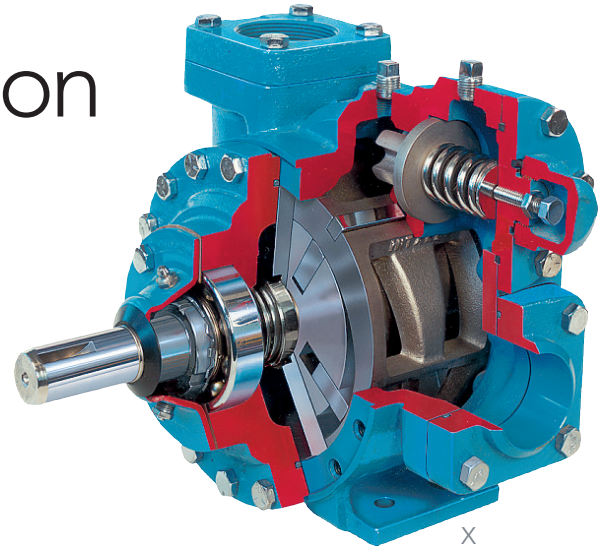
Tank Battery Circulation

APPLICATION DOCUMENT



Extraction of crude oil from any wellhead application does not solely provide crude oil. In the liquid mix that is extracted, crude oil is often joined together with gas, water, chemicals and various abrasives like stone or sand. This multiphase crude needs to be separated so that oil products can be pushed further downstream for refining.

The separation of the multiphase crude oil happens after initial extraction. During this process, the multiphase crude oil is stored in tank batteries until it is pumped to a heater treater that is used to separate the oil from the rest of the water and other contaminates.

Positive displacement sliding vane pumps excel in this application thanks to a unique design that allows them to handle extremely thin fluids (low viscosity) and liquid with vapors (entrained gas). This design also provides excellent priming capability and high performance over a wide range of temperatures and differential pressures. Additional benefits include "self-adjusting" vanes that allow them to maintain near-original performance during the life of the pump, dry run capability, and the ability to self-prime and handle pumping solids without detrimental effect on the pump.

Blackmer XL Series Pumps, which are part of the Iron Line, are high-performance pumps that have been specifically built for tank battery circulation applications.

Available in five sizes ranging from 1.25- to 4-in, the XL Series pumps have flow capacities that vary from 4 to 345 gpm (15 - 1,306 L/min). Constructed of shock resistant ductile iron, the pumps feature a wide range of mechanical seal components, and different vane and elastomer options. The temperature limits of the XL pumps range from -25°F to 240°F (-32°C - 115°C).

With the ability to replace the vanes, liner, casing, and end discs, the XL Series pumps can be rebuilt to like new condition giving them a huge advantage over throw-away pumps that can't be rebuilt. The ability to rebuild the pumps extends the life of the pump, and lowers the overall cost of ownership over competitive pump technology.

The 4-in XL pump is equipped with a Cavitation Suppression Liner designed to eliminate the destructive chattering that is a result of cavitating fluids by breaking large vapor bubbles into smaller bubbles before they have a chance to implode. The result is less noise, less wear and less chance that the pump will be susceptible to disruptive failures associated with cavitation that happens when pumping entrained vapors.

Specifically for Tank Battery Circulation applications, the XLF model is especially well suited. The XLF model is a motor speed pump that comes in 1.25- and 1.5-in. sizes and does not require a gear reducer. The XLF pumps are high performance pumps that can withstand wide temperature ranges, viscosity levels, entrained gases, and various pressure levels.

Tank Battery Circulation

XLF

BLACKMER SOLUTIONS

- XL Series Sliding Vane Pumps
  - XLF1.5

COMPETITION

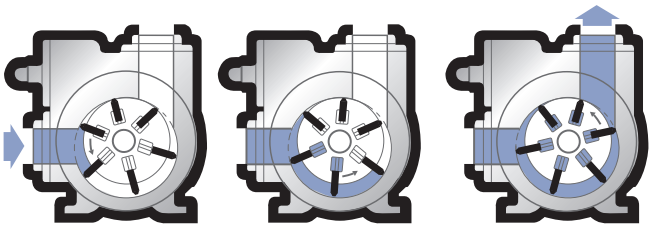
- Gear pumps

Gear pumps are the primary pumping solution in Tank Battery Circulation applications. The gear pumps are often throw-away pumps, lasting on average for only 3 to 6 months before they scrapped. Gear pumps struggle in pumping the multiphase crude oil. Gear pumps need viscous and lubricating fluids and without them, the pump will wear down quickly and burn out. Additionally, multiphase crude oil also contains many abrasives such as sand, rocks, or dirt, which will quickly deteriorate the gear pump. Lastly gear pumps can't be rebuilt, and they immediately start to lose efficiency every rotation as the gears grind against each other, becoming less and less effective.

GLOSSARY

Heater Treater – help facilitate oil/water separation by speeding up emulsions separation by applying heat.

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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