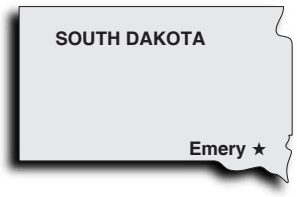
Flat Storage Annex

CARGILL BUILDS COMPLEX HALF A MILE SOUTH OF ITS CONCRETE ELEVATOR AT EMERY, SD



Cargill, Inc.
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 Emery:
- Dwight Berens, plant manager
- Brad Lawley, regional sales lead
- Christine Schmitt, customer solutions

Supplier List

Aeration fans.. Chief Agri/Industrial Division
Bucket elevators.... The Essmueller Co.
Catwalk..... LeMar Industries Corp.
Contractor ..... Marcus Construction
Control system..... Control Stuff Inc
Conveyors (belt)... Hi Roller Conveyors
Conveyors (drag) ... The Essmueller Co.
Distributor..... The Essmueller Co.
Dust collection ..... Donaldson Torit
Elevator buckets ..... Maxi-Lift Inc.
Flat storage .... Marcus Construction
Grain dryer ... Zimmerman Grain Dryers
Grain temp system ... Control Stuff Inc
Hazard monitoring system ... Control Stuff Inc
Millwright..... PMI Nebraska LLC
Scale automation... CompuWeigh Corp.
Screenings tank ... Meridian Mfg. Inc.
Square bins ..... InterSystems
Steel storage..... GSI Group LLC
Temporary storage ..... Hanson Silo
Tower support system..... LeMar
Truck automation system ..... CompuWeigh Corp.
Truck loadout spout.... Sioux Steel Co.
Truck probe ..... InterSystems
Truck scales... Siouxland Scales/Fairbanks

Cargill Inc.'s new 5.37-million-bushel remote station annex half a mile south of its main elevator at Emery, SD. Visible in front of the main flat storage building are three 50,000-bushel GSI wet tanks, a 7,000-bph Zimmerman dryer, a 25,000-bph Essmueller receiving leg, and an InterSystems' square bolted bin mounted over a Rice Lake outbound scale. Photos by Ed Zdrojewski.

Cargill Inc. has operated the big concrete elevator on the main highway through Emery, SD (605-449-4255), since 1996, when it acquired the facility as part of a swap with Continental Grain.

When it came time to expand in 2014 to handle increased corn volume, however, Cargill chose to build its "remote station" along a county blacktop half a mile to the south of Emery.

"One of our drivers was to get our drying operation and corn truck traffic out of town," says Plant Manager Dwight Berens, a 20-year Cargill veteran who has been at Emery for 11 years. "We needed more drying capacity, and this keeps the extra 'bee's wings' out of town."

The centerpiece of the 2014 project, however, is a huge 5.2-million-bushel flat storage building, along with the dryer, a 1-million-bushel temporary storage pile, several small wet tanks serving the dryer, and a truck loadout scale. Berens notes that the company determined that, at least in the case of Emery, flat storage is more cost-effective than upright tanks.

Cargill took bids on the design-build project and selected a proposal at a confidfential

Northern view of the station's 5.2-million-bushel flat storage built by Marcus Construction.

Reprinted from the May/June 2015 GRAIN JOURNAL

An InterSystems' square bolted bin equipped with a Sioux Steel dust suppression hopper and spout loads trucks atop a 120-foot outbound Fairbanks truck scale.

cost. PMI Nebraska LLC, Grand Island, (308-382-5454), served as millwright; Marcus Construction Co. Inc., Willmar, MN (320-222-6616), built the flat storage building; and Control Stuff Inc, Cologne, MN (952-466-2175), handled the automation systems.

Groundbreaking took place in March 2014, and the annex was completed in April 2015.

Flat Storage

The new flat storage building is of steel construction measuring 300 feet x 550 feet, with the sidewalls atop a 12-foot concrete stemwall. The building is 98 feet tall at the peak.

The building has a concrete floor with in-floor aeration ducts. Air is supplied to the ducts by a series of 48 Caldwell 10-hp axial fans. The structure also is equipped with a 78-cable grain temperature monitoring system supplied by Control Stuff.

Incoming grain is brought into the flat storage on an overhead 25,000-bph Hi Roller enclosed belt conveyor equipped with a moving tripper. Emptying the building is accomplished with front-end loaders, which push grain into a line of 20 sumps that empty onto a 25,000-bph Hi Roller enclosed belt in a below-ground tunnel running the length of the building.

Adjacent to the new building is a Hanson Silo temporary pile measuring 450 feet x 150 feet. The pile has 8-foot-tall cement sidewalls, an asphalt floor, and six 10-hp Caldwell axial fans that supply air through perforated plastic tubing. The pile is filled using portable augers and emptied by front-end loaders.

Grain Handling

The remote station has its own set of 120-foot Fairbanks inbound and outbound truck scales supplied by Siouxland Scale Service, under the control of a CompuWeigh SmartTruck scale automation system. Incoming trucks are sampled by an InterSystems probe.

Drivers continue onto a 1,000-bushel receiving pit feeding a 25,000-bph Essmueller receiving leg outfitted with two rows of Maxi-Lift 18x8 Tiger-Tuff buckets mounted on a 41-inch Goodyear belt.

The leg deposits grain into a 4-duct Essmueller rotary distributor after routing through a 25,000-bph InterSystems gravity screener.The distributor feeds to a series of 25,000-bph overhead Essmueller drag conveyors running to the flat storage, wet tanks, truck loadout, and the temporary pile. The reclaim tunnel from the flat storage buildling runs back to the receiving leg.

Wet grain goes to one of three GSI corrugated steel wet tanks holding 50,000 bushels each. The hopper tanks are 36 feet in diameter and 71 feet tall at the eaves, with 45-degree steel hoppers.

The wet tanks empty onto 10,000-bph Essmueller drag conveyors running to a 10,000-bph Essmueller wet leg. This feeds grain into a 7,000-bph Zimmerman propane-fired grain dryer. Berens says the new dryer has not yet been operated, except for some test firings.

The dryer empties onto a 10,000-bph Essmueller drag running to a 10,000-bph Essmueller dry leg. From there, grain travels to storage.

Twin 10,000-bushel overhead InterSystems square bolted bins are mounted over the outbound scale for loading trucks through a Sioux Steel dust suppression hopper.

Ed Zdrojewski, editor