World's largest steam-driven water pump, weighing 725 tons, is housed in a Michigan mining museum.

Michigan Museum Houses World's Largest Steam Pump

The world's largest steam-driven water pump, built by E.P. Allis, a forerunner of Allis-Chalmers, is on display at the Cornish Pumping Engine and Mining Museum in Iron Mountain, Mich. It's a modern engineering marvel, featured on the History Channel and in other documentaries. Those who've seen it say it's not to be missed.

Museum visitors are overwhelmed by the size of a 725-ton steam-powered pump. A crew of 60 men, divided into three 20-man shifts, was required to run the pump 24/7. The mine where it operated employed nearly 2,000 men. The pump's engine is 54 ft tall and measures 75 ft front to back. The 40-ft dia. flywheel weighs 160 tons. Running "full steam," the engine could pump more than 3,100 gpm, equivalent to 191,000 gal/hr and more than 4.59 million gal in 24 hr.

Visitors to the museum ask, "Why is it so big? Why does it pump so much? Where did all that water go?" These are good questions, answered by operators of the Chapin Mine, a company specializing in underground iron ore mining in the late 1800s. Ore deposits deep underground were accessible only after water was pumped out of the shafts. The huge Cornish pump could move millions of gallons every day. Built over 3 years and put into operation in 1892, the monstrous pump was used until 1932. In that time, the mine produced more than 27 million tons of iron ore.

After sitting idle for 2 years, the engine was donated to Dickinson County and designated for sightseeing. During WWII, it was nearly dismantled for scrap metal, but locals saved it. The county later donated it to the Menominee Historical Foundation, which built a museum around it. The pump and the building it's housed in are now listed on the National Register of Historic Places.

Running "full steam," the engine could pump more than 4.59 million gal in 24 hr.

In its heyday, the steam engine produced 1,200 hp and turned the flywheel at a maximum of 10 rpm. It consumed almost 1,000 tons of coal per month to power a 24-in. dia. drive shaft connected to a series of eight pumps. Each pump had 28-in. plungers that lifted water in stages to the surface, where it was discharged into natural waterways, a common practice in mining operations at the time.

The Mining Museum also displays a large collection of underground mining equipment, including ore cars, hammers, tuggers, scrapers, skips, man cars and a dynamite car.

Contact: FARM SHOW Followup, Cornish Pumping Engine and Mining Museum, 300 Kent St., Iron Mountain, Mich. 49801 (ph 906-774-1086; mrhmuseum@gmail.com; www.menomineemuseum.com).

Unit's compact size can shelter roughly 400 turkeys, 50 hogs, 20 cows, 800 chickens, dozens of sheep and even ducks, making it useful for hobby farms and serious pasture-based enterprises alike.

Mobile Shade Pasture Plans

In pasture-based farming, shade for livestock is more than a comfort feature; it's part of an overall management strategy. Polyface Inc. has developed its own mobile shade trailer, offering a practical answer to a long-standing question: how do we protect animals from summer heat without sacrificing pasture performance?

Permanent shade trees create trade-offs.

"In the summer, livestock need shade, but we don't want to lose all the manure in the trees; we want it in the pasture where it can do some good. It's the obvious natural adjunct to pasturing livestock," says Polyface owner Joel Salatin.

Trees also interfere with haying and other uses of open pasture. Portable shade offers more practical, usable options, allowing farmers to decide where animals will graze and rest, where manure and urine are deposited, and how the land remains productive. A reduction in nitrogen evaporation is an additional benefit.

The Polyface mobile livestock shade trailer is straightforward, with a lightweight V-truss frame mounted on trailer or mobile-home axles. It's typically 16 to 30 ft long and about 7 ft high, designed to accommodate a cow's height. The roof covering is 70% to 80% nursery shade cloth.

"The beauty of the shade cloth is that since it's permeable, heavy winds go through it and only ripple the fabric," Salatin says. "The shade cloth can come off in a minute, and all the purlins can be popped up out of the slots and bungee-strapped to the hitch tongue, so you can travel down the road at 50 mph if needed."

