

# Generating Momentum in the Pacific Northwest

By Doug Cumpston

Like many biodiesel industry pioneers, Scott Johnson began making biodiesel with some basic equipment and know-how. In 2005, Johnson and his wife Kathy commuted a combined 440 miles per day and faced diesel fuel bills that totaled more than \$900 per month. Out of necessity, Johnson set up a small-scale biodiesel production facility and quickly dropped his fuel bills to only \$350 per month.

Even though the money savings was beneficial to his family, Johnson still had to endure skepticism by others in his community. “I had people laughing at me,” he says. “The guy that was delivering the methanol ... was laughing at me, calling me the crazy guy trying to make his own fuel.”

However, after friends and neighbors heard how much the Johnsons were saving on their monthly fuel bills, the skepticism quickly turned into intrigue. “In a short time, I had more and more people ask me if I could make it for them,” Johnson says. “... It came to the point where a few of us began discussing a full-fledged biodiesel production facility.”

Johnson and four other owners sat down during the second half of 2005 and began mapping out their plan for what is now one of the largest biodiesel plants in the state of Washington. Just two short years after his first batch of biodiesel, Johnson, now president of Burbank, Wash.-based GEN-X Energy Group Inc., operates a large-scale biodiesel production plant strategically positioned in the southeastern part of Washington state.

The GEN-X plant is permitted for 5 MMgy of biodiesel, but Johnson estimates the plant could produce 15 MMgy without any modifications. The plant could easily go to 40 MMgy with a couple more reactors and centrifuges, he says.



PHOTO: BLACKMER

Left to right: Cumpston, left, Fuqua, center, and Johnson, right, stand near the Blackmer XL Series sliding vane pump used to load tanker trucks with finished biodiesel.



PHOTO: BLACKMER

A Blackmer ProVane motor speed sliding vane pump transfers caustic during the production of biodiesel.

### Equipment Needs

Since the Gen-X project wasn't going to be just another small-scale biodiesel operation, the newly formed company turned to its local equipment distributor, Spokane, Wash.-based Northwest Pump & Equipment Co., for advice on the proper equipment needed for each application within the plant. Rick Fuqua, Northwest Pump's resident biodiesel expert, consulted with Johnson and immediately began discussing the company's pump options since pumps are one of the key components within a biodiesel production plant. Fuqua suggested to GEN-X the use of Blackmer ProVane motor speed sliding vane pumps for their methanol recovery, caustic (potassium phosphate), Magnesol and multiple oil feedstock-transfer applications. Johnson agreed and installed Blackmer pumps throughout the facility.

"Blackmer pumps are known for their reliability," Johnson says. "You can use them in all different kinds of applications and we certainly do just that in this plant. Another nice thing about Blackmer pumps is that they will benefit us financially. Since they're simple to

work on—it's easy to change the vanes and easy to maintain—we don't have to worry about downtime."

GEN-X also uses the Blackmer XL Series of sliding vane pumps for high-speed truck loading and transfer rate applications throughout the plant. Both series of pumps are designed for reliable continuous duty in biodiesel production operations. The sliding vane technology provides biodiesel producers with superior self-priming and suction capabilities. This suction capability can benefit biodiesel operators by stripping lines of residual product in order to improve production yields and avoid contamination issues.

The sliding vane technology principles ensure proper sealing and volumetric output performance, even after significant time in-service. This eliminates the efficiency-robbing "slip" that shortens the life of lobe and gear pump technologies. The ProVane and XL Series provide smooth, sliding vane action without metal-to-metal contact, which reduces pump friction, eliminates galling and minimizes agitation of fluids.

