

ADAPTS TO NEW OR EXISTING GRAIN BINS

Build Yourself A Solar Grain Dryer

A wrap-around solar grain dryer that really works, isn't expensive, and that you can build yourself onto a new or existing grain bin is now available. That is, plans are available. You can buy the necessary materials at your local lumber yard.

The accompanying photos show a covered-plate solar collector on a 22,000-bu. steel bin on the Harvey and Wesley Carlson farm near Lynn Center, Ill. It was built by a local contractor, but Harvey says he could have built it himself had it not been for the press of other farm work.

The wrap-around collector was designed by Marvin Hall, area extension agricultural engineer at Macomb, Ill., who has been a leader over the years in designing solar grain dryers and solar livestock buildings.

According to Hall, a solar system like the Carlsons' can be built for \$1,200 to \$1,500, depending on materials prices paid, and how much of the labor you provide yourself. The fan would be additional.

"Our solar bin worked very well, but we didn't get it wired and ready until fairly late in the season last fall," explains Harvey. Essentially, he dried 23% moisture corn down to an adequate moisture level for safe long-term storage the year-around.

Last fall, corn was put into the 22,000 bu. bin beginning the first of October, and the solar system was operated through to the end of that month. Most of the corn going in was wet, except for 5,000 bu. of dry corn purchased from town. Also, toward the end of harvest, some of the corn coming direct out of the field was not extremely wet.

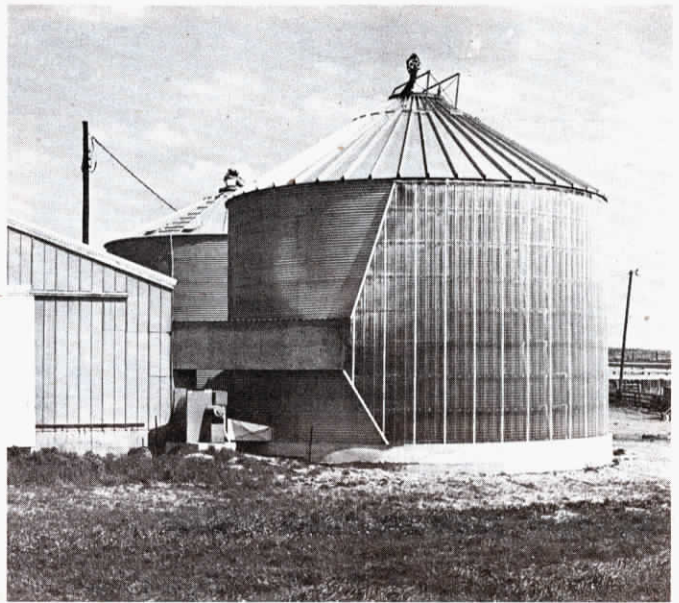
"I stuck with 23% moisture corn going into the bin except for one load that was 30%," Harvey points out. His overall grain drying and handling system also involves the adjoining building — a machine shed that has a solar collector roof — and another nearby bin. Corn comes from the combine at 28 to 30% moisture, is unloaded into the nearby bin where it is dried down to 23% moisture, using L-P gas and heat from the solar collector on the machine shed. Grain is then moved to the new solar bin and dried, slowly, down to a safe moisture level for long-term storage.

The Carlsons' solar bin does have an L-P gas burner with it for heat, but the burner has not been hooked up. It measures 36 ft. in dia. by 21 ft. high. A clear fiberglass blanket wraps halfway around, providing 1,155 sq. ft. of collector surface. Technically, it is a covered-plate collector. The bin wall behind the fiberglass is painted flat black, and absorbs the sun's heat coming through the fiberglass. The fiberglass simply holds the heat in until the air carries it through the ducts and into the grain.

Some bin solar collectors are bare-plate — the wrap-around clad is not clear, rather is black itself, usually metal, and absorbs the heat itself. Air passes along behind it in a chamber just like with the covered-plate collector.

Extension engineer Hall says the covered plate collector is best — you get 10 to 20% more heat, depending on how clear a day it is, amount of wind, and other factors.