The unit's compact size can shelter roughly 400 turkeys, 50 hogs, 20 cows, 800 chickens, dozens of sheep and even ducks, making it useful for hobby farms and serious pasture-based enterprises alike. For turkeys, cross pieces can be installed in the V truss to create sleeping roosts.

Because it's lightweight, the trailer can be easily towed with a 4-wheeler to move animals through pastures and paddocks.

Rather than manufacturing the mobile shade trailers commercially, Polyface sells the designs, along with those for many other useful farm innovations, in a build-it-yourself plan book that includes drawings and blueprints, reflecting a philosophy rooted in farmer independence rather than factory production. The 568-page book is priced at $90.

Salatin estimates the cost of building a mobile shade trailer at roughly $1,000 for parts and materials, not including labor.

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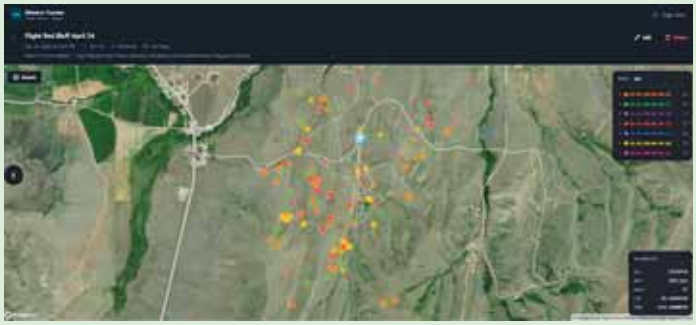

Aerial image of cattle herd from drone.

High-Tech Cowboys Hitting Montana Ranches

SkyDogg from Rogue Livestock has all the tools for high-tech cowboy work. They include drones, GPS livestock tags, thermal imaging, real-time mapping and field-based reporting. Founder Melissa Brandao says the only thing missing is trained drone pilots to integrate these tools into ranch management and to work with cowboys on the ground.

"When we first started testing drones, we realized successful application of the technology depended on who you picked to fly the drones and how well you train them to collect the data and images, including thermal images, day or night," says Brandao.

Rogue had already assembled much of the technology and the partners to provide it for their YardDogg feedlot program. YardDogg provides livestock logistics and biometrics for individual animals in feedlots, dairies, sales yards and livestock transport. It includes ID and GPS monitoring via ear tags, gateway infrastructure to transfer the data, and operational software to use it.

SkyDogg uses many of the same technologies, combined with drones. In addition to aerial and image gathering for pasture management and herd location, a growing market is the use of drones for predation management. That means being able to differentiate between a cow and a bear in a thermal image. It also means being able to quickly locate a predator kill so action can be taken to prevent further predation.

Rapid identification can make the difference between receiving state reimbursement and simply having an animal go missing. While available technologies have the potential to address these needs, a key component was missing.

"The biggest hurdle to adoption of the technology is coupling it with the technical knowledge of livestock and the geography where it'll be used," says Brandao. "We started a non-profit apprentice program this year to couple cowboy expertise with drone technology. We're working with the state of Montana to create a structured program."

Brandao's plan is to build a local expert network. Rogue Livestock will sell the drone service, ear tags and other products to ranchers, while local pilots will represent the company and fly the drones.

"They'll be like the Geek Squad for ranching communities," says Brandao. "They'll be able to stay in their communities, where they know the local ranchers and the geography. The technology exists, and people need it, but they don't have the expertise."

Interns in the program are paid on a graduated scale that increases as they gain more expertise. Brandao notes that a late start to the program this year limited rancher interest.

"We have to be in place and ready to go in 2027, when the cattle go on grass," she says. "We're seeking ranchers interested in the service and cowboys interested in the internship program."

Montana is Rogue's proving ground for the program, suggests Brandao.

"We have yet to market beyond Montana at this point. We don't want to overpromise. We want to show demonstrative results."

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