

Self-Loading Bale Unroller

By Jim Ruen, Contributing Editor

Gordon Edgar's loader-mounted, bale unroller does it all. The lift arm spears a big bale, lifts it into position and holds it in place to be unrolled. The unroller itself slides left and right and can unroll to either side.

"We have around 200 goats and milk about 130. Feeding and bedding them takes a lot of work," says Edgar. "We use haylage bales for feed and tried just putting them in feeders, but the goats couldn't reach all of the hay. We had to stand the bales on end and pull the hay off with a fork."

When the Edgars added cheese-making to their operation, time became even more precious. He started looking for a better way to handle bales.

Using the apron chain and sprockets from an old forage wagon, Edgar built an unloading platform that slides back and forth on a subframe. The subframe has quick-attach couplers so it can be used on a front-end loader.

The platform has a frame of 2-in. square tubing with 1 by 1-in. square tubing as cross pieces. Cherry boards attached to the crosspieces form the floor of the platform. Metal side panels help to hold the bale in place and direct the haylage or bedding to either side. A chain drive on an orbital motor powers the apron chain to the left or the right as desired.

The subframe is built out of 3-in. square tubing. A hydraulic cylinder slides the platform a foot to the left or right. Edgar uses this function when unrolling hay into a feeder or unrolling bedding material.

"We can pull alongside gates, raise the loader and move the platform to extend over the gate so it drops the bedding into the pens as we drive by," says Edgar.

The platform cylinder is mounted to the subframe and attaches to the reinforced rear/right corner of the platform. This corner also serves as the base for the spear-arm support post.

The spear-arm post and arm is also fabricated from 3-in. square tubing. It has an 8-in. and a 16-in. cylinder mounted to a yoke, allowing the spear-arm to travel more than 180°.

The yoke, composed of two 4-in. wide by

1/2-in. thick steel plates, pivots on the upright post mounted to the platform. The arm cylinders connect to pins that pivot at either end of the yoke plates. The arm is pinned to the post at the center of the yoke. The two cylinders are hooked in series so when one has extended fully or retracted fully, the other goes into action.

The 8-in. stroke cylinder rides against the outside of the post. It extends from one pin to the platform frame. As it retracts, it lifts the spear-arm from its rest position on the platform to a near vertical position.

At that point, a 16-in. cylinder mounted from the opposite pin on the yoke kicks in, moving the arm around and into a bale spearing position.

It is the yoke and the position of the shorter cylinder that ensures the 16-in. cylinder doesn't go over center on the post.

"Getting the positioning of the two cylinders and the post was the biggest challenge," says Edgar. "I made a model using plywood to get the reach and positioning right before cutting it out of steel. The first steel I used was too light, and it bent the first time I tried to pick up a bale."

With stronger steel, it has worked fine. Where possible, he ran hydraulic lines through the steel tubing to protect it from wear.

Controlling the various cylinders and the orbital motor required a fairly complex set of control valves. Hydraulic power comes from the auxiliary power line that normally controls the grapple on his loader bucket. He runs it to a 3-way valve.

"A switch mounted to the joystick sends flow to the orbital motor, with the joystick controlling whether the apron unloads left or right," explains Edgar. "When I activate a second switch mounted on the loader post, the flow moves from the motor to the cylinder on the bed, and the joystick moves the bed left or right. When the third switch is activated, the flow moves to the loader arm. Again, the joystick controls moving the arm left or right."

To simplify connecting and disconnecting the valves that are mounted on the unroller, Edgar ran the electric control functions



To save time feeding and bedding a herd of dairy goats, Gordon Edgar built this loader-mounted bale unroller. It loads itself and unloads out to either side.



Edgar used unloading chain from a forage wagon to make unloader.



Unroller slides out to either side for unloading into pens. Bale spear reaches out to the left side of tractor to load bales onto platform.

through a common 110 outlet and plug. When disconnecting the loader for other uses, he simply pulls the plug and disconnects the auxiliary hydraulic hose.

"Since building the unroller in 2007, I've used it twice a day every day," says Edgar. "It sure saves a lot of work."

Contact: FARM SHOW Followup, Gordon's Goat Dairy, 43253 C-Line Rd., Wroxeter, Ont., Canada N0G 2X0 (ph 519 335-4321; gordonsgoatdairy@gmail.com; www.gordonsgoatdairy.ca).

Rare Electric-Powered Deere Mowers

Not only does George Beckett own two rare Deere electric riding mowers, he has a unique way of keeping them charged. The green riders, along with the rest of his collection of electric mowers, are stored in a new barn with a 7,500-watt solar array on the roof that powers everything on Beckett's rural Tennessee property. The choice to go solar was easy when he and his wife discovered they were \$20,000 away from the power grid.

Beckett bought his first General Electric riding mower on eBay. "I had a friend who was a General Electric engineer, and he helped me restore it. I had to learn about resistors and capacitors and relays," Beckett says. "When we finished I was hooked."

Beckett's collection of GE riders grew to 32 machines. He really didn't intend to collect other models until he saw a \$100 Deere 90 listed on Craigslist in his home state of Michigan.

"It was rough, but it was running. The price was right," Beckett says.

"The most interesting feature of the Deere electric tractor is that the charger is nice. On the GE, you plug it in, and it's ready to use the next day. If you didn't use it regularly, you still had to do a full charge from time to time. The Deere produces a trickle charge if you keep it plugged in. That did a lot for the health of the batteries," Beckett says.

Deere only made two models from 1972 to 1976, Beckett says, in response to the energy crisis at the time. Because of increased battery prices and lack of skilled service to make repairs, the electric market faded away.

But that's not a reason to avoid them today, Beckett emphasizes.

"You have to remember, they are 1970's, Apollo era, so the electronics are old. Electronics today are more dependable," he explains. Because the parts are 40 years old, he suggests replacing everything – new resistors, capacitors and relays. Parts are readily available and inexpensive.

Knowledge of how the electric riders work translates well to solar power and makes a cool connection – the sun powers the Becketts' new home, the barn that houses the tractors, plus the tractors, which quietly mow the grass that the sun helps grow.

Some of the GE garden tractor models have a DC port, which allows them to be directly plugged into the solar array without going through the AC inverter. Beckett has 1,000 watts on a transfer switch that allows him to directly power the tractors, which saves the 15 percent of power that is lost using the inverter.

Beckett notes he has "trailer queen" tractors to show off at parades, but both he and his wife use several of the mowers for



George Beckett keeps his collection of electric riding mowers charged by storing them in this barn, which has a 7,500-watt solar array on the roof.

various jobs on the property. An overnight charge provides enough power to mow 3 to 5 acres.

"They are fun because they are like little golf carts. They have such a tight radius, almost a zero turn," Beckett says. "It's a nice feeling to cut grass. It's quiet, and you're driving along and realize you didn't have to go to the gas station today."

Contact: FARM SHOW Followup, George Beckett, 302 Hickory Trace, Lyles, Tenn. 37098 (geo@myelec-traks.com; www.myelec-traks.com).



He bought this rare electric-powered Deere 90 riding mower on Craigslist for \$100.