

Syracuse Ag Service Terminal

MIDWEST FARMERS BUILDS ITS FIRST SHUTTLE LOADER TO REMAIN COMPETITIVE



Midwest Farmers Cooperative
Elmwood, NE • 402-994-2585

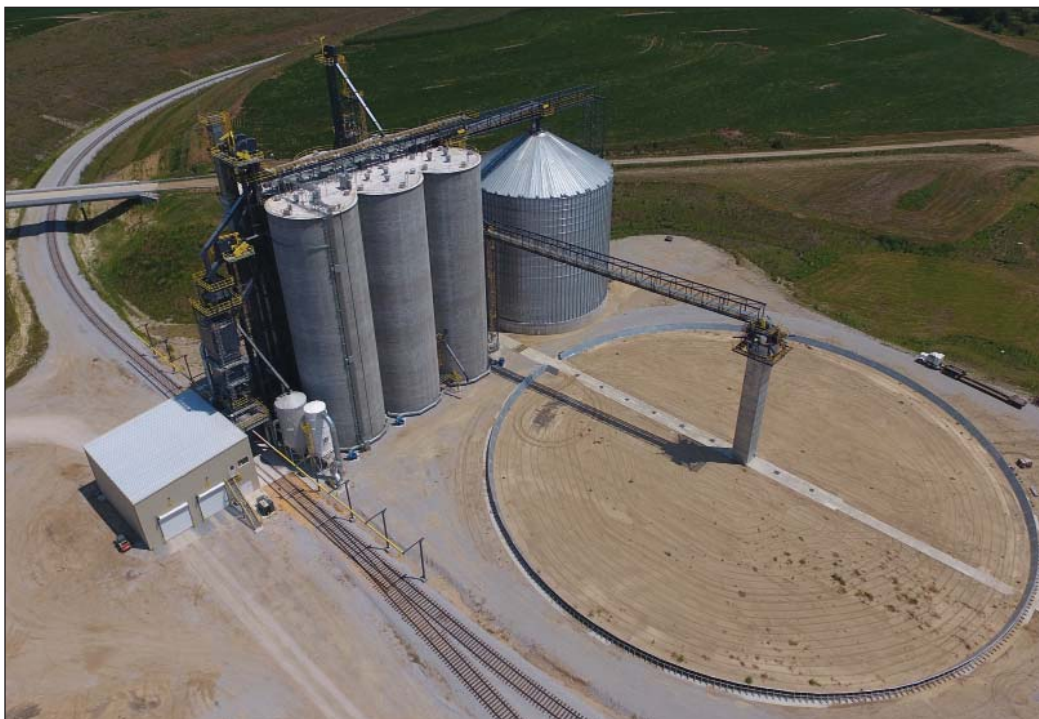
Founded: 1921
Storage capacity: 30 million bushels
at 26 locations
Annual volume: 30-40 million
bushels
Annual revenues: \$250 million
Number of members: 2,500
Number of employees: 180
Crops handled: Corn, soybeans
Services: Grain handling and mer-
chandising, feed, agronomy, energy

Key personnel at Syracuse:

- Dale Piper, CEO
- Craig Schultz, COO
- Marsha Whetham, CFO
- Gayln Boesiger, grain division manager
- Eric Werth, location manager
- Colton Knickman, production supervisor
- Michelle Smith, scale operator
- Trenton Bohling, grain originator
- Derek Straw, operations
- Trevor Kreifel, operations

Supplier List

Aeration fans.....AIRLANCO
Aeration systemAIRLANCO
Belting (leg)All-State Belting
Bin sweeps GSI
Bucket elevators..... InterSystems
Bulk weigh scale InterSystems
Bulk weigh scale controls..Proceres/
Cultura
CatwalksWarrior Mfg. LLC
Cleaner InterSystems
Contractor/millwright..... Hogenson
Construction Co.
Control system.....Wachter Electric
Conveyors InterSystems
Dust collection sys......AIRLANCO
Elevator buckets Maxi-Lift Inc.
Engineering ... Sunfield Engineering
Fall protection Hogenson
Construction Co.
Grain dryerZimmerman Dryers
Grain temp system TSGC
Level indicators..... BinMaster
Magnets ... Industrial Magnetics Inc.
Manlift.....Sidney Mfg. Co.
Moisture meter DICKEY-john



Midwest Farmers Cooperative's new 2.75-million-bushel rail terminal in Syracuse, NE. Aerial photo by Pathogen iNk Photography, Grand Island, NE.

When Midwest Farmers Cooperative set out to build its first shuttle train loading terminal on the outskirts of Syracuse, NE (402-269-3536), the coop faced a particular challenge with the site. In the hilly southeast corner of Nebraska, the site half a mile off State Highway 50 had enough flat ground for a 2.75-million-bushel concrete and steel grain elevator plus an adjacent fertilizer plant but not enough left over for the 9,400-foot loop track.

The site was far and away the best available for the terminal, says Location Manager Eric Werth, who joined Midwest Farmers in 2016 after working at other locations in the industry. Near the intersection of State Highways 50 and 2, it provided easy access for area pro-

ducers. It also sits along a 17-mile short-line railroad, which connects to the Union Pacific (UP) at Nebraska City, NE.

