



**Air cleaner rides on four caster wheels. Suction arm on front draws dirty air into the unit before it has a chance to get out into shop.**

## Portable Filter System Keeps Shop Air Clean

If you're tired of breathing in welding smoke or grinder dust particles when working in your shop, you'll like this new portable air cleaner that goes where the work is.

Wayne Hughes, owner of Air-Vac Systems, Cedar Falls, Iowa, says, "It pulls welding smoke or other fumes and particles away from your face before they can get into your breathing zone," he says.

The first-of-its-kind air cleaner rides on four caster wheels and is housed in a 16-gauge steel cabinet that measures 3 ft. wide by 2 ft. deep by 6 ft. high. A "step-on" brake locks the unit to the floor while it's in use.

An electric fan at the top of the unit pulls dirty air through an 8-pocket bag filter inside the cabinet. An 8-in. dia. suction arm on front draws dirty air into the unit before it has a chance to get out into the shop. The arm can be swiveled left or right 180 degrees, and also swivels at the hood and at the center of the hose. External springs counterbalance the weight of the arm, with friction joints added for stability.

"If you want you can even set the hose to reach 11 ft. straight up into the air," says Hughes.

A metal mesh spark arrestor filter is located below the bag filters and catches sparks in a slag pan, which can be pulled out and emptied. It prevents any hot sparks from going into the bag filter and catching on fire. "The bag filters need to be changed only about once a year. The spark arrestor filter should be cleaned about once a month," notes Hughes.

Sells for \$3,980. There's a \$500 discount for Farm Show readers.

Contact: FARM SHOW Followup, Air-Vac Systems, 1514 W. Lone Tree Rd., Cedar Falls, Iowa 50613 (ph 800 234-2473; whughes@cfu.net; www.air-vacsystems.com).

**Reader Inquiry No 195**



**Wood gas generator turns wood and other biomass into gas to fuel cars, trucks, stoves and furnaces. Car shown above is running on syngas. A completely assembled unit is shown at right.**



## Kits Turn Wood Into "Syngas"

Want to fuel up your truck from the woodpile? Get a wood gas generator from All Power Labs (APL), which turns wood and other biomass into gas to fuel cars, trucks, gensets, stoves and furnaces. Prices for a wide variety of sizes range from free for a full set of plans to \$5,000 for a complete system, all painted and ready to assemble. Individual components are available as well.

APL uses an open source process to improve, refine and test its products; thus the free plans. All you have to do to get the free plans sent to you is to agree not to sell a product based on those plans, or pay a 10 percent fee to APL if you do sell units. You also agree to share any improvements you make on the plans. In a very real way, anyone who receives the free set of plans becomes a collaborating researcher with Mason and APL. The agreement is called a General Public License.

"The more minds you have working on something, the better it will be," says Price. "The world is littered with good ideas that never went anywhere because people held on to them so tightly. We believe we have solved a lot of challenges in developing downdraft gasifiers because people have supported our work and shared their knowledge."

The company's latest design vaporizes water out of incoming fuel and turns fuel into charcoal. It heats the charcoal and incoming air. It also removes a majority of particulates to prevent soot clogging. The result is more complete combustion for increased total efficiency and elimination of any need for a radiator or cooling system. It's also fitted with a gasification control unit (GCU) that monitors and evaluates gas

production.

"We don't tell people our units are turnkey," says Price. "You'll have to play around with it a little. Every kind of fuel you put in will react differently. Balsa and oak won't make the same kind of gas. You have to tweak it a little."

The GCU will make it easier to tweak the system's maximum efficiency. Price explains that different fuels require different flow rates and pressures. The GCU monitors production and provides feedback. It can measure flow rate and pressure and monitor outputs from motors running on the gas produced or on DC motors running off a generator that is running on syngas.

With 107 kits out the door (12 to university research facilities) in the past year, APL is a leader in turning wood and other biomass into fuel. They are also a leader in putting syngas to work. In addition to fueling generators, they have also used it to fuel a Honda Accord and other vehicles.

This winter, the company plans to start offering plans or kits for a gasifier with a 12.5-hp, single cylinder, China diesel. It will contain a separate electronic speed control kit and a butterfly (valve) kit. The speed control kit and butterfly kit can also be used with Lister diesels.

APL's website offers a tremendous amount of information on downdraft gasifiers and how they work. Plans can also be downloaded.

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