Rare Hot Air Engines Driven By Heat

Hot air engines were first patented in 1759. They're still enjoyed today by collectors like Dan Wiese of Westlock, Alberta.

Wiese owns two working models of these rare units, and says most people have never heard of them. Both of his engines were manufactured by De Lamater Iron Works in New York, N.Y., most likely in the late 1800's or early 1900's.

"They're often confused with steam engines, but that's not what they are at all," he says.

The large, low horsepower engines were primarily used for pumping water for livestock. Smaller versions were used in urban areas by hotels and other businesses to pump water to cisterns, so guests could have gravity-fed running water.

"There was one ship powered by a huge hot air engine, but it was too inefficient. It sank in a storm. When it was raised, it was refitted with steam engines," he explains. "The engines work on the expansion and contraction of hot air to drive a piston."

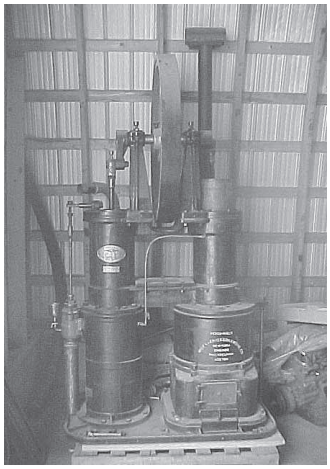
Wiese's hot air engines have a firebox in the bottom where wood or coal can be burned when he demonstrates them, he sets a propane burner from an old hot water heater inside for his heat source.

Fire from the fuel source heats the air inside the cylinder and as that air expands, it forces up the piston. Water that's being pumped by the engine is first sent into the water jacket to provide cooling. As air at the top of the cylinder cools, it contracts again, and is displaced by the hot air from the bottom. In this way, the air is recycled, going through the same process again and again.

Wiese says the stationery engines would normally sit directly over a water well when used as a pump.

"I took the big one out to a local Vintage Tractor Show once, but I haven't displayed it anywhere since because it's too heavy. It weighs about 3,700 pounds."

Wiese has pumped water with both of his engines. The 8-in. Ericsson pumps 500 gal./hr. (50 ft. above the surface of the well water), and weighs 700 lbs. The 10-in. Rider pumps 3,500 gal./hr. (50 ft. above the surface of the well water).



First patented in 1759, hot air engines were primarily used to pump water for livestock. The engines are still enjoyed today by collectors like Dan Wiese of Westlock, Alberta.

When asked about the value of the pumps, Wiese says he knows of another 10-in. unit that sold in Crosby, N. Dakota last spring for $10,000 U.S., but it was made by a different company.

"There aren't very many around. I only know of four hot air engines in all of Canada," he says. "However, on April 21 and 22, the 'Third Annual Southwest Regional Hot Air Engine Meet' will be held in conjunction with the 15th Annual California Antique Farm Equipment Show in Tulare, California. There will be more hot air engines together there than at any other time."

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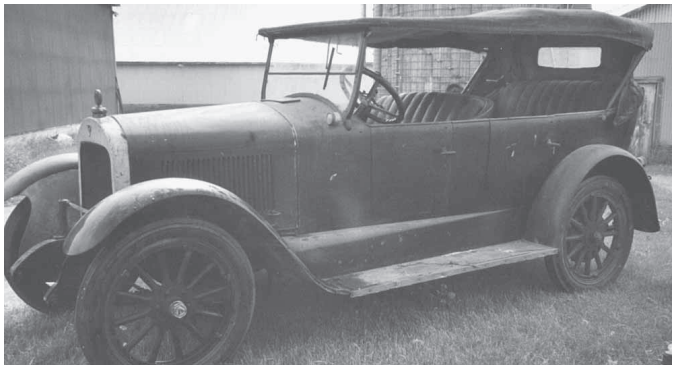

At the turn of the century, Deere dealers sold cars under the name of Velie. Collector Ron Hurlburt is proud of his 1923 Velie model 58 touring convertible.

Rare Deere Cars Attract Dedicated Collectors

Imagine buying a car at your local Deere dealership. At the turn of the century, you could. Thanks to Deere's son-in-law and grandson, company dealers sold cars under the family name of Velie. Today avid Deere collectors like Ron Hurlburt treasure their Velie cars and Velie memorabilia.

"Most people are pretty much in the dark about Velie cars, except for serious Deere collectors," says Hurlburt. "Most people don't know the name Velie."

Hurlburt knows it well. In addition to a 1923 Velie Model 58 touring convertible, he also has a mint condition Velie horse-drawn surrey sold under the Wrought Iron Line brand name. His Model 58 is all original and runs smoothly on its 6-cylinder, 45 hp engine.

According to the Velie Register, Hurlburt's Velie is one of 210 remaining worldwide. Velie cars can be found in countries all over the world.

