

## Automatic Fire Extinguisher

"It pinpoints the location of any fire that develops on your equipment and automatically puts it out before the fire can get out of control. You don't have to do anything," says Neal Hall, Brook Park, Minn., about the new automatic fire extinguishing system that he and Shelby Holen developed.

The patent pending fire extinguishing system is heat-activated and is designed to cover up to 20 different spots on equipment. It can be used on everything from combines, tractors and trucks to clothes dryers, stoves, dishwashers, chimneys, etc.

"It's a failsafe system - all you need is a fire for it to work," says Hall. "So far we've built one small style for appliances such as clothes dryers, etc. The appliance extinguisher could be externally mounted on existing appliances or internally mounted on new appliances. And we have a larger style for combines and tractors, etc."

The farm equipment system makes use of a standard 25-lb. pressurized bottle of dry chemical fire extinguishing agent, which mounts behind the engine compartment on combines. The bottle is connected to a copper line that's off to run through the engine and combine drive compartments. The line has several 3/8-in. dia. copper-lined caps soldered onto it with a low temperature solder. When a fire starts, the cap melts off and the dry chemical agent discharges out the opening to extinguish the fire. At the same time, a

low pressure switch on the system sends a signal to the cab, which turns on a warning light and sounds a buzzer to let you know there has been a fire.

The valve was removed on top of the fire extinguisher and replaced with a new screw-on head to which the copper line and a low pressure switch is attached. A gauge on the head indicates whether the bottle has pressure or not.

"You don't have to be there to pull the fire extinguisher handle. In fact, you don't have to even know there is a fire. And it pinpoints the location of agent so if the engine catches on fire, only that area gets doused. You don't waste any agent going to the hydraulic compartment, belts or anything else," says Hall.

"You can place the caps wherever you think there might be fire potential such as the combine's hydraulic bay, engine, belt drives, etc. You can make the solder cap melt off at different temperatures, anywhere from 100 to 600 degrees. For example, for a hydraulic compartment that runs cool you might make a 250° solder. Another compartment that runs warmer might require a 350° solder.

"If the bottle doesn't have pressure, a red light and a buzzer will come on in the cab so you know you need to service it."

Hall says he first came up with the idea for use on a clothes dryer. He serves as a volunteer fireman in his community and has learned that a lot of house fires start when



When a fire starts, cap melts off and dry chemical agent discharges out opening to extinguish fire. At the same time, a low pressure switch on system sends a signal to cab, which turns on a warning light and sounds a buzzer. Automatic extinguisher also works on clothes dryers (below).

the clothes dryer starts on fire. "The dryer is hooked up to a low pressure switch on the extinguisher that automatically shuts off the dryer when a fire develops or when the pressure is low in the bottle. It leaves only a small mess to clean up."

The two men are looking for a company to manufacture and market the systems. "We believe the product could be sold for about \$700 for combines and \$70 for home appliances," he notes.

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## He Helps Boost Hydraulic Capacity Of Older Deere Tractors

If you've got an older Deere tractor and would like to use it with a newer implement that requires more hydraulic capacity than your tractor was designed for, you'll be interested in the aftermarket hydraulic products offered by the Klager Machinery Co. of Saline, Mich.

Earl Klager, a farmer and mechanical engineer, has worked with industrial hydraulics for more than 25 years. His hydraulic-boosting products are designed for Deere tractors made from 1960 to 1990. That includes the 10, 20, 30, 40, 50, 60, and 70 Series tractors. It doesn't include lawn and garden tractors or compact tractors. He uses standard off-the-shelf products, such as valves and pumps, and supplies all the mounts, adapters and manifold plates required.

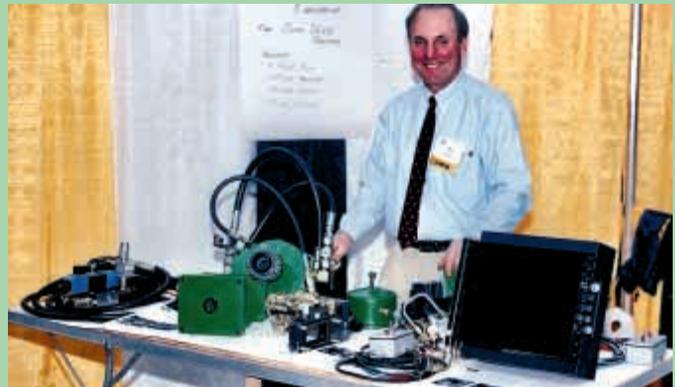
"There are a lot of older Deere tractors that are still operating and they'll continue to operate for years to come, especially if you can upgrade them to meet the hydraulic requirements of today's implements," says Klager. "My products are pre-engineered to work on your tractor without requiring a lot of extra lines, fittings, new bolt holes, etc."

Those products include: 1) Extra remote outlets independent of the tractor's existing outlets that are operated by a separate con-

trol; 2) A pto-driven auxiliary pump system that provides the tractor with extra hydraulic flow capacity, such as if the implement you want to use requires 20 gpm but your tractor has a capacity of only 10 gpm; 3) A pressure intensifier that plugs into the tractor's existing outlets and raises hydraulic pressure for a particular use, such as folding or unfolding a heavily-loaded implement. For example, the implement may require 3,000 psi but your tractor can put out only 2,250 psi; 4) An oil cooler to remove the heat caused by running under heavy loads.

"Nothing I've done is entirely original. I just put different things together to make it work," says Klager. "Not everything I offer is limited to Deere tractors. The oil cooler and pressure intensifier could also be used on any brand of tractor."

Klager started off by selling an extra remote outlet two years ago. "I know what the needs are because I'm a farmer, too. But trying to make this idea work has been a challenge. Each tractor and each application is different, and newer implements often have several hydraulic functions that have to work simultaneously. It can get pretty complicated trying to make different hydraulic combinations work together. As a result, I often have



Earl Klager says his hydraulic-boosting products are designed for Deere tractors made from 1960 to 1990.

to find farmers who are willing to work with me on an experimental basis before I can get a final product out. That's why I prefer limiting the geographic area that I cover mostly to Michigan and Ohio."

An extra remote outlet sells for about \$650; a pump system sells for about \$600 plus the cost of the pump. Pump costs can range from \$200 to \$2,000 depending on the particular

requirements. A pressure intensifier sells for about \$1,000. The oil cooler sells for about \$450. All products except the pump system come with electric controls to turn them on and off.

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## "Tire Loader" For Bunker Silos

"Our bunker silo measures 120 by 60 ft. and it takes about 1,000 tires to hold the plastic down over the top. To make the job easier we made a bucket-mounted tire loader that really works well," says Jerry Gormley, Grinnell, Kansas.

He bolted three 17-ft. lengths of 2 3/8-in. dia. drill stem pipe to the bucket on his Versatile 4-WD tractor, spacing the pipes about 3 ft. apart to match up with the bucket's three steel dividers. He drilled a hole through each divider, then welded a short length of strap iron onto one end of each pipe and bolted it to the divider. He also welded three angle iron brackets on the front lip of the bucket to hold the pipes in place.

He has a tire pile where he loads tires onto the pipes. Then he drives up to the side of the silo and raises the bucket and also tilts it

down, enough that the tires slide downward as workers take them off and place them on the plastic.

"The pipes reach about halfway across the pile so we don't have to do much walking and worry about poking holes in the plastic. We use everything from car tires to big truck tires," says Gormley. "The pipes can carry about 50 car and truck tires at a time. We place the truck tires along the outside bottom edge of the silo, and put the smaller car tires on top. It used to take twelve people all day to do the job. Now it takes five people only about four hours."

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