Most of the cost of the bin collector is for the clad. Fiberglass costs 55 to 75 cents a square foot, sometimes up



Carlson's solar drying system, adapted to a 22,000 bu. bin, can be built for \$1,200 to \$1,500.

to \$1. "But you shouldn't pay over 75 cents (for 5-ounce) per square foot," says Hall. "If your local lumberyard doesn't carry clear fiberglass, they can order it for you."

Costs in addition to the fiberglass would be for wood furring strips to go between the bin wall and the clad, and to which the clad is fastened; plywood and other lumber to build the ductwork; and labor.

Harvey figures payout on his solar system will be fast: "I feel if I can dry 20,000 bu. of corn a year and save a nickel a bushel because of the solar system, that's \$1,000 a year." He spent a total of about \$6,000 for his total solar system, including the collector on the machine shed.

To help farmers meet solar grain drying system financing needs, USDA recently announced that government loans are now available to build solar grain drying systems. You can apply through your county ASCS office.

According to Hall, the maximum

diameter bin that a solar collector would be effective on is 36 to 42 ft.

Information on how to build solar bins is available. For a free hand-out sheet on fiberglass (covered-plate) collectors, send a stamped, self-addressed envelope to: Marvin Hall, W.I.U. Livestock Center, RR #5, Macomb, Ill. 61455. Drawings and an explanation are given on the sheet.

For plans to build a bare-plate collector, send \$2 to Extension Ag Engineering, South Dakota State University, Brookings, South Dakota 57007. SDSU engineers have been instrumental in developing solar drying bin systems.

A complete kit for installing a bare-plate collector on new or existing grain bins is available from Sioux Steel Co., P.O. Box 1265, Sioux Falls, So. Dak. Cost of a collector to go onto a 5,000 bu. bin for example, is \$2,700 (F.O.B.). The package is sold either with a Sioux bin or separately, and the price does not include installation labor.

SAVE MONEY ON BULK PURCHASE

"One Stop" Farm Lubrication Center

Handiest system we've seen for storing and dispensing lubricants is the Chief Storage Center, from Sauk Valley Equipment Co., Rock Falls, Ill. It lets you store from 4 to 36 specially-built 65 gal. storage drums, each equipped with a dispensing spigot, on a permanent wall rack.

"This system means no more lifting of heavy 55-gal. drums. It also prevents waste, takes very little room, and you save money by being able to bulk purchase oil and lubricants," says Jim King, Jr., sales manager.

Individual drums are permanently mounted on heavy-duty steel frames. Each drum features a read-at-a-glance sight gauge. Hoses run from each

drum to a control console for easy dispensing.

Drums are refilled back through the dispensers with a pump that sucks lubricants out of the drum they're delivered in. It takes from 4 to 12 minutes to transfer material from a new delivery drum to the shelf drum, and the job can be done unattended. A check valve prevents backflow of the oil.

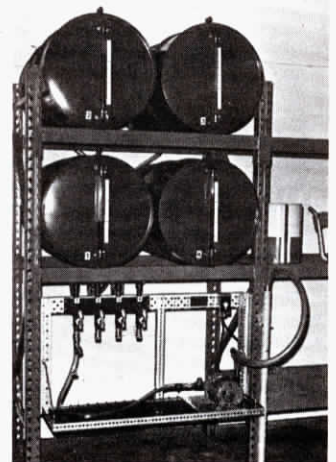
"It's convenient because you don't have drums sitting all over your shop. And, you don't have to lift heavy drums onto racks. Also, you can tell at a glance what your inventory is," King points out.

The storage system is primarily de-

signed for lubricating oil, including hydraulic oils, motor oil, cutting oil, and transmission oil. It is not designed for storing gasoline or other volatile liquids.

A 4-barrel storage rack, with transfer pump, takes up 3½ by 4½ ft. of floor space and sells for \$935. A 6 barrel model sells for \$1,300.

For more details, contact: FARM SHOW Followup, Sauk Valley Equipment Co., 200 E. 3rd Street, Rock Falls, Ill. 61071 (ph. 815 626-1018).



Each 65 gal. storage drum has an easy-to-reach dispensing spigot. Drums are back-filled through same spigots when refilled.