Hurlburt knows the cars and the Velie name well. He shared a July 2001 copy of the *John Deere Tradition* collectors' magazine with FARM SHOW. An article by Brenda Kruse described how Deere's grandson Willard launched the Velie Carriage Co. of Moline to manufacture horse-drawn wagons and buggies. Velie soon realized the future was in cars and began building them in 1908. In 1911 he also started the Velie Engineering Co. to build gas and steam engines, electric motors, automobile accessories and motor trucks. Until 1915, Kruse reports that Velie vehicles were sold exclusively by Deere dealerships. By 1916, the company was making military vehicles. In 1920, production peaked at 9,000 cars, and the buggy business went away.

From 1916 to 1920, the Velies built tractors under the Biltwel 12-24 brand and teamed them with Deere plows at exhibitions and fairs.

In the late 1920's the company moved into aviation, starting Mono Air-Craft, Inc. Its 5-cyl. radial aircraft engine was awarded the highest rating by the U.S. Dept. of Commerce. It powered a four-seater plane called the Monocoach. Two other models followed.

The Velie companies were sold off after the company founders died.

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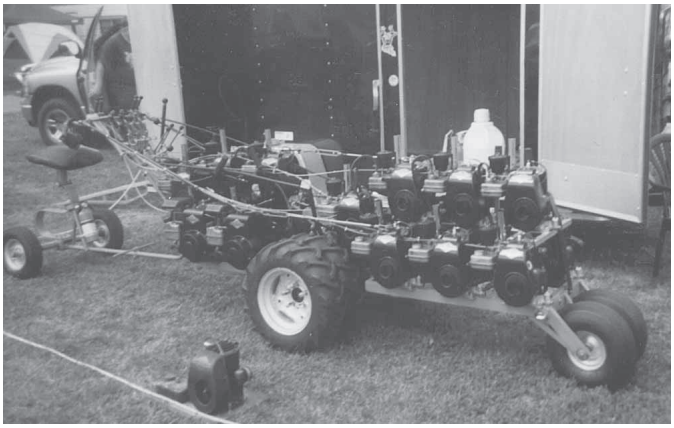
Also: Bob Nelson, The Official Velie Register, 1811 E. Stella Lane, Phoenix, Arizona 85016 (ph 602 274 6049; velie1 @earthlink.net; http://clubs.hemmings.com/clubsites/velieregister/index.htm).



Ken Ryan's "mega motor monster" has 17 Briggs & Stratton engines, all running together.

17-Engine "Mega Monster" Sounds Like A Jet Engine

A bet that he couldn't connect five lawn mower engines together was the beginning for Ken Ryan. It led to construction of a "mega motor monster" with 17 Briggs and Stratton engines, all running together. He rides in a sulky cart behind the unusual rig.

"People stare, and their jaws drop," he says. "I drive it at shows for fun, starting up and driving it once an hour or so. A lot of people don't realize at first that all of the engines are connected."

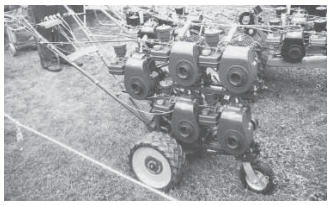
Connected they are, with 16 V-belts running from one to another via four jackshafts to a pulley on the gear driven transmission. Ryan starts one engine with its rope pull. With the aide of 9 manual clutches, three automatic clutches and three compression releases, the rest of the engines start up, either by themselves or in groups of two and, in one case, three at a time.

"I start one of the right rear engines and pull the hand clutch to start the next, which starts two and so on," he says. "It is just a series the way they start. If it is warmed up, I can go from one to all 17 in about 15 seconds."

All throttle controls, ignition and power drives are hooked together with toggle switches and a dead man's switch he wears on his wrist. "I have 35 controls in my operator area - clutches, chokes, compression releases, ignition shut offs. They are all right there," he says.

The engines are mounted on a home-built frame made with 1-in. channel iron boxed at certain areas for strength. He mounted a set of 6 by 12 duals at the center point of the frame. A set of tires picked up at a household auction is mounted rigid at the front end. The 6-forward, 3-reverse transmission was recycled from a 1953 walk behind Simplicity garden tractor. Ryan made disc brakes for the wheels.

To turn the 1,120-lb. vehicle, Ryan simply pushes down on the handlebars. "The balance has to be just right," he says. "If it is too heavy, it can't turn, and if it is too light, the front end picks up every time you hit the throttle."



Ryan's first multi-engine "tractor" had five engines.

Ryan says his engines if left stock would produce about 36 hp with their 124 cu. in. displacement. However, he admits he doesn't leave anything stock. With modifications and racing fuel, he estimates power at the wheel of about 50 hp.

"I have it geared down so it produces about 15 hp in high gear," he says.

Among the modifications was switching over to electronic ignition to eliminate excess vibration. He also runs rubber tubes from gas vents on the upper level of engine fuel tanks. They drain beneath the lower level of engines. That eliminates the danger of vibration induced gas spills dripping down on hot exhausts.

"With 17 gas engines, you have to be real careful about fire," he says. "I keep several fire extinguishers handy.

The toughest challenge in the entire project was figuring what order to start the engines. Once he figured that out, he simply follows it every time. Then he sits back and listens to the roar.

"It has 17 1 by 6-in. straight chrome pipes," he says. "It sounds like an aircraft engine. You'd never imagine these are Briggs and Stratton engines."

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