

Dodge Pickup Powered By Revolutionary Stirling Engine

You've never seen anything like the engine under the hood of the Dodge D-150 pickup driven by Albert Richey, Jr., one of the developers of a revolutionary new "external combustion" Stirling engine that gets 30 to 50% better fuel efficiency than similar sized conventional "internal combustion" engines. The Stirling engine burns virtually any kind of fuel including gasoline, diesel fuel, alcohol (methanol or ethanol), LP gas, jet fuel, natural gas, fuel oil, etc. What's more, the engine burns so quietly and efficiently it completely eliminates the need for a muffler, catalytic converter or other emission controls.

The Stirling engine was invented way back in 1816 by British inventor Robert Stirling but until now the materials and technology have never been available to make the unusual engine a commercial success. Now a New York company, Mechanical Technology Inc. (MTI), has developed working prototypes which have received "rave reviews" from government agencies and private companies that have tested the engine, including Deere & Co., which recently tested a van equipped with a Stirling engine.

Unlike conventional internal combustion engines which use spark plugs to explode fuel inside a cylinder to drive a piston up and down, the Stirling engine takes advantage of the fact that high pressure hydrogen gas expands extremely rapidly when heated and compresses quickly when cooled. Cylinders on the Stirling engine are sealed shut with small amounts of high-pressure hydrogen gas inside. When the gas is heated, it expands rapidly, driving the piston down. As the gas cools, it compresses, allowing the piston to move back up again. All that's required is a constant heat source to alternately heat and cool the sealed gas, which is never used up. Virtually any fuel can be used and there's no need for refined fuels with high octane and cetane numbers. The fuel is burned continuously like the flame in a furnace. When more power is required by the vehicle, more fuel is pumped into the fuel chamber and, simultaneously, more hydrogen gas is injected into the sealed cylinders, Richey points out.

He has put more than 800 hrs. on his Stirling-equipped Dodge. The first thing you notice when you look under the hood is

the big dome on top of the engine which is the cover of the big combustion chamber. Fuel feeds into it through a single nozzle at the center of the top of the dome. It sprays fuel into the combustion chamber in a 75° arc. It burns at temperatures well over 3,000° inside the all-stainless steel chamber. "Heater heads" that extend up into the combustion chamber transfer heat to the gas in the sealed cylinders, driving the engine. The pistons act on a crankshaft just like in a conventional engine and the Stirling will work with any conventional transmission.

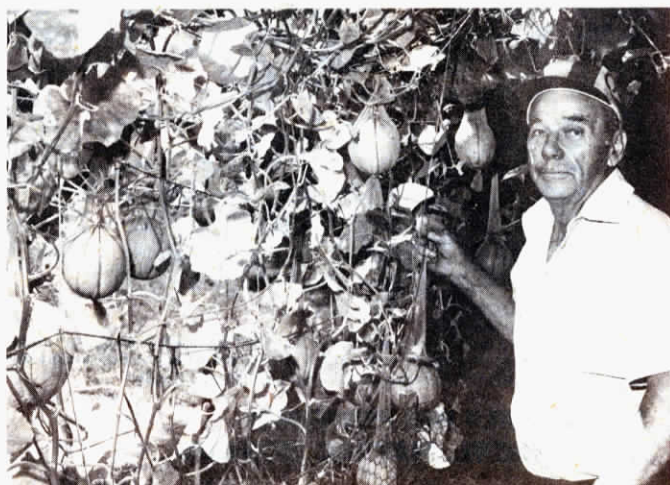
The Stirling engine runs quiet because there are no "explosions" of fuel to muffle - just a constant flame. You never have to change the engine's oil because with external combustion no byproducts, such as carbon, can get into the oil. The starter, alternator and other engine components are the same as on a conventional engine. The only difference in performance is that it takes the engine about a minute to warm up when it's first started.

"We've run this test pickup on unleaded gas, diesel fuel, and even jet fuel without making any adjustments to the engine. You can even mix or match fuels in one tank, using whatever fuels happen to be available, or whichever is least expensive," says Richey.

