor to operate them. Often, the tractor’s pto can’t handle the job, which can result in an expensive pto failure.

To solve the problem Don Perrion of Ipswich, S. Dak., recently finished building a self-propelled, 2-WD “pto power plant” that eliminates the need for a tractor.

“It’s designed to operate big grain augers and to drive down the road to the next farm, but it could also be used to operate hay grinders and other farm implements that normally require a big tractor equipped with pto,” says Perrion.

The 2-WD rig is powered by a 170 hp Cat diesel engine hooked up to a large twin disc clutch that drives a 540 and 1,000 rpm gearbox. There’s a pto shaft and drawbar on front, allowing Perrion to push an auger up to the bin, raise or lower it, and operate

it. Hydraulic outlets located next to the pto shaft can be used to operate a belt conveyor. Hydraulics are used to operate the machine’s power steering, raise and lower the auger, and drive the rear wheels. The rig is even equipped with lights for unloading grain at night.

There’s no seat. The operator stands on a platform behind the steering wheel. To go down the road, he stands on one side of the steering wheel and turns the other way, then puts the transmission in reverse. The machine’s starter, throttle, and clutch are located next to the steering wheel, while the pto and hydraulic controls mount on a panel box on one side of the machine.

“I don’t have a lot of experience with it yet because I just finished building it last fall, but I think it has a lot of advantages,” says Perrion. “As I steer the auger I have a good view of the top of the grain bin. It works

better than sitting inside a tractor cab and looking back all the time. I figured I don’t need a seat because I won’t spend much time there anyway. It’s built with very strong components. The engine, steering system, and hydraulics are all off a New Holland twin rotor combine, while the gearbox is off a Case 4-WD tractor.”

He started with a Ford 1-ton ambulance, which he bought at a salvage yard equipped with a 4-speed transmission and positraction rear end. He stripped the vehicle down to the frame keeping the springs, differential, and rear wheels. He had a machine shop make a driveshaft to connect the engine and differential. The ambulance had been in an accident and didn’t have a front axle, so he installed the front axle off a Dodge 1 1/2-ton pickup.

He plans to build another self-propelled power plant this winter and mount a forklift

on it. “I’ll use the forklift to handle corn and soybean seed containers that farmers use to fill planters and drills,” says Perrion. “These containers often contain 200 bu. of seed corn and are too heavy to handle with some skid loaders. I’m in the grain cleaning business, and last spring I got several phone calls from people who wanted me to clean up spilled seed after their containers had tipped over. My self-propelled rig has a much longer wheelbase than a skid loader and will be able to handle seed containers much more safely.”

Perrion says if there’s enough interest he’s willing to build similar units for others. “It took me two months to make this one. I spent about \$20,000,” he notes.

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## Dual Fuel Mixer Saves Irrigators Money

Irrigators looking for fuel savings for diesel engines have found it with a dual fuel system marketed by Don Hardy, who runs a business called Fuel Efficient Engine Service.

“I grew up around car engines and spent nearly 20 years tuning race engines and building chassis for dragsters,” says Hardy. “Then I realized a person has to stay home to see their kids grow up, so I started working with irrigation engines.” His company has built, sold and serviced irrigation engines for 25 years. In 2005 he worked with a research engineer to develop a device to mix diesel fuel and natural gas as it enters the injection system of a diesel engine.

Hardy’s dual fuel converter for diesel engines costs about \$1,500, but it can save a farmer more than \$3 an hour on fuel, boost engine rpm’s, and reduce the frequency

of oil changes. Hardy’s system starts the engine on diesel and, after it heats up, the fuel switches to 80 percent natural gas and 20 percent diesel. Larger engines, like big block Cat or Cummins power plants, use a higher percentage of natural gas, and savings can be \$80 to \$100 a day. That kind of money gets a guy’s attention when he’s running that engine 3 to 4 mos. a year.

Hardy knows the system works because of testing he did with Texas Cooperative Extension in Amarillo. Researchers measured straight diesel use and a natural gas-diesel blend on a Case IH 4391 turbo. Savings with the dual fuel system averaged more than \$3.50 an hour over straight diesel.

A smaller 4-cyl. had savings of a \$1 an hour and a Deere engine on dual fuel saved almost \$2.50 an hour.

“Most irrigators wouldn’t give us a 2<sup>nd</sup> look if diesel was half or 2/3rds what it is today,” Hardy says, “but with \$4 per gallon diesel common, we’re doing a lot of business.”

At late 2012 levels, the price of natural gas is about \$2.75 a gallon compared to diesel at just over \$4, so there’s a definite advantage to Hardy’s system. His converter installs either in front of or between the air filter and the turbo. Two separate lines, one for diesel and one for natural gas, feed into one side of the mixer and one line goes to the fuel pump. “It’s a simple system that works well,” says Hardy.

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Dual fuel system mixes diesel fuel and natural gas as it enters the injection system of a diesel engine.

## Flow Hammer Keeps Bin Feed Flowing

It’s not unusual to see a big rubber hammer hanging on a bulk feed bin to use when feed bridges up inside. The need for that hammer is a thing of the past thanks to the Flow Hammer from Automated Production Systems that delivers the “hammer blows” automatically.

“Bridging in the neck of feed storage bins has always been an issue, but it has become more prevalent as feedstuffs and rations have changed,” says Brian Rieck, Automated Production. “Livestock producers came to us with the problem and asked for a solution.” High frequency vibration devices had been

introduced in the past and, while effective, had their own problems, according to Rieck. Use could result in loosened hardware and metal fatigue. Automated Production came up with a low frequency, high impact design. It keeps feed flowing without damaging the bin or voiding warranties.

“Ours is a low frequency device that delivers 500 lbs. of force every second to a striker plate, not the bin,” says Rieck. “The striker plate is a metal band attached around the collar of the bin.”

The Flow Hammer requires no modification to storage bins. It can be set to run every time

the auger does, or a time can be set to run periodically.

Automated Production markets the Flow Hammer through its dealer network. It’s available in the U.S. and Canada.

List price for the Flow Hammer is \$1,585. “Any out-of-feed event has a cost,” suggests Rieck. “The payback for the Flow Hammer is a very short period of time.”

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To keep feed moving, Flow Hammer delivers 500 lbs. of force every second to a metal band attached around bin collar.