McAninch Corp, Des Moines, IA (515-267-2500) excavated a portion of an adjacent hillside to make room for the track, moving 845,000 cubic yards of dirt in the process. Kea Corp., Denver, CO built an overpass to access the inside of the rail loop.

Midwest Farmers wasn't going to let a minor detail like a hill stop the construction of its rail terminal. "This is a way for us to reach more end users," Werth says. "It will help us get better freight rates, reach new markets and remain competitive with other grain handlers."

The Project

Midwest Farmers broke ground on the terminal in July 2015. "We were able to start receiving grain at the tail end of the 2016 harvest," says Werth. "The rail siding was done April 1, 2017, and then we held a ribbon cutting with the Syracuse Chamber of Commerce."

Sampler.....InterSystems
Steel storage.....GSI
Temporary storage Warrior Mfg. LLC
Tower support system InterSystems
Truck probeCR Mfg.
Truck scales..... Rice Lake Weighing Systems



Closeups of structure containing two 20,000-bph InterSystems receiving legs, 60,000-bph InterSystems shipping legs, 80,000-bph InterSystems bulkweigher with 40,000-bph InterSystems gravity screener, all with InterSystems tower support systems. Also included are a 50,000-bushel Lorrich screenings tank and AIRLANCO baghouse dust filter.

The cooperative selected Hogenson Construction Co., West Fargo, ND (701-281-1742), as general contractor and millwright on the project. Additional participants:

- Sunfield Engineering Inc., Cedar, MI (231-360-8608), performed structural engineering on the project.
- Wachter Corp., Kansas City, KS (913-227-3900), served as the electrical contractor.
- Wachter and Rockwell Automation's Omaha, NE office (402-593-4180), programmed the facility automation systems.
- Goens Construction, Scottsdale, AZ (480-252-2446), erected the GSI steel tank.

Storage Structures

The main elevator consists of a six-pack of slipform concrete tanks plus a 750,000-bushel GSI corrugated steel tank. "The concrete tanks can handle corn or soybeans, as needed," Werth explains. "The steel tank is needed for the increasing amount of dry corn we're handling in the fall."

The slipform concrete section includes six 155,000-bushel tanks plus two interstices. The tanks stand 42 feet in diameter and 140 feet tall. They are outfitted with

five-cable TSGC grain temperature monitoring systems, SmartBob level indicators, and AIRLANCO AIRAUGER air-assisted unloading floors. The unloading action is powered by one 60-hp AIRLANCO centrifugal fan per tank capable of delivering 1/10 cfm per bushel for aeration purposes.

The 750,000-bushel GSI steel tank stands 105 feet in diameter, 102 feet tall at the eave, and 130-1/2 feet tall at the peak. The flat-bottom tank is equipped with outside stiffeners, 16-inch GSI X-Series zero-entry bin sweep, 24-cable TSGC grain temperature monitoring system, and BinMaster SmartBob level indicators. A set of four 30-hp AIRLANCO centrifugal fans provide 1/10 cfm per bushel of aeration through in-floor ducting.

Adjacent to the upright storage is a 1-million-bushel Warrior center-fill temporary storage ring. The ring is 280 feet in diameter with a packed fly ash floor and four-foot perforated steel sidewalls.

An overhead 20,000-bph InterSystems drag conveyor carries grain out to the temporary pile's center fill tower, which is topped by four AIRLANCO 50-hp centrifugal fans that hold the tarp in place. A below-ground 20,000-bph InterSystems enclosed belt conveyor carries grain back to the main elevator.

Grain Movement

The facility includes inbound and outbound 80-foot pitless Rice Lake scales with a CR Mfg. truck probe in advance of the scales. The scales are under control of Proceres/Cultura oneWeigh™ scale automation. The probe delivers grain to a grain lab in the facility office building equipped with a GAC 2500 moisture meter.

A digital display directs trucks to one of two 1,000-bushel mechanical receiving pits. These feed a pair of InterSystems 20,000-bph legs equipped with two rows of Maxi-Lift 14x8 Tiger-Tuff orange buckets mounted on a 31-inch All-State Belting belt.

The legs deposit grain into a two-way valve leading to a set of InterSystems 20,000-bph overhead drag conveyors out to storage. Storage tanks empty onto a 60,000-bph InterSystems reclaim enclosed belt conveyor running below ground from the concrete and above ground from the steel.

From there, outbound grain is elevated by a 60,000-bph InterSystems shipping leg outfitted with three rows of 20x8 Tiger-Tuff orange buckets mounted on a 65-inch belt.

The shipping leg deposits grain directly into an 80,000-bph InterSystems bulk weigh loadout scale under the control of oneWeigh software, with an optional InterSystems 40,000-bph gravity screener mounted above the bulkweigher. Either of the two receiving legs can be used for shipping, as well, to reach 80,000-bph.

The terminal has been loading 110-car unit trains in about eight hours plus prep time. Workers atop railcars are protected by a 300-foot trolley unit from Hogenson running the length of about five cars.

In addition, the terminal includes a 7,000-bph Zimmerman tower dryer fired by natural gas and served by a set of 14,000-bph InterSystems wet and dry legs. Werth says the dryer has yet to be fired up, since grain has been coming in at 15% moisture or less since last fall.

Ed Zdrojewski, editor



Overpass carries traffic to and from the elevator over a portion of the facility loop track carved into an adjacent hillside. Photo by Ed Zdrojewski.