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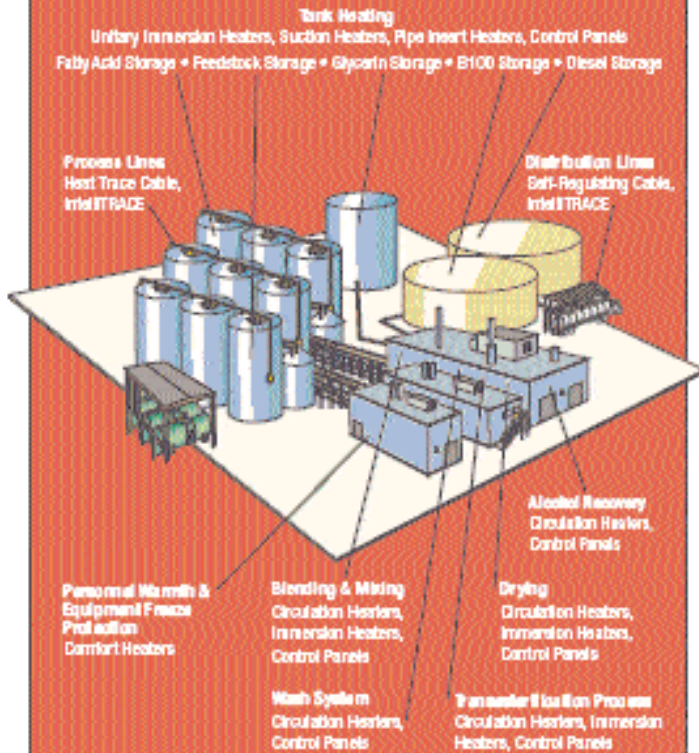
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“When the ConocoPhillips/Tyson Foods partnership on tallow was announced, I called my contact at Tyson and asked him about the situation,” Johnson says. “He assured me that it won’t impact our agreement.”

Rapids, Mich.-based Blackmer, the ProVane provides added benefits to GEN-X and other biodiesel producers due to its many “designed in” features such as the hydrodynamic journal bearing—a unique fluid boundary forming principal—that eliminates shaft-to-bearing contact. The shaft hydroplanes above the bearing surface on a cushion of liquid. In this hydrodynamic condition there is no metal-to-metal contact or wear and bearing life can be significantly extended. It also maintains optimum bearing characteristics even under a wide range of operating conditions, such as the ones found in the GEN-X biodiesel production plant. Reduced shaft/bearing contact minimizes friction and results in higher mechanical efficiency and smart energy cost savings.

Besides the typical hiccups that plague nearly every new plant, GEN-X has had a promising first few months of operation. In part, their success can be attributed to the proper selection of equipment throughout the plant and Johnson’s prior production experience.



PHOTO:BLACKMER

Johnson kneels next to one of his Blackmer ProVane motor speed sliding vane pumps located in the plant.

### Feedstock Partnerships

At press time, the GEN-X biodiesel plant was on track to produce a modest three million gallons of B100 in 2007, but Johnson says he plans on quickly hitting its long-term goal of 40 MMgy. With a Tyson Foods rendering facility 12 miles away, GEN-X has the groundwork in place to acquire enough tallow oil to become a significant producer of biodiesel in the northwestern United States.

“Our feedstock backbone is tallow oil from the Tyson Foods rendering plant just down the road,” Johnson says. “They could supply us with between 5 million and 8 million gallons of tallow per year. There are also a lot of other oil sources around that could be used for another million gallons per year, but Tyson is a

key partner for us moving forward.”

In April 2007, ConocoPhillips and Tyson Foods announced a strategic alliance that would allow the major oil company to use beef, pork and poultry by-product fat (tallow oil) to create a transportation fuel, according to a Tyson press release. After that news hit the streets, Johnson and the rest of GEN-X wanted to know what that meant for their long-term plans with the local Tyson plant.

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In addition to Tyson, GEN-X is working with farmers and crushers in the

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area to bring local seed oil into the plant. Johnson says he also sees a large opportunity to partner with some of the restaurants in the area for second-use oil that would supply about 10,000 gallons of feedstock per month. It's not a significant amount, but Johnson says he is more than happy to work with anyone with the same mindset.

"Another partner that we've signed an agreement with is Westway Feed Products Inc. ...," Johnson says as he

walks out the back door of the GEN-X facility and points to the adjacent Westway operation. "They provide feed to livestock industries in the area. Westway can use our glycerin, which is a byproduct of our biodiesel production process, as a feedsource. Therefore, we are closing that loop between the feed, tallow and biodiesel."

Many other opportunities will likely be presented to Johnson in the coming months, but GEN-X is certainly posi-

tioned for a significant growth spurt in the future.

