

The Need For Speed

BLACKMER® LGL SERIES SLIDING VANE PUMPS HELP RED ARROW TRANSFER TERMINAL REALIZE ITS DREAM OF PROVIDING AN AMBITIOUS 1,000 GALLON-PER-MINUTE LPG FLOW RATE FOR TRANSPORT LOADING AND UNLOADING

By Jim Becker



As Scott Tonkin attempted to identify the pump that could reliably meet the Red Arrow Transfer Terminal's ambitious LPG flow rates, his search always kept coming back to the Blackmer LGL Series: "When I was talking with Gas Equipment Co. and other suppliers, they told me Blue wouldn't let me down."

It's a basic tenet of negotiation: always ask for more than you can possibly hope to receive. Even with that in mind, when Scott Tonkin proposed a 1,000 gallon-per-minute LPG throughput rate for Altogas, Inc.'s new Red Arrow Transfer Terminal in Benton Harbor, MI, USA, even his bosses were forced to do a double-take when considering their Operations Manager's seemingly pie-in-the-sky flow-rate goal.

"Scott immediately got the wheels spinning in his head and started talking about 1,000 gallons a minute and we said, 'No, nobody's done that and there's got to be reasons,'" said David Hast, General Manager of Altogas. "He also talked to several people we know and have worked with and they said, 'No, you're not going to do that, it's not possible,' but he's a hard sell."

That incredulity was shared by others close to the Altogas operation and its new Red Arrow Transfer Terminal project, most notably Kevin Pruitt, Director of Integrated

Systems for Gas Equipment Co., Dallas, TX, USA, the firm that supplies Altogas with its LPG-handling pumps and equipment.

"I received a phone call from Scott and he threw out a flow rate that scared the heck out of me—he wanted 1,000 gallons per minute," marveled Pruitt. "My first reaction was, 'Scott, I don't want to promise you I can do that and under-deliver.' He said, 'Will you work with me to try to get there?', and I said, 'Absolutely, I would.'"

"We shopped for a number that a lot of people thought was a bit excessive for the gallons per minute," admitted Tonkin, who is also Business Development Manager for Altogas. "After talking to a lot of transport drivers, the fastest anybody could remember seeing was 850 gallons per minute, which is a fairly large number when it comes to loading an LPG transport, but why not do something different? That's why we built it—to see what would happen."



Observers were amazed when the Red Arrow Transfer Terminal's LPG-transfer system was put into operation and the flow meters reported a flow rate that exceeded 1,000 gpm.

Full Speed Ahead

In the end, that unique 1,000-gpm LPG flow rate was perfect for the state-of-the-art operational capabilities of the Red Arrow Transfer Terminal. Altogas is headquartered in Alto, MI, USA, a few miles southeast of Grand Rapids, with satellite offices in the nearby towns of Charlotte and Edmore. From that base of operations it has grown into one of Michigan's largest locally owned propane companies and since the 1980s, it has provided propane to a residential, commercial and agricultural customer base in central Michigan.

The idea for the Red Arrow Transfer Terminal was born from the fact that the Chicago LPG market has more favorable pricing than Michigan's does. By locating the terminal in the far southwest corner of the state in Benton Harbor, the facility would be close enough to the Chicago LPG racks so that "jumbo" LPG transports, which are not allowed to operate in the Chicago market, could load up with Chicago LPG for delivery in Michigan.

"While the Chicago market has favorable pricing, it doesn't allow the larger trucks, so there's a freight loss when you're moving the product north," explained Hast. "Our idea was to have a quick transfer facility where you could get the smaller trucks offloaded and the larger trucks to onload so they could deliver to Michigan companies. Initially, we thought this would be really good for our business, then we thought if it's really good for us it's probably good for somebody else, as well, and maybe we can start getting a pass-through percentage of the volume that goes through here."

Enter Tonkin and his grandiose 1,000-gpm flow-rate plan, which, if realized, would allow the jumbo LPG transports to be loaded in less than 30 minutes.

