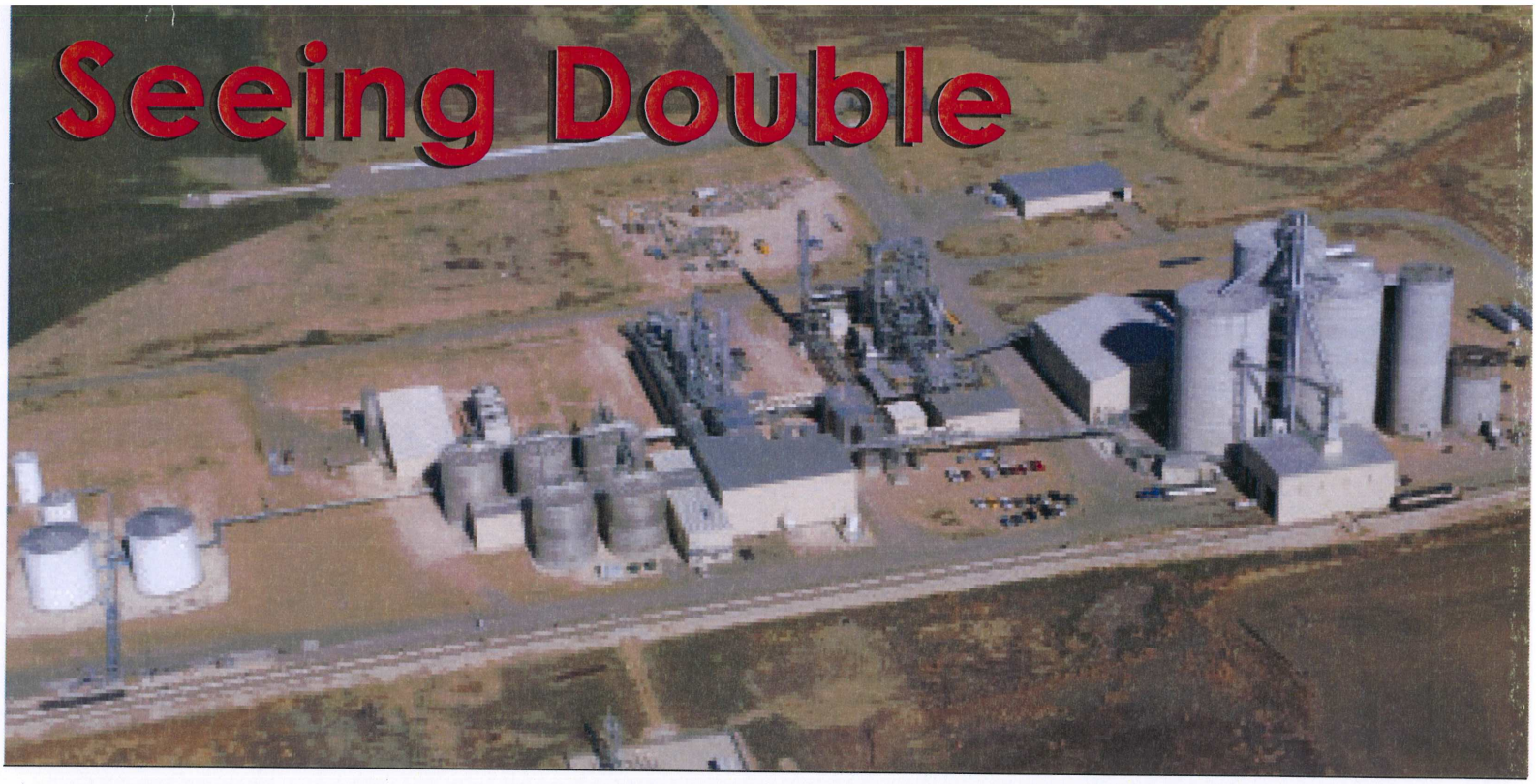
Seeing Double



Pratt Energy's Renovation and Restart Aided by Its Twin

When Jerry Schroeder arrived in Pratt, KS to restart and run the 57-million-gallon-a-year (MMGY) Pratt Energy, LLC ethanol plant, he found an operation that was very similar to the ethanol plant he'd been managing for five years at Calgren Renewable Energy in Pixley, CA.