### Future Plans

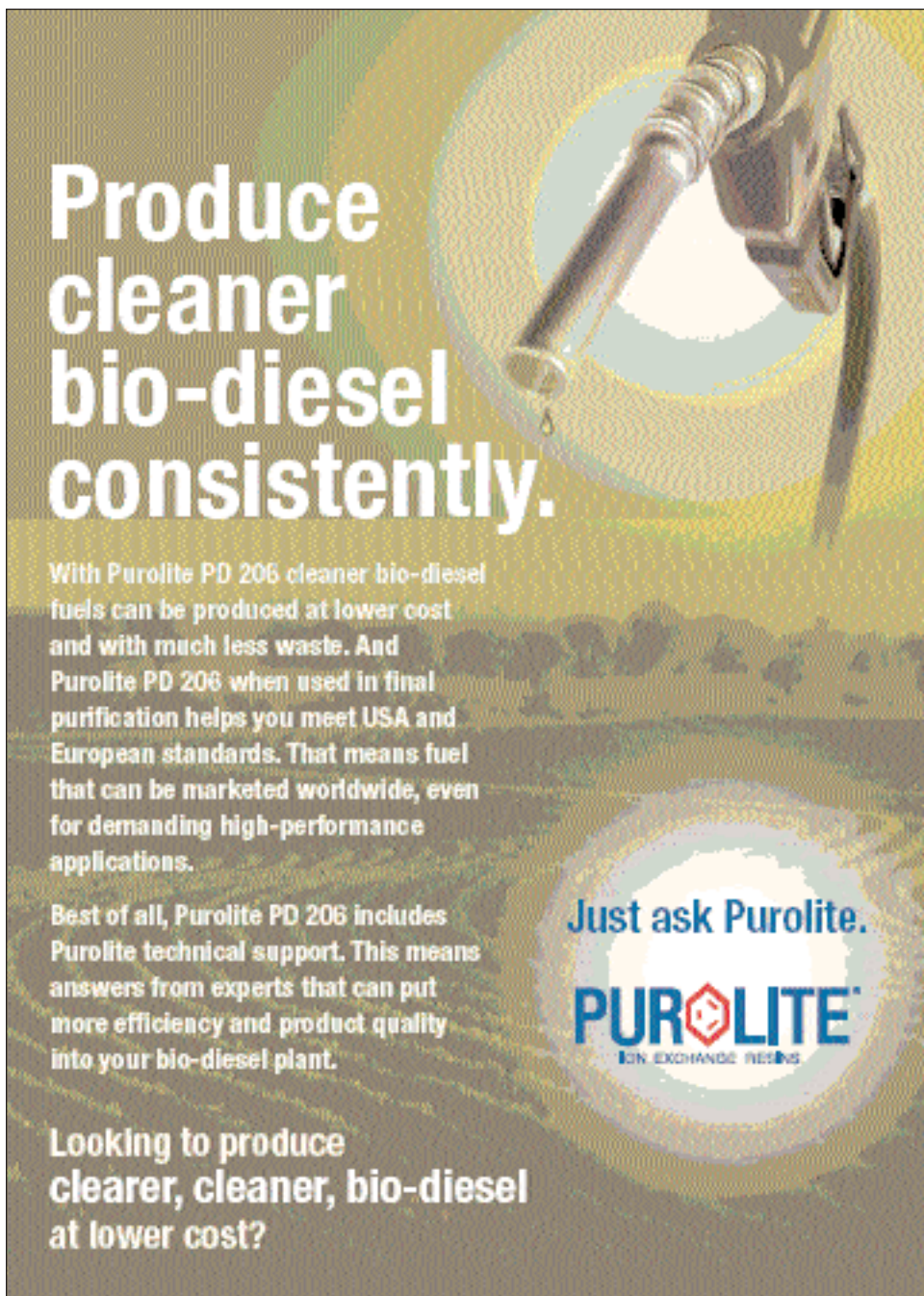
With a new 18,000-square-foot facility, 11 employees and a brand new company, Johnson and the other owners at GEN-X are already thinking about the next chapter in their story. "All of us are very excited about how far we can take this," Johnson says. "Fernando Moreno, our vice president, Ray Benavides, our vice president of sales and marketing, Joe Stanton, our director of plant operations, Brian Moreno, a stockholder, and myself are happy to come to work and finally be doing something that actually helps make a difference."

Johnson mentions that GEN-X would like to open or partner with a crushing plant and crush locally grown seeds. They are working with several farmers in the area to reach that goal. Two crushers that work with GEN-X recently started operation and are already at 100 percent capacity because the price of canola peaked at the same time they opened.

"We are also creating an engineering firm that would be located here," Johnson says. "We're going to bring an engineer on board, John Forrest, that has a tremendous amount of experience in the oil industry. That way, he can focus on engineering projects and we can focus on creating biodiesel."

GEN-X continues to refine its process along with growing its base of solid partnerships. When the company first discussed the idea of opening a biodiesel plant, Johnson and the other owners were nervous about the potential customer base in the northwest United States. Today, GEN-X is bursting at the seams and is a true testament to the "build it and they will come" mentality. ■

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