"The idea was that if we get the trucks in and out fast, we can do more trucks," said Tonkin. "The owners were all for it and said to do it anyway you want. And that's what we did here."

To meet his goal, Tonkin designed a terminal layout that was as flow-friendly as possible. That meant piping with no elbows or 90-degree turns, which would ensure a smooth product flow. It also meant that, when loading, the LPG would flow simultaneously through two hoses and meters, all of which had to be able to support a flow rate of at least 500 gpm. Tonkin incorporated a 10-inch trunk line and collector that pushes the LPG through a 4-inch pipe that is equipped with a 4-inch flange shutoff and 4-inch strainer. The LPG is stored in six 30,000-gallon aboveground tanks that are situated on piers.

"When we partnered with Gas Equipment Co. we also worked with a meter company to make the gas move as quickly as possible," said Tonkin. "These meters are the first of their kind in the nation and approved for up to 700 gpm per meter. Coming off the 10-inch trunk line we're going through our 4-inch flange shutoff and 4-inch strainer, and then we have 40 inches of clean pipe so that we could maximize flow without any cavitation concerns."

"Blue Wouldn't Let Me Down"

The equipment that would drive this unique LPG-transfer operation would be the pumps. For those, Tonkin turned to Pruitt, who confidently recommended LGL Series Sliding Vane Pumps from Blackmer®, Grand Rapids, MI, USA.

"We looked at all kinds of pump curves out there and settled on Blackmer for this application," said Pruitt. "Blackmer's always been there, always been reliable. They provide a very low cost of ownership. We put Blackmer pumps in and don't hear from the users for 10 years, and then they just might buy parts for the pump. They've just always been so reliable."

"When I was talking with Gas Equipment Co. and other suppliers, they told me Blue wouldn't let me down, so that's why we decided to go this route," confirmed Tonkin.

For the Red Arrow application, Tonkin required four 4-inch LGL Series pumps. They were the perfect choice because they have been designed for maximum performance and reliability under the most demanding and severe service conditions. They feature a cavitation-



Scott Tonkin, front, Operations Manager for Altogas' Red Arrow Transfer Terminal, and Jim Becker, Blackmer®/PSG® Regional Manager, have been infinitely pleased with the capability of Blackmer's LGL Series Sliding Vane Pumps to meet the unique flow-rate needs of the new facility.

suppression liner that reduces noise, vibration and wear, as well as replaceable casing liners and discs that allow for easy rebuilding of the pumping chamber to like-new condition. All models are able to be base- or truck-mounted and are equipped with an internal relief valve. They can be powered by PTO drive, hydraulic motor or electric motor, depending on the installation location and application.

"We use the Blackmer 4-inch pumps with a 25-horsepower electric motor and gear-drive reducers and we also ganged two pumps together so that we can utilize the best of their operation as the LPG comes to the 10-inch collector I designed," said Tonkin. "Each pump has a bypass that we tie together with a 2-inch tee that returns back to the trunk line. We've got 4-inch inlets and 3-inch outlets on the pumps so we could get the flow we're after. That maximizes the flow and lessens the idea that any cavitation would be created with the restriction, and then everything delivers out of both of our meter systems."

While Tonkin's 1,000-gpm goal was eye-opening and the design looked good on paper, the real test would come when the system was fired up for the first time and the LPG began to flow. If jaws dropped when Tonkin made his 1,000-gpm proposal, the project's principals were positively stunned when the first load of LPG flowed through the system.

"I didn't think we could get 1,000 gpm either, so I remember when they first cranked it up the surprise from everyone, the adjectives when those meters were reading 1,000 gallons per minute; that was quite a pleasant experience."

– Bernie Vanderboegh, President, Altogas, Inc.