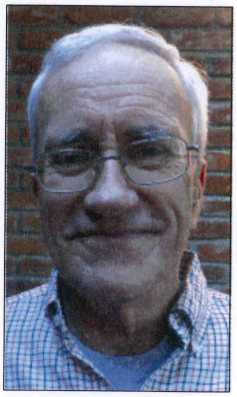
That similarity stems from the fact that both the Calgren and Pratt plants were built by Lurgi, AG, and have many components in common.

The plants also have some of the same owners: Pratt Energy is co-owned by The Scoular Company, Omaha, NE, and Pratt Biofuel Investors, LLC (PBI). Calgren Renewable Fuels is owned by Dansk Investment Group, Inc. of Moorpark, CA, and Flyers Energy, LLC of Auburn, CA, which also own PBI. Scoular is not involved in the California ethanol operation.

Scoular maintains an office for trading operations in Pratt Energy's administration building where it procures all the corn and milo used as feedstocks by Pratt Energy. Scoular also sells all the wet and dry distillers grains (WDGs and DDGs) produced by the plant. Scoular is building four concrete tanks totaling 727,000 bushels of storage for corn, milo, and wheat at the ethanol plant site, which is located two miles northeast of Pratt.

The Pratt plant had been shut-down for five-and-a-half years after its original owner entered bankruptcy. When the plant was restarted in September 2013, extensive repairs and renovations were necessary.

Coming to an Understanding



Lyle Schlyer

Lyle Schlyer, who is president of both Calgren Renewable Fuels and Pratt Energy, told *BioFuels Journal* that after Scoular acquired the Pratt plant out of bankruptcy, it talked to several entities about running the plant. It chose PBI.

"Both partners have been fully committed to making the Pratt plant a success," Schlyer said of the partnership between PBI and Scoular. "It's definitely a partnership where both partners are benefitting from the other's expertise. We bring expertise in ethanol operations and Scoular brings a huge expertise on the grain side. We went into this with

Facility Feature

Pratt Energy, LLC
620-933-2288 | Pratt, KS
www.calgren.com

Lyle Schlyer, President
Jerry Schroeder, Plant Manager
Mark Dakken, Production Manager
Jennifer Slater, Controller
Brad Applegarth, Maintenance Manager

Employees: 37 currently
Capacity: 57 MMGY
Feedstock: Corn, grain sorghum

This sign greets visitors to Pratt Energy.

huge expectations and we haven't been disappointed at all."

Of the five plants built by Lurgi, Calgren's Pixley, CA plant was the only one that didn't end up in bankruptcy, Schlyer said. By taking some suggestions from other producers and coming up with its own modifications, the Calgren plant has been made much more energy efficient. "We have a real nice-running plant in California," said Schlyer, who is based in Pixley and often visits the Kansas plant.

Because of its experience retooling the California plant, PBI has been able to revamp the Pratt plant as Calgren did with Pratt Energy's twin in California.

Both plants are very energy efficient and don't discharge any water, Schlyer said. The Calgren plant doesn't have a drier because it sells all its distillers grains as wet cake to neighboring dairy producers in Tulare County, a leading dairy production region in the United States. "At Calgren, we say that we are not an ethanol plant, we are a wet distillers grains plant," Schlyer said. "It's all a question of focus. WDGs have always been our focus here and will always be our focus."

Jerry Schroeder

"Both partners have been fully committed to making the Pratt plant a success."
- Lyle Schlyer, Pratt Energy

The Pratt plant has a drier so it can sell DDGs, he said, but it sells 60% of its co-product as wet distillers grains. It also sells the dried co-product to feedlots in Kansas and Oklahoma.

Steam Used Four Times

An unusual feature at both plants is that steam from two gas-fired boilers is re-used four times, which gives the plants a very low energy cost: 18,900 British Thermal Units (BTUs) per gallon of ethanol produced. That amounts to considerable energy savings and a lower carbon footprint. "I don't know of any other plants that use their steam so many times," stated Schlyer. "We're very pleased with the energy savings it gives us."

