

Rail Loading Venture

MINNESOTA COOP, ADM TEAM UP TO BUILD A NEW ELEVATOR WITH LOOP TRACK



United Grain Systems, LLC
Winthrop, MN • 507-647-6600

Founded: 2012
Storage capacity: 17.2 million bushels at six locations
Members through United Farmers Cooperative: 2,300
Number of employees: 22
Crops handled: Corn, soybeans
Services: Grain handling and merchandising, brokerage

Key personnel:

- Jeff Nielsen, general manager/CEO
- Jason Tews, director of operations
- Tony Martens, superintendent
- Dan Klancke, assistant superintendent
- Dan Wolff, scalehouse foreman
- Joel Lueck, outside operations
- Kile Howe, outside operations

Supplier List

- Aeration fans**.....Rolfes@Boone
- Aeration system** North American Equipment Co. Inc.
- Bearing sensors**..... CMC Industrial Electronics
- Bin sweeps** Springland Mfg.
- Bucket elevators**.....Schlagel Inc.
- Bulk weigh scale** Intersystems
- Catwalks** LeMar Industries Corp.
- Cleaners**..... Intersystems, Baasch & Sons Inc.
- Contractor/millwright** SM Associates Construction LLC
- Control system**.....S-M Controls
- Conveyors** Hi Roller Conveyors, Schlagel Inc.
- Distributor**.....Schlagel Inc.
- Dust collection system**..... MAC Process Inc.
- Earthwork**.....Mathiowetz Construction, Brenteson Companies
- Elevator buckets** Tapco Inc.
- Engineering** VAA LLC

United Grain Systems LLC's new rail terminal outside of Brownton, MN has nearly 7 million bushels in concrete, steel, and temporary storage. Aerial photos by Eagle Eye Photos, Buffalo, MN.

Prior to 2012, Winthrop, MN-based United Farmers Cooperative had two main markets for its corn and soybeans – the river terminals at Savage, MN and area ethanol plants.

“Livestock is not growing significantly in this area,” says CEO Jeff Nielsen, who came to United in 1995 after holding positions with GROWMARK and Land O’Lakes, “and ethanol demand is not always reliable. Now, the weather extremes have shown that the river is not always dependable, either.”

One service largely lacking in the region, about 75 miles west of the Twin Cities, however, was a rail shuttle loading service.

To rectify that, United teamed up with Decatur, IL-based giant Archer Daniels Midland



UGS CEO Jeff Nielsen (left) and Director of Operations Jason Tews. Ground-level photos by Ed Zdrojewski.

Co. (ADM) in 2012 to form United Grain Service LLC (UGS), the purpose of which was to build a nearly 7-million-bushel rail-loading

- Fall protection** Flexible Lifeline Systems
- Grain dryer** Zimmerman Grain Dryers
- Grain temperature system**.. Tri-States Grain Conditioning Inc.
- Level indicators**..... Bindicator
- Manlift**..... BarnesCo Inc.
- Motion sensors** CMC Industrial Electronics
- Sampler**..... Intersystems
- Steel storage**..... The GSI Group
- Temporary storage**..... SM Associates Construction LLC
- Tower support system** LeMar
- Truck probe** Intersystems
- Truck scales**..... Rice Lake Weighing Systems/Lake Country Scale Works



Aerial view of the 8,200-foot loop track that connects the UGS terminal with the Twin Cities & Western short-line railroad.

elevator with an 8,200-foot loop track in Brownton, MN (507-647-6600).

The venture selected a 160-acre site at the west end of town. It's at the intersection of two major highways, U.S. Highway 212 and State Highway 15, and has access to the Twin Cities & Western Railroad, a 146-mile short-line with service to the Twin Cities, where it connects with several Class I railroads.

UGS selected SMA Associates Construction LLC (SMA), Monticello, MN (888-259-9220), as general contractor. "They had done projects for United Farmers at two feed mills in the past," says Nielsen. "Our board toured about a dozen elevators around Minnesota and the Dakotas, and they were really impressed with the SMA projects. They're located about an hour away from here, and they do an excellent job."

In addition to SMA, VAA LLC, Plymouth, MN (888-583-3527), performed engineering work on the project, and SM Controls, Adams, MN (507-582-7865), designed and installed the facility's automation systems. Cross Country Construction, Elbow Lake, MN (218-685-6410), erected the steel tanks.

Construction began in September 2011, and the facility was completed in September 2012.

Storage

The Brownton facility combines several types of grain storage for maximum flexibility including four slipform concrete tanks with interstices, four large corrugated steel tanks, and two temporary storage piles. Director of Operations Jason Tews, who came to UGS from ADM in 2012, says the concrete provides the long-term durability

