Wisconsin's Largest

ETHANOL PLANT SET UP TO BUY GRAIN DIRECT FROM ELEVATORS

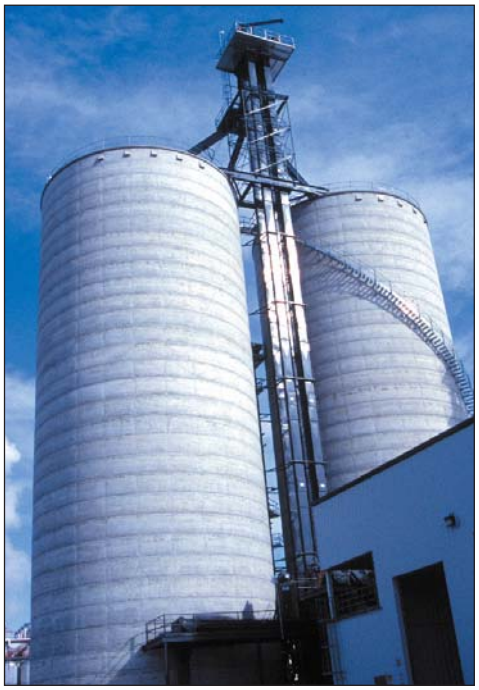
Badger State Ethanol LLC
Monroe, WI • 608-329-3900

Founded: 2000
Grain storage capacity: 390,000 bushels
Production capacity: 40 million gpy
Number of employees: 34
Products: Fuel-grade ethanol, distillers wet and dry grains

Key personnel:
- Gary Kramer, president/ general\manager
- Richard Hanson, plant manager
- Erik Hurschitt, merchandiser
- Sam Wineholt, distillers grains sales
- George Drewry, local distillers grains sales
- Curt Koller, lab manager

Supplier List

Bucket elevators ..... Schlagel Inc.
Concrete tank builder ... Hoffmann Inc.
Conveyors .. Schlagel Inc., Hi Roller Conveyors
DDG receiver filter ..... OISA
Design/build contractor .... Fagen Inc.
Distributor ..... Schlagel Inc.
Dust filters ... Industrial Accessories Co.
Electrical contractor ..... Precision Drive & Control
Elevator buckets ..... Tapco Inc.
Elevator subcontractor ..... T.E. Ibberson Co.
Grain probe ..... InterSystems Inc.
Liner (ceramic) ..... Dee Ross Co.
Millwright ..... T.E. Ibberson Co.
Production process ..... ICM Inc.
Scales ..... Cardinal Scale Mfg. Co.
Scalper ..... Baasch & Sons Inc.
Tower support system ... Brownie Systems



Two 190,000-bushel Hoffmann jumpform concrete tanks serve as corn storage for Badger State Ethanol LLC. Photos by Ed Zdrojewski.

Many of the ethanol plants that are newly built or under construction today are set up as farmer-owned, value-added cooperatives, under which farmer-owners are obligated to deliver a specified number of bushels of grain per share that they own.

The owners of Badger State Ethanol LLC in Monroe, WI, who began production at a 40-million-gallon-per-year plant in October 2002, had a different idea. (The Monroe plant is the second and largest ethanol plant to open in the state.)

"One of the unique things about this plant is that there is no corn delivery requirement," says President and General Manager Gary Kramer. "Our 460 investors are strictly investors. That means we can deal with grain elevators exclusively. Instead of 2,000 growers, we have 20 elevators, 15 in Wisconsin, four in Illinois, and one in Iowa. They can take on contracts for delivery and arrange for farmers to deliver directly here."

Two-Man Startup

Badger State Ethanol is the brainchild of Kramer and John Malchine, a lifelong farmer and former president of the Wisconsin Agricultural Board. Kramer came to the business after serving as CEO of Adkins Energy LLC, which recently built an ethanol plant in Lena, IL.

"We drew up a business plan and formed the company in May 2000," Kramer says.

They selected a site on the west end of Monroe, partly for access to the Wisconsin Southern Railroad, a short-line connecting to the Union Pacific, Canadian National/Illinois Central, and Burlington Northern Santa Fe at Janesville, WI.

But the biggest reason for the site was that the City of Monroe was eager for the plant. "They courted us heavily," Kramer recounts. "They offered a lot of perks, including land, utility infrastructure, leveling, railroad prep work, installation of a water line, and sewers, through a tax increment financing (TIF) district. We got $1.6 million worth of work for the price of $1."

Badger State Ethanol turned to the ethanol plant specialist Fagen Inc., Granite Falls, MN (320-564-3324), as design/build contractor on the $54 million project. Fagen utilized a proprietary process designed by ICM Inc., Colwich, KS (800-796-7890).

Subcontracting to build a 390,000-bushel elevator to serve the plant was T.E. Ibberson Co., Hopkins, MN (952-938-7007), featuring jumpform concrete tanks built by Hoffmann Inc., Muscatine, IA (563-263-4733). Precision Drive & Control, Monroe (608-528-5600) served as electrical contractor.

Gary Kramer

Construction be-

The 40-million-gallon-per-year Badger State Ethanol LLC plant, which began operation in October 2002 in Monroe, WI.

gan in July 2001 and took 15 months to complete.

Grain Handling

The Ibberson/Hoffmann elevator features two 190,000-bushel jump-form concrete tanks standing 50 feet in diameter and 128 feet tall. That's enough storage capacity to cover nine days of production.

The tanks have 45-degree concrete hopper bottoms, which eliminates the need for a sweep auger or manual labor. No aeration or grain temperature monitoring is provided due to the fast turnaround time.

The elevator can unload up to 85 trucks per day through a pair of 15,000-bph Schlagel legs, outfitted with Goodyear belts and 20x8 Tapco heavy-duty buckets.

From storage, grain is transported to a pair of 250-hp Bliss hammer-mills, set up to grind 100,000 to 110,000 lbs. of corn per hour, 24 hours a day.

Ethanol Processing

Ground corn enters a Fagen/ICM processing stream that is virtually identical to the one utilized by Midwest Grain Processing LLC in Lakota, IA *(see the article beginning on page 28 for a complete description).* As at Lakota, the process at Monroe is set up for zero process water emissions.

While the plant is officially rated at 40 million gallons per year, Kramer notes that in actual operation, the plant currently is generating the equivalent to 45 to 46 million gallons. In addition, the plant is producing approximately 300 tons per day each of distillers dry and wet grains.

Ethanol is stored in a pair of welded steel tanks and is either trucked to blenders in the Chicago, IL, or Rockford, IL areas or shipped via rail to the West Coast market. Distillers grains are stored in a flat storage bunker and sold to dairy farms in southern Wisconsin and northern Illinois.

Kramer notes that expansion could be in the plans for the future. "The opportunity is very great," he says, "but it must be controlled. It's easy in this business to expand at a rate faster than the market can grow."

Ed Zdrojewski, editor

Distillation column is used to separate moisture from grain alchol, producing a 190-proof product for further dewatering.

Skid steer loader loads distillers dried grains for shipment to area dairy farms.