Two new boilers were installed at Pratt that had been left-over from the previous ownership.

A cooling tower from Midwest Cooling Towers, Inc. was added to complement the existing cooling tower and two 600,000-gallon fermentation tanks were repaired.

A new ethanol loadout was added so two trucks could be loaded simultaneously. Pratt Energy can ship ethanol and receive feedstocks by truck or rail. This flexibility is important, said Schroeder, when rail shipping is as congested as it is now.

The Pratt plant is adding electrical generation capability, Schroeder said, which it hopes to have online by next summer. The system will be similar to the one used at Calgren that uses heat from gas-fired turbines for producing steam.

"It's a very efficient process," said Schroeder, adding that it lowers the plant's carbon footprint. The plant also benefits if power is lost from the grid.

Improvements include adding a second high pressure liquid chromatography (HPLC) to the plant's laboratory.

Grain oil is extracted at the Pratt plant from both corn or milo, depending on which feedstock is being run. The back-end oil extraction process can eight-tenths of a pound of corn oil per bushel, according to Schlyer. The oil is sold mostly for livestock feed but also for biodiesel production.

Unpleasant Surprises

There were several unpleasant surprises when the plant was taken over, Schroeder said, including the fact that the foundations for the fermentation tanks and beer well lacked adequate drainage; the package boilers purchased for the plant were poorly specified; and, after sitting idle for five-and-a-half years, the plant had numerous bearings, drag chains, and seals that needed to be replaced. Insulation in several parts of the plant also was inadequate, he said, a point that was driven home by the bitter cold experienced last winter in Kansas.

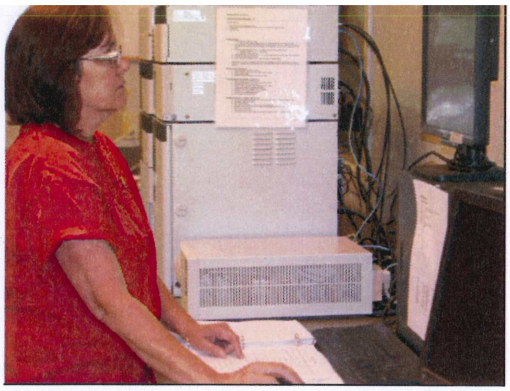
Schlyer said Pratt Energy was brought online to full capacity while Calgren managers also worked on multiple projects at the Pixley, CA plant, including the addition of an anaerobic digester, selling excess co-generated power from the plant to the energy grid, and collecting and selling the carbon dioxide generated by the plant. The multiple projects at both plants have made for a busy year, Schlyer said.

Self-Generated Electricity

The Calgren plant has generated its own electricity since it began operations and is adding a second co-generation unit. "We have been running the ethanol plant off the grid for six years for production purposes," Schlyer said, "but we have a connection to the grid for standby. We score pretty low with the California Air Resources Board on our carbon intensity because of the steam generation."

The plant also has received the right to sell the excess electricity it gen- ▶

Matt Adams, lead operator, checks operations in the control room.



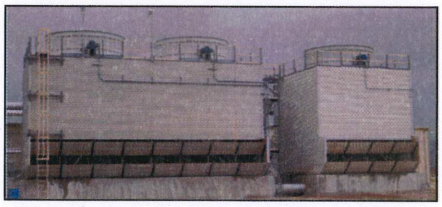
Julie Schroeder, laboratory technician, monitors fermentation in the lab.

erates to the local utility, Schlyer said, adding that he believes that makes the Calgren plant just the second entity in California that is able to sell its excess co-generated electricity to a utility when it adds the capability by this time next year.

Air Liquide, which purchased Lurgi in 2007, is building a carbon dioxide liquefaction plant on the Calgren plant's property near its scrubbers. The ethanol plant will supply the liquefaction plant with electricity from its two turbines. The ethanol plant supplies a consistent supply of high-quality carbon dioxide, which Air Liquide will refine and ship to its customers in California and neighboring states, according to Schlyer.

In September, an anaerobic digester came online at the Calgren plant that can replace up to 10% of the natural gas used by the plant with methane biogas generated from dairy manure and other waste materials.

