

Upgrade on the River

CARGILL BARGE TERMINAL REBUILDS HEADHOUSE, LEGS, ADDS NEW ELECTRONICS



Cargill, Incorporated
Wayzata, MN • 952-742-6211

Founded: 1865

Annual sales: \$135 billion

AgHorizon U.S. business unit facilities: 120

Crops handled: Corn, soybeans, wheat (soft red winter, hard red winter, hard red spring), sorghum, rice

Services: Grain handling and merchandising, risk management, crop insurance, crop inputs

Key personnel at Florence:

- Dan McClenning, location manager
- Dustin Deeder, operations
- Mikel Starnes, operations
- Jim Dobson, operations
- Kurt Graham, operations
- Nancy Kurpaitis, operations

Supplier List

Actuators..... Andco Actuators

Bearing sensors The Lakeland Companies

Bucket elevators.....The Essmueller Co.

Contractor McCormick Construction Co.

Control system..... Control Stuff Inc

Distributors The Essmueller Co.

Elevator buckets Maxi-Lift Inc.

Engineering VAA, LLC

Gates..... Industrial Fabrication Systems

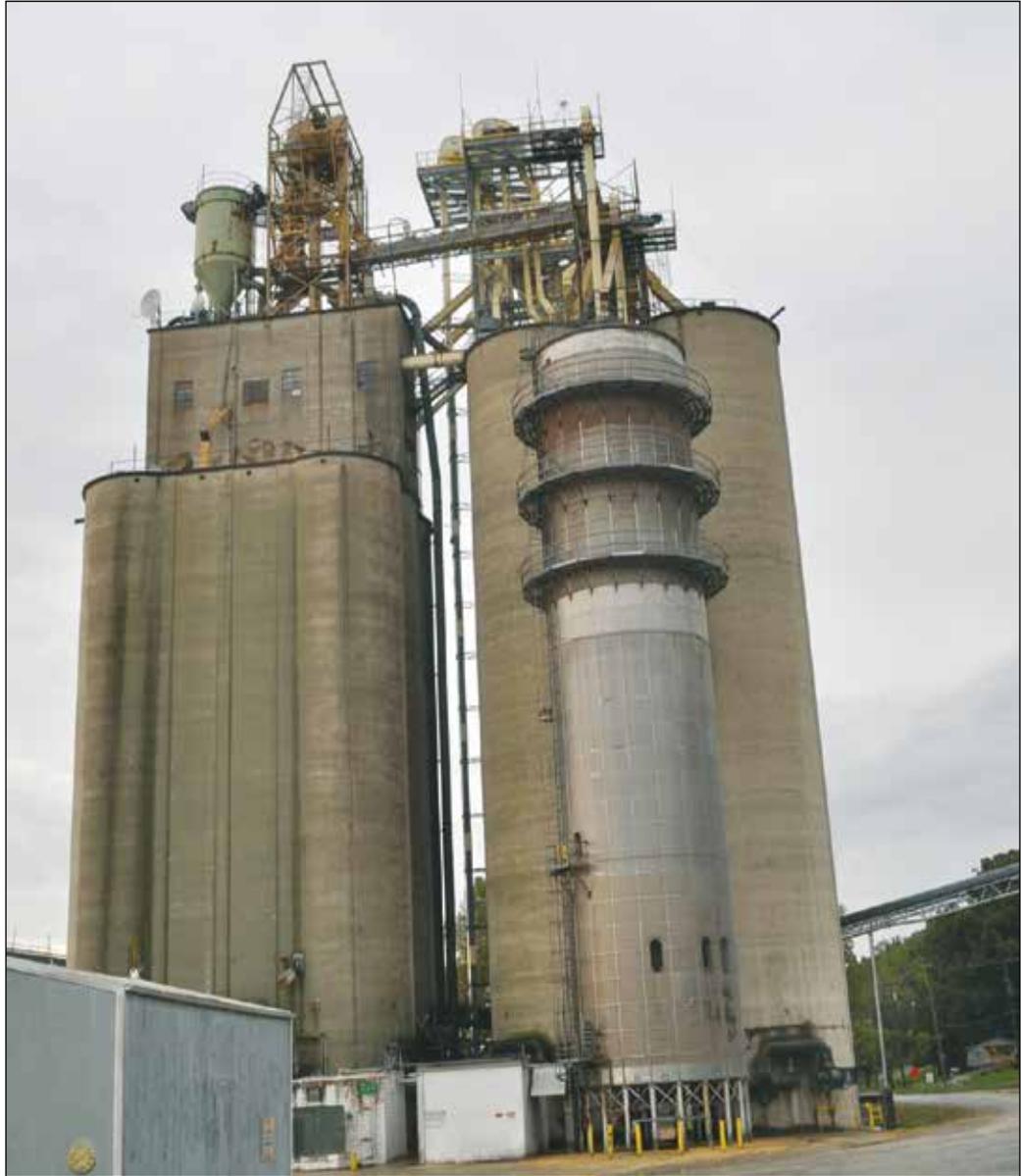
Leg belting..... Goodyear Conveyor Belting

Millwright..... McCormick Construction Co.

