



Where Innovation Flows

LPG Transports

APPLICATION DOCUMENT

According to a “*Global Liquefied Petroleum Gas (LPG)*” report released in August 2020, the market value of United States LPG production was nearly \$70 billion.

On the business end of the LPG supply chain – after the discovery, recovery, refining, production, transport and storage processes – are the thousands of delivery vehicles that put the fuel into the hands of end users.

The challenge that must be overcome in order to keep the LPG supply chain functioning smoothly is the speed with which the delivery vehicles – which typically range in size from 3,000-gallon bobtails to 10,000-gallon-plus transport trucks – are able to be unloaded at the end site. However, the unloading process is complicated by one unavoidable fact: LPG is a highly flammable substance that must be kept in its liquid state during transport in order to ensure proper delivery performance.

That means the trucks and their delivery systems must be kept under the proper pressure during loading and unloading activities. While keeping the LPG under pressure is paramount, a secondary concern at this stage is the speed with which the loading/unloading process takes place. Slow product-transfer speeds will keep bobtails and transports idled at the fuel terminal or at the delivery point, which will put strain on delivery schedules and limit the actual number of deliveries that can be performed.

The best option in LPG delivery vehicle loading and unloading activities is Blackmer® TLGLF Sliding Vane Pumps. The TLGLF pumps, which are part of the Blackmer Cavitation Line of pump technologies, are



TLGLF4
Sliding Vane
Pump



TLGLF3
Sliding Vane
Pump

available in two 3-inch (76 mm) models (TLGLF3 and TLGLF3HD) and one 4-inch (102 mm) model (TLGLF4). With a maximum flow rate of 425 gpm (1,608 L/min), the TLGLF4 pumps are designed for transport loading and unloading. The TLGLF3 configuration produces a flow rate up to 140 gpm (530 L/min), making them ideal for use on smaller bobtails, while the TLGLF3HD model has been designed to deliver a maximum flow rate of 180 gpm (681 L/min), which is 29% greater than the TLGLF3 pump. This makes the TLGLF3HD pump perfect for high-capacity bobtails with tanks up to 7,000 gallons (26,500 liters). What further differentiates the TLGLF pumps from the competition are their innovative Cavitation Suppression Liners, which have been specifically designed to mitigate the negative effects of cavitation, including excessive noise, vibration and deterioration of the pump’s internals. The Cavitation Suppression Liner, which can be easily replaced when needed, allows for the safe transfer of LPG with high vapor pressures and zero net positive suction head (NPSH). Additionally, all these models have maintenance and rebuild kits available, allowing the pumps to be rebuilt to like new condition when needed. The TLGLF models also benefit from the built-in advantages in the sliding vane operating principle, most notably self-adjustment for wear that helps the pump maintain consistent flow rates, which is pivotal in LPG transfer.



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COMPETITION

- Gear Pumps

Gear pumps have a simple design that makes them well-equipped to transfer lubricating liquids, but LPG is non-lubricating. This creates metal-to-metal contact of the pump’s gears, which will lead to performance degradation over time. The metal-to-metal wear will also create and enlarge cavities in the flow path, which will lead to efficiency-robbing product slippage.

- Other Vane Pumps

No other brands or models of sliding vane pumps feature cavitation-suppression features. Also, the Blackmer TLGLF3HD model provides 4-inch performance in a 3-inch model, which helps it deliver 32% more flow than competitive 3-inch truck models (at 800 rpm and differential pressure of 100 psi conditions).

FROM THE FIELD

A Midwestern LPG supplier was looking to upgrade its operation as it approached its 50-year anniversary. Specifically, the LPG storage tanks on the property were located in an area that was prone to flooding, which made it difficult to load the company’s delivery fleet of tandem trucks and bobtails.



TLGLF3HD
Sliding Vane
Pump

As the new storage-tank area was being constructed, the company used the opportunity to look for other ways it could improve its LPG-delivery system. One was to improve the reliability and speed of the LPG-offloading process at end-user sites. The solution was to outfit its delivery fleet, which consists of vehicles with capacities ranging from 3,500 to 5,000 gallons (13,250 to 18,927 liters), with Blackmer® TLGLF Sliding Vane Pumps, specifically the 3-inch (51 mm) models.

The TLGLF3 pumps meet the needs of the LPG supplier because they are able to handle large-capacity offloading applications with consistent flow rates. Together, the system’s pumps have the capability of pumping 525 gpm (1,987 L/min), which lowered overall loading times from 40 minutes down to a speedy 13 minutes on its 5,000-gallon trucks. This also means that the LPG supplier can now turn over its product three times faster than it had been able to in the past, increasing the amount of propane it can sell in a shorter period of time. The company was able to save roughly nine hours of loading time per truck per month – or basically creating an extra day of delivery time.

For more information on these additional solutions, visit us at blackmer.com.

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