Deere representative Gregory Guptsell told FARM SHOW the company was impressed with the new engine. "We got 15 to 30% better mileage with the engine compared to internal combustion engines. And its exhaust emissions were low enough to meet government emission standards for 1990 and beyond." Guptsell says Deere is evaluating the possibility of manufacturing the engine under license. Another agricultural equipment manufacturer, Valmont Industries, Valley, Neb., is also taking a look at the engine. Valmont is testing a Stirling engine on an irrigation well, fueling the engine with coal.

MTI plans to continue tests on the prototype pickup-mounted engine and is considering licensing several companies that want to manufacture it.

For more information, contact: FARM SHOW Followup, Mechanical Technology Inc., 968 Albany-Shaker Road, Latham, N.Y. 12110 (ph 518 456-4142).



August Wilks puts each melon in a stocking and ties it to the trellis.

IDEA LETS HIM GROW "VINY" CROPS ON TRELLISES

He Raises Melons In Silk Stockings

"I can't wait for my wife to get a run in her stocking because then she gives it to me for my melon patch," says August Wilks, Elkhorn, Wis., who uses stockings to support the weight of the muskmelons he raises on a trellis in his garden.

"When the melons start to get too heavy for the vines, I slip them inside a stocking and tie the stocking to the twine that runs crossways on the trellis. Then they don't weight the vine down and it can continue to grow upward on the trellis," says Wilks, noting that as the melons get larger, the

stockings stretch.

He also raises cucumbers and tomatoes on trellises but they don't require stockings for support. Wilks says raising plants on a trellis makes it easier to pick the crop and lets him raise more produce in a minimum amount of space. The plants don't spread out over the surface of the garden, smothering other vegetables, and the vines don't get trampled when harvesting. It's also easier to weed the garden because he only has to hoe around the base of the trellis.

ATTRACTIVE ORNAMENT SPINS IN THE WIND

He Turns Pop Bottles Into Neat Bird Cages

Minnesotan Harvey Jobe performs "recycling magic" on 2 liter size plastic pop bottles. He turns them into money.

Here's how he does it:

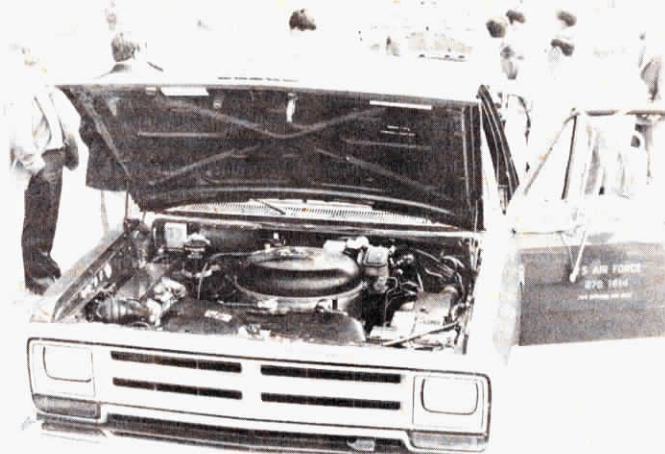
Using a hot knife and a steady hand, Harvey cuts the plastic bottles into strips, transforming them into ornamental bird cages that spin in the wind. He begins by rinsing out the bottle, then removes the outside paper label and glue. He then marks out a pattern to follow when cutting the 18 strips which form the cage.

"It takes me about an hour to turn a bottle into a bird cage," says Harvey, who sells his eye-catching creations at craft shows for \$5 each. They can be displayed individually, or in a chain of two or more cages. His "best seller" is a green cage (made from a green plastic 7-Up bottle) with a bright red artificial cardinal perched inside.

For more information, contact: FARM SHOW Followup, Harvey Jobe, 806 4th St. S.W., Waseca, Minn. 56093



Harvey uses a hot knife to cut the sides of plastic bottles into strips.



The prototype Stirling engine is installed in a Dodge truck. Fuel burns in a constant flame that heats a sealed gas. When the gas is heated, it expands rapidly, driving the piston down. As the gas cools, it compresses, allowing the piston to move back up.