Centrifuge Makes DIY Oil Cleaning Easy

You can strip water and contaminates from used oil with a Simple Centrifuge from Numeric Control. Available as a turnkey operation or as components for building it yourself, the direct-drive Simple Centrifuge is safe and easy to maintain and inexpensive to run. It can be used to clean waste vegetable oil, bio diesel, lube oils and hydraulic oils.

"Our original philosophy was to be as simple as possible. However, over time the design has become a little more complex," says Randy Smith, Numeric Controls co-founder along with Mike Nielsen. "The changes have been driven by customer needs. Other changes are a result of us being end users ourselves."

"It works so well that other companies have tried to copy our design," says Nielsen.

Smith uses a machine to clean waste oil for heating the machine shop where the components are made. Nielsen, who manages multiple businesses, uses half a dozen machines to recycle waste oil for heating.

"I have mine set up with gravity feed," explains Nielsen. "Oil comes out of settling towers above into a small (2 1/2-gal.) heater and then into the machine. From there the oil goes into a storage tank, then into burners for heat."

Nielsen notes that he can usually pick up waste oil for under 15¢/gal. He also gets more heat per gallon. Centrifuged oil has 130,000 to 140,000 btu's per gal. versus 70,000 to 90,000 btu's per gal. of propane.

Heating the oil increases the processing rate to more than 20 gal. per hour. However, the slower the processing rate, the finer the particulates removed. Nielsen and Smith are confident the centrifuge captures particles down to 1 micron in size.

"If Mike or his employees aren't happy with maintenance or operation, I hear about it," says Smith. "Personally, I don't like having to take apart machines and clean them, so we come up with solutions."

Customer suggestions come in from a wide array of users, including those who use recovered oil for heating like Smith and Nielsen do. Many customers, including most foreign buyers, use centrifuged waste oil to fuel their diesel-powered vehicles or generators.

"We have one customer with about 800,000 miles on a diesel-powered truck who uses waste oil at a 20 to 30 percent mix with diesel fuel in the winter and 40 percent in the summer," says Nielsen. "He tried other centrifuges in the past, but they required too much labor."

Reducing labor has been key since developing the first design. One of the first improvements was to go from an open to closed bowl design. That eliminated splatter and reduced cleanup, as did making the unit self-draining. Other upgrades have increased G-force and increased the amount of oil subjected to the G-force. Recent improvements include a 2-part rotor with a feed cone, all of which can be removed intact for bench-top cleaning.

Numeric Control centrifuge is designed to strip water and contaminates from used oil. Photo below shows cutaway of unit.

"What we have now is a machine where the waste oil comes through the top of the rotor, down a tube to the bottom, and then works its way in with no splashing," says Nielsen. "It's easier to clean, we don't have to clean it as often, and it holds more product. It's a much better design."

The Turnkey Simple Centrifuge with motor starts at $1,500. The 2-part rotor with feed cone is available for $650 and ships with detailed construction and assembly notes for building your own. Other components include industrial single and triple phase motors and upgrade rotors to fit earlier turnkey machines.

Check out a video of the Simple Centrifuge in use at FARMSHOW.COM.

Contact: FARM SHOW Followup, Numeric Control, LLC, P.O. Box 916, Morton, Wash. 98356 (ph 360 269-1497; www.simplecentrifuge.com).

This Tractor Is So Quiet It Hums

Imagine cultivating vegetables with a Farmall Cub tractor so quiet that you can hear plant leaves swishing by the metal shank supports. You can have that experience with a Cub powered by a DC motor, which delivers full torque at low rpm's. The motor hums effortlessly, powered by 4 Trojan deep cycle 12-volt batteries. Instead of a liquid fuel gauge, the round instrument in front of you shows the amount of charge remaining in the batteries. When it's time for recharging, just head back to the farmyard and plug it in.

David Grau built his first electric Farmall Cub several years ago and has used it in his California farming operation without any problems since. He says the idea of using electric power for a tractor really makes sense because the machine rarely travels far from a charging station. The weight of the motor and the batteries provides more traction and the electric motor provides outstanding torque. The tractor is easy to drive, they never have to deal with engine problems and oil changes.

Grau designed and built a belly-mounted tool bar that handles up to a 3-row cultivator, a rotary mower, a sickle bar or a plow. The tractor also has a rear-mounted hitch for pulling wheeled trailers.

The Electric Cub was built on the frame of a gas-powered tractor. They first removed the motor, radiator, battery and gas tank, then reconditioned all the drive train parts, including the transmission and the brakes. A custom steel framework supports the batteries and electric motor that power the tractor. The sheet metal hood preserves the general look of the tractor. After they applied fresh paint, new tires were added and a linear actuated lift arm assembly and mid-mount double toolbar. The completed tractor even has a pto and, of course, electric lights. Grau and his staff have built a second version with some modifications on a similar Cub frame. In the future they may offer electric tractor do-it-yourself kits.

Contact: FARM SHOW Followup, Valley Oak Tool Co., P.O. Box 301 , Chico, Calif. 95927 (ph 530 342-6188; www.valleyoaktool.com).

Farmall Cub tractor is powered by a DC motor that hums effortlessly, powered by 4 Trojan deep cycle, 12-volt batteries.

A custom made console on the electric tractor (below) replaces the factory OEM version. The toolbar lift system is built onto the tractor's frame.

Outlet Bolted To Back Of Tractor

"I installed a waterproof, 12-volt AC metal outlet box on back of my Kubota 70 hp tractor and wired it to the tractor's battery. It eliminates the need for a battery to operate the pump on my 15-gal. pull-type sprayer," says Michael Myers, Kirbyville, Texas.

Myers uses the sprayer with a hand wand to controls weeds around his ponds. Myers removed the 12-volt battery from the sprayer and installed a plug on the end of the battery cable to plug into the outlet box. He drilled 2 holes in back of the tractor to bolt the outlet box on. Then he ran a wire from the outlet box up to the battery on front of the tractor.

"It's an AC outlet box, but I'm using it to supply the tractor's DC voltage," says Myers. "I paid $4 for the outlet box and another $4 for the wire."

The sprayer mounts on a pallet, which sets on a home-built wooden wagon that Myers pulls behind the tractor. "I use the forks on my loader tractor to lift the sprayer onto the wagon and tie it down with bungee straps," says Myers.

He also keeps a hammer on back of the tractor. "I drilled 2 holes in the tractor frame and installed a U-bolt bracket to hold the hammer. It comes in handy any time I have to pound on something while hooking up to an implement," he says.

Contact: FARM SHOW Followup, Michael Myers, 2942 CR 474, Kirbyville, Texas 75956 (ph 409 423-4142).

Waterproof, 12-volt AC metal outlet box on back of tractor is wired to tractor's battery. "It eliminates the need for a battery to operate the pump on my 15-gal. pull-type sprayer," says Michael Myers.