The 1.3 million-gallon digester has been designed to fully digest its feedstock in 21 days, Schlyer said, and has been built as a modified plug-flow type. The in-ground structure has been completely sealed and uses injected biogas to move the biomethane. Waste heat from the plant's co-generation units keeps the digester at 100 degrees throughout the year. "Really, what we are doing here is cleaning up the atmosphere by capturing methane and using it to replace natural gas," Schlyer said.



A new cooling tower on the right went online in September 2013 at Pratt Energy and has helped the ethanol plant meet its conversion goal of 2.8 gallons of ethanol for each bushel of corn processed.

All the water from the digester goes back to the dairy farm that supplies the manure for use as fertilizer.

Schlyer said Calgren started working on the digester several years ago. California's regulations have made it difficult to install a digester these days, he said. "Working with Kansas regulators has been a breath of fresh air, no pun intended," he added.

Digester Grant

The California Energy Commission granted Calgren $4.67 million for the digester and the ethanol plant matched the grant, Schlyer stated.

The plant also was granted $3 million from the commission to use grain sorghum as a feedstock to lower its carbon

footprint. "What we are trying to do here in California is to increase the amount of local production for sorghum so we can use it as a feedstock," said Schlyer. "A lot of our feedstock comes from the Midwest, but we think that sorghum, in particular, makes a great deal of sense for California." Sorghum needs less water than corn, he said, and the drought in the western United States makes sorghum a more desirable crop to grow.

Plant History

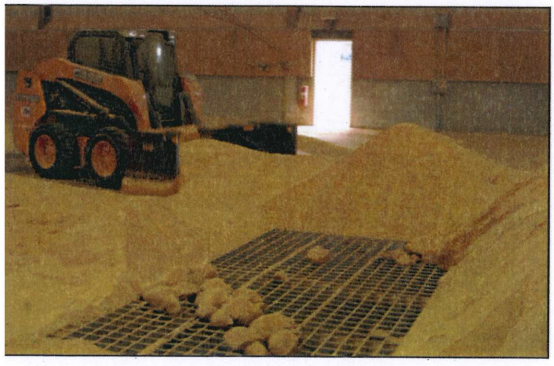
The Pratt Energy plant was originally owned by a series of entities, ultimately by Gateway Ethanol, according to Schlyer. It and four other entities, including Calgren Renewable Fuels, contracted to have highly energy-efficient ethanol plants built by Lurgi. Schlyer said that, although Lurgi was a relative newcomer to the ethanol industry, it was a well-established subsidiary of a strong German conglomerate. Under Lurgi's care, custody, and control, he said, operations at the Gateway plant commenced in October 2007 but operational and financial problems caused it to close in February 2008. Ultimately, Schlyer said, Calgren was the only one of the five Lurgi-built ethanol plants that didn't go through bankruptcy.

Calgren survived, Schlyer said, by analyzing the shortcomings of the Lurgi process, surveying other technologies, and making selective process modifications.

Because Calgren's plant in Pixley, CA was originally identical to the Pratt plant in all relevant ways, Schlyer said, Calgren's owners, doing business as PBI, entered into the partnership with The Scoular Company and acquired a majority interest in Pratt Energy. The renovations that Calgren undertook at the Pratt facility allowed the plant to be operated like Calgren's ethanol plant, which began operations in 2009.

Schlyer said PBI has been delighted with the outcome of its co-ownership and renovation of the Pratt ethanol plant. "We have access to rail, abundant corn and milo supplies, and can truck ethanol to areas that have not been well-served, he said. "For longer distances, the plant can use its rail access to ship its low-carbon-intensity ethanol to California, if it chooses." Because of its ▶

Two new evaporators have been installed at the Pratt Energy plant.



Dried distrillers grains are moved to a pit for conveying to a truck for loading.

Most of the 4,000 tons of distillers grains produced annually at Pratt Energy are sold as wet cake as is this batch being loaded.

proximity to cattle feedlots in Kansas and Oklahoma, Pratt can sell much of its distillers grain as wet cake instead of having to dry the distillers grains, which saves money and lowers the plant's carbon footprint.