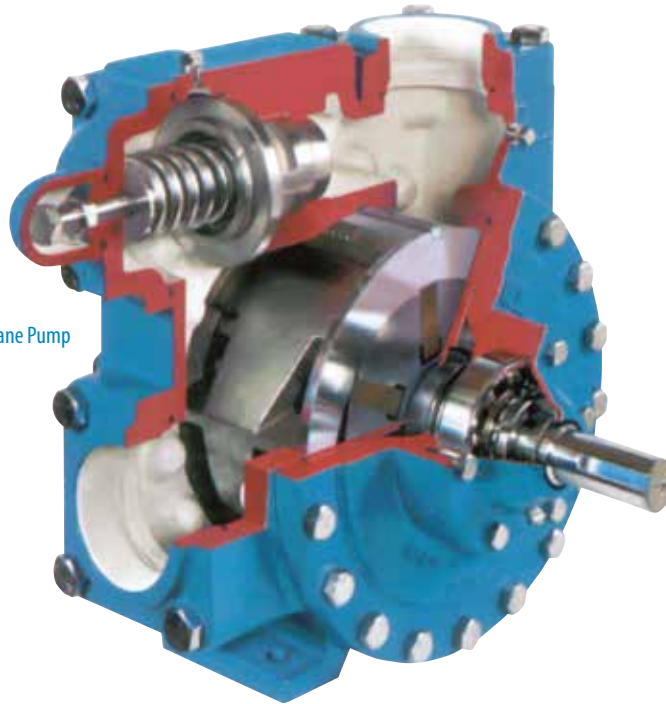
"I recall when we first fired the plant up we all had our phones out videoing it because we couldn't believe the flow rates we were seeing," said Pruitt. "We actually put sight glasses in the line so that we made sure we had laminar flow and the flow was crystal clear, a real smooth flow. I remember videoing one line and counting off that one line at 545 gpm, so between the two of them we were around 1,080 gpm. It was quite an adventure, I must say. I have to give credit to Altogas for doing every little thing right; it all adds up in the end. They didn't cut any corners, spared no expense and did the project pretty much better than anything I have ever seen."

"I've always liked to do things that sometimes other people haven't tried yet," said Bernie Vanderboegh, President of Altogas. "I didn't think we could 1,000 gpm either, so I remember when they first cranked it up the surprise from everyone, the adjectives when those meters were reading 1,000 gallons per minute; that was quite a pleasant experience."



Jim Becker, left, and Scott Tonkin, in front of the facility's four 30,000-gallon LPG storage tanks.

Blackmer® LGL Series Sliding Vane Pump



Conclusion

The Red Arrow Transport Terminal only became operational in March of this year, but already its storage capacity has been expanded from the original 120,000 gallons of LPG to 180,000 gallons which will help the facility meet the growing demand. In fact, Tonkin hopes that by the time Red Arrow celebrates its first birthday next March, as many as 15 million gallons of LPG may have passed through the facility.

“The situation now is that we can’t keep the tanks full,” said Hast. “The key is getting the product to the site, so we’re also going to be adding another offloading facility so we can get more trucks in. We’ve tried to set a parameter of how many gallons in and out we can do, what’s crazy and what’s too minimal; somewhere in the middle is what we’re gonna shoot for, and I think we can accommodate it.”

While “crazy” has been a constant in the creation of the Red Arrow Transport Terminal (Really, a 1,000-gpm LPG flow rate!?) one of the sanest decisions that was made in the course of the site’s development was the commitment to use Blackmer LGL Series Sliding Vane Pumps to facilitate the LPG transfer, and it’s a decision that no one involved in the project has had cause to question.

“With my experience with Blackmer compared to other pumps, the reliability and long-lasting consistent operation will keep the gas flowing and moving with minimum maintenance involved, which makes it easier for everybody,” said Tonkin. “They’re machined much better, everything is much more consistent when it comes to the inner workings, and the tolerances are excellent. Also, the fact that they’re a Michigan company means the service is right there, the parts are there, anything that’s needed is right at our backdoor so we know that everything will continue to run smoothly.”

About the Author:

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