Motors Toshiba International

Speed reducers Falk Corp.

Tower system LeMar Industries Corp.



Cargill AgHorizon's 1.8-million-bushel barge loading terminal on the Illinois River at Florence, IL recently underwent an upgrade of its receiving operations and automation systems. Photos by Ed Zdrojewski, unless noted.

Cargill AgHorizons' Illinois River 1.8-million-bushel barge terminal at Florence, IL (217-723-4302), has for the most part been a good acquisition for Cargill. But as with any grain elevator built in the 1950s, it has needed maintenance over the years.

"We had two old Huss & Schlieper legs

rated at 10,000 and 15,000 bph, respectively, that were installed with the original elevator in 1956," says Location Manager Dan McClenning, who has been at the Florence location since August 2008. "We needed more capacity, but the biggest problem with them was very bad backlegging." (Backlegging is the discharge



3D drawing at left was developed by McCormick Construction showing new and rebuilt portions of the elevator head section in red, green, and gold. Illustration courtesy of Cargill AgHorizons. Top photo, also courtesy of Cargill AgHorizons, shows the head section prior to upgrade. Photo immediately below that by Ed Zdrojewski shows the head section as it appears from the ground today.



of some grain away from the leg outlet so that it falls back into the boot pit.)

“The old turnhead was displaced relative to the leg, so we ground a lot of grain,” he adds.

The problem was solved to a degree shortly after Cargill acquired the elevator with the installation of two new 15,000-bph legs to replace the original legs, a project that also included the addition of a GSI/Zimmerman grain dryer; however, the old legs and distributors remained in service.

Cargill began making plans to replace the legs and distributors in 2009. While the new project was making its way through the corporate office for approval, several delays occurred.

The 2009 crop was late and had serious quality problems, which personnel at Florence had to deal with. Heavy rains in May and June 2013 caused the Illinois River to rise and flooded the lower levels of the elevator. In 2012, drought devastated grain yields in the area. After that, the state of Illinois initiated a project to repair the lift span structure on the nearby State Highway 106 bridge over the river, snarling truck traffic into the area.

Also that year upon corporate approval, McClenning hired the engineering firm VAA, LLC, Plymouth, MN (763-559-9100), which developed a plan using 3D modeling for replacing the two old legs, distributors, and spouting. “That really made the project come alive,” he says.

Receiving Upgrade

Based on the package prepared by VAA, Cargill took bids on the proposed project, and in 2013, awarded a

contract to McCormick Construction Co., Greenfield, MN (877-554-4774), which is a Cargill-preferred supplier. McCormick acted as general contractor and millwright. Beardstown E&M Corp., Beardstown, IL (217-323-4400), did the related electrical wiring.

In addition to McCormick’s portion of the upgrade, the company hired Control Stuff Inc, Cologne, MN (952-466-2175), to upgrade automation systems to add barge loading, a grain dryer, and grain routing to some of the tanks to the overall control system.

Work on the project began in July 2013 and was finishing in time for the 2014 harvest, for a confidential cost.

The project included McCormick replacing the other two old legs with a 10,000-bph Essmueller leg, which is still inside the main structure’s slip, and an outside Essmueller 20,000-bph leg.

The No. 3 leg is outfitted with a single row of Maxi-Lift 14x8 Tiger Tuff buckets mounted on a 16-inch Goodyear belt using the Maxi-Splice elevator belt splice bolting system, while the larger leg has two rows of 14x8 Tiger Tuff buckets on a 32-inch Goodyear belt. The trunking on both legs was upgraded with explosion panels.

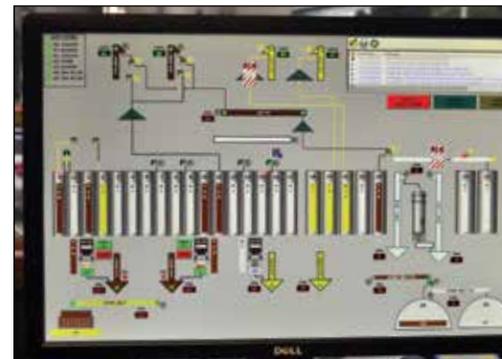
Each of these legs feeds its own new 8-hole Essmueller rotary distributor, through which grain can reach every part of the facility. McCormick also installed some new spouting. Everything is supported by a LeMar structural steel tower.

McClenning notes that with the receiving upgrades, it takes a little over three minutes to empty a semi truck.

In the area of hazard monitoring, Control Stuff Inc installed a new Extron Bus Mux Pro system throughout the facility. The system is integrated with automation and control system screens allowing for effortless real-time monitoring and alarm notifications.

McClenning says plans call for facility automation systems to be completed by Spring 2015. He adds that the company is considering the addition of a Compu-Weigh SmartTruck traffic management system, as well.

Ed Zdrojewski, editor



Automation screen shows receiving and storage operations at the Florence terminal, which utilizes an automation system developed by Control Stuff Inc.