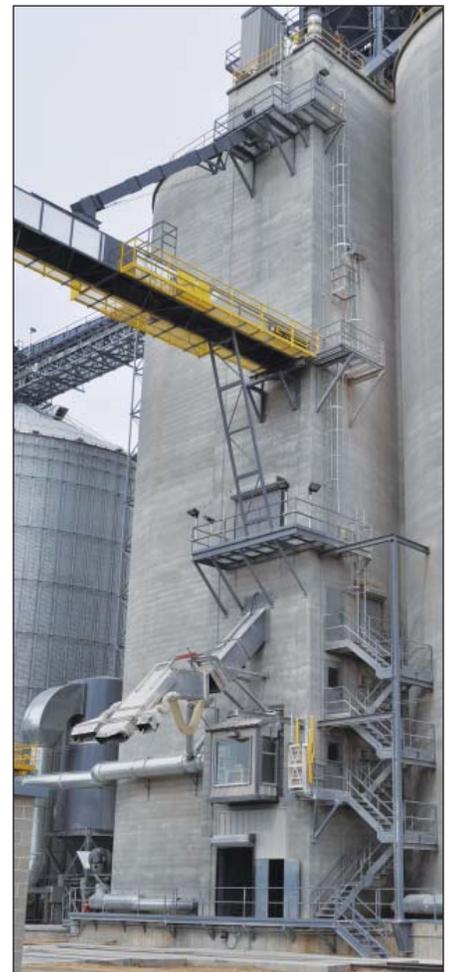
with the stresses that go with frequently loading and unloading, while the steel tanks provide a better cost per bushel for longer-term storage. As yields continue to grow, the 1.5-million and 3 million-bushel temporary storage piles will be needed at least in some years.

The slipform concrete structure at the center of the elevator includes four 120,000-bushel tanks plus two interstices and two blending bins. The slipform structure includes housing for an 80,000-bph Intersystems bulk weigh loadout scale to protect it from Minnesota's often harsh weather.

The four big slipform tanks stand 38 feet in diameter and 120 feet tall. These tanks have no grain temperature monitoring, since they are designed for fast turnaround, but they do have KanalSystem floors for aeration and air-assisted unloading. A single Rolfes@Boone 50-hp centrifugal fan delivers 1/10 cfm per bushel through the Kanal floors when aerating.

The four GSI corrugated steel tanks stand 90 feet in diameter, 93-1/2 feet tall at the eaves, and 119 feet tall at the peaks holding 543,000 bushels each. Each tank is equipped with outside stiffeners, flat floors, 15-cable TSGC grain temperature monitoring systems, and Bindicator level monitors. A set of four 60-hp GSI centrifugal fans per tank deliver 1/7 cfm per bushel of aeration through in-floor ducting.

SMA also constructed a pair of oval-shaped temporary storage structures on either side of the upright tanks, one 300 feet by 500 feet holding 2.8 million bushels and the other 240 feet by 370 feet holding 1.4 million bushels. The piles feature asphalt and ag lime floors and 4-foot perforated steel sidewalls. Grain



A portion of the slipform concrete structure houses a 80,000-bph Intersystems bulk weigh loadout scale that has loaded 110-car trains in less than six hours.

reaches the piles via overhead 20,000-bph Straight Line belt conveyors.

Handling

The Brownton facility has three enclosed truck receiving pits, one outdoor truck pit, and one rail receiving pit.

The inbound scale, a 70-foot Rice Lake pit-type scale from Lake Country Scale Works, also is enclosed. The scale operator utilizes an Intersystems truck probe to take samples while the truck ►

Two 20,000-bph Schlagel drag conveyors receive grain from the truck receiving pits.



is on the scale and grades the samples using a DICKEY-john GAC 2500-UGMA moisture meter and MCI Kicker dockage tester.

The outbound scale also is housed inside.

The roughly 1,150-bushel mechanical receiving pits feed into a pair of Schlagel 20,000-bph legs outfitted with Tapco 20x8 low-profile buckets mounted on a 22-inch Goodyear belt. The legs feed into a Schlagel six-holeswing-type double distributor. From there, grain travels out to storage via a series of 30,000-bph Schlagel enclosed belt conveyors. Extra-wide LeMar catwalks provide space to add more conveyors in the future.

The operator can route grain into a natural gas-fired Zimmerman 10,000-bph tower dryer, which is served by a pair of 20,000-bph Schlagel wet and dry legs.

Nielsen notes that the rural site was not served by a natural gas main. As a result, the UFC portion of the venture formed United Natural Gas LLC for the purpose of building a 3-mile-long gas pipeline extending service out from the nearest main. This newest LLC will remain in business to provide hookups to potential residential and commercial customers in the village of Brownton, population 400.

All tanks are reclaimed at 50,000-bph onto a series of Hi Roller enclosed belt

conveyors running through the honeycomb of below-ground tunnels. One of the two temporary storage piles also empties onto a below-ground reclaim, a Schlagel 20,000-bph belt.

These, in turn, feed a 50,000-bph Schlagel shipping leg outfitted with three rows of Tapco 20x8 standard buckets mounted on a 64-inch Goodyear belt. Prior to loadout, the operator has the option of running grain through a 40,000-bph Intersystems gravity screener and grain can be scalped on a 17,500-bph Baasch drag scalper.

Railcar loading is accomplished through an 80,000-bph Intersystems bulk weigh loadout scale housed inside the concrete slip and equipped with Intersystems' own control software. Workers atop railcars are protected by a Flexible Horizontal Lifeline System designed and installed by Flexible Lifeline Systems.

Tews comments that the facility has loaded 110-car trains in as little as 5 hours 51 minutes.

The entire facility from inbound trucks to loadout is under the control of an automation system from S-M Controls. Operators can run the elevator from workstations in the office, scalehouse, or rail loadout booth.

Ed Zdrojewski, editor



United Farmers Cooperative built a three-mile natural gas main to service this 10,000-bph Zimmerman tower dryer.



An incoming grain truck is weighed and probed in an enclosed scalehouse bay.