The Pratt, KS community has been very supportive of the ethanol plant, according to Schlyer. "Doing business here is a breath of fresh air compared to doing business in California," he said. The Pratt County Commission supported renovation efforts with a partial property tax exemption that gradually declines over a period of 10 years.

Company Organization

On Feb. 16, 2011, The Scoular Company announced it had acquired the assets of Gateway Ethanol, LLC. Scoular said the acquisition included the 55-MMGY ethanol plant and an adjoining 1.8-million-bushel shuttle train facility. Terms of the transaction were not announced.

"Scoular is pleased to have taken yet another step to serve grain producers and end-users in this area as well as to further expand our presence in the renewable fuels market," stated Scoular CEO Chuck Elsea. He also said that Scoular was in discussions with companies interested in operating the plant in partnership with Scoular.

On Jan. 14, 2013, Scoular announced that it had sold a portion of its ownership interest in the Pratt ethanol plant to Pratt Biofuel Investors, LLC (PBI), which has common ownership with Calgren Renewable Fuels. Scoular also announced that it would continue to operate the grain facility at the plant as well as procure all the feedstock and provide distillers grains marketing services for the ethanol plant. Terms of the transaction were not announced.

"We're pleased to have selected PBI as our business partner in Pratt Energy," said John Heck, Scoular's senior vice president. "They bring the solid operating experience required to get this plant up and running, which will allow us to establish even closer relationships with feedstock suppliers, distillers grains consumers, and ethanol buyers."

Schlyer, who is president of Calgren Renewable Fuels, was named president of Pratt Energy, the announcement said, to provide general management and production expertise for the plants in both Pixley and Pratt.

Schroeder, who was plant manager at Calgren and now serves in the same capacity at Pratt, was named the on-site manager of the Kansas plant's renovations and became plant manager when it resumed operations.

With the exception of Schlyer, all of Pratt Energy's managers are located

in Pratt, KS, which is 80 miles west of Wichita.

In addition to Schroeder, key managers include Mark Dakken, production manager; Brad Applegarth, maintenance manager; Amie Mass, lab manager; Pat Breeding, safety/administrative manager; and Jennifer Slater, controller. The Pratt managers lend support to and are supported by individuals in similar roles at Calgren's California facility.

The number of employees is approximately 37, but varies from time to time.

Capacity/storage

The original nameplate capacity of Pratt Energy was 55 MMGY. The plant is currently operating at more than nameplate capacity and managers expect the plant will be able to achieve 58 MMGY.

There are 1.8 million bushels of corn and milo storage, 1.65 million gallons of ethanol storage, and 4,000 tons of distillers grains storage.

T. J. Mandl

Feedstocks

The plant was re-started on milo, but is now processing primarily corn. Corn and milo feedstocks are widely available locally and are procured by Scoular. T. J. Mandl is Scoular's facility manager in charge of grain procurement at Pratt Energy.

Marketing and co-products

The plant can dry its distillers grains, but sells most of it as WDGs to local livestock operations. Currently, 60% of the plant's distillers grains are produced as WDGs and 40% as DDGs. The distillers grains are sold to local cattle feeders and dairy producers.

Scoular sells the WDGs and DDGs produced by Pratt Energy.

Pratt Energy markets its own ethanol, primarily to buyers in Kansas, Oklahoma, and Texas within trucking distance.

Transportation

Trucks move 98% of the ethanol produced by the plant with the balance moving on a Union Pacific rail line. The plant has the ability to handle unit trains.

The Future

The future of ethanol is currently constrained by rail congestion, Schlyer said.

Because the production capacity of the ethanol industry exceeds domestic demand, a strong ethanol export program and a mandate to increase renewable fuel consumption are important.

Ethanol is currently the cheapest octane enhancer available, he said, and petroleum refiners benefit by blending ethanol with low-octane gasoline. With ethanol comprising 10% of the domestic gasoline market and petroleum refineries running at 93% of capacity, ethanol is here to stay, Schlyer believes. "The outlook for energy-efficient, flexible, well-run facilities like Pratt Energy is rosy," he stated.

Jerry Perkins, editor