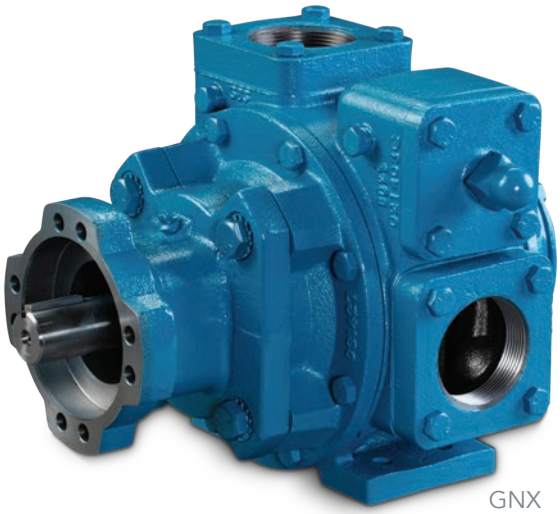
Avgas

APPLICATION DOCUMENT

Since 1990, in the United States there have been approximately 20,000 airports, with the numbers hovering around roughly 5,000 public-use facilities and 15,000 private airfields, airstrips and airparks. That is a lot of aircraft – ranging from two-seater Cessnas for private transport to the commercially flown Airbus 380 - 800, which can seat nearly 900 passengers – that need to be fueled on a daily basis.

Most of these aircraft are powered by aviation gasoline, or "avgas." The main challenge in handling avgas is keeping it clean, with any impurities capable of damaging sensitive airplane engines. Therefore, the hydrant-based fuel-pumping systems that are common at most airports, large or small, require the use of fuel-filter strainers and separators. As these strainers and separators fill up with impurities, the differential pressure across them will get higher. This can cause variations in the fueling system's pumping pressure, which can typically range from 60 to 125 psi (4.14 to 8.62 bar). Thanks to their unique self-adjusting vane design, which does not require a lubricating fluid, positive displacement (PD) sliding vane pumps will not be affected by changes in differential pressure while being able to maintain the proper flow rate.

Blackmer has developed the perfect solution with its GNX Series Sliding Vane Pump. The GNX model – which is part of the Blackmer Iron Line of PD sliding vane pumps – is the market's only alignment-free, reduced-speed PD pump. The GNX pumps, which are



GNX

suitable for both mobile and stationary applications, have the features of the Blackmer legacy GX Series pump, but take performance to the next level via the incorporation of a commercial-grade, single-stage gearbox. This gearbox is positioned between the pump and motor and held in place by a permanent dowelled connection that creates a structural link between the high-speed and low-speed sides of the pumping system. The result is a pump that will not need to be realigned either at installation or after a maintenance procedure. GNX pumps are available in 2-, 2.5-, 3- and 4-inch sizes and have 90-degree porting orientation (180 degrees for the GNXH model). A composite baseplate provides unmatched surface flatness, which reduces installation costs and operational vibration.

Other Blackmer models that will perform well in avgas applications include the X, MLX and HXL Series pumps. These high-capacity pump models are capable of producing high flow rates, which make them a better choice for aircraft with larger fuel tanks. Additionally, BV Series Bypass Valves can be used to further mitigate differential-pressure concerns. They feature a chamber that fills with liquid when the valve opens. This hydraulic "cushion" prevents the valve from slamming shut, which minimizes chatter, cavitation and valve-seat wear.

Avgas

BLACKMER SOLUTIONS

- GNX Series Sliding Vane Pumps
- X Series Sliding Vane Pumps
- ML Series Sliding Vane Pumps
  - MLX
- HXL Series Sliding Vane Pumps
- BV Series Bypass Valves

COMPETITION

- **Centrifugal Pumps**

As differential pressure increases in the pumping system, centrifugal pumps will have difficulty maintaining a constant flow rate, which can lead to cavitation and, in extreme cases, vapor lock.

- **Gear Pumps**

Gear pumps struggle to maintain operational consistency when pumping thin liquids and will wear down quickly if a lubricating fluid is not present, meaning the pump will need to be removed from service for repairs.

- **Lobe Pumps**

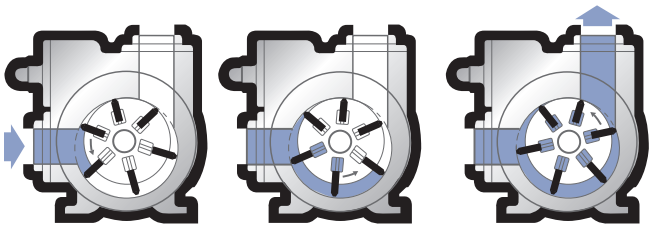
Since they are mechanically sealed, they typically feature an O-ring instead of packing, which means that leakage can be an issue.

GLOSSARY

Hydrant – The hub of the piping system that supplies fuel for aircraft at an airport.

Differential Pressure – The difference of pressure measurements between two points in a system.

HOW BLACKMER SLIDING VANE ACTION WORKS



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

Where Innovation Flows

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