

The background image shows an oil field wellhead in a dark, overcast sky. A large, semi-transparent red 'X' is overlaid on the left side of the image. The wellhead equipment is silhouetted against the sky, with various pipes, valves, and a large handwheel visible. The overall tone is industrial and somewhat somber.

# WELL MASTER PAGL & GAPL



## COMBINING GAS LIFT AND PLUNGER LIFT TECHNOLOGIES FOR WELLBORE DELIQUIFICATION AND OPTIMIZATION

PAGL is referred to as Plunger-Assisted Gas-Lift and GAPL is referred to as Gas-Assisted Plunger-Lift. With this perspective, PAGL and GAPL can come at two distinctly different times in the life cycle of the well

**PAGL:** The plunger assists and extends the economic life of the gas-lift system by improving the efficiency and economics at lower rates. The amount of time that a gas lift system can operate towards the end of the life cycle, before switching to another form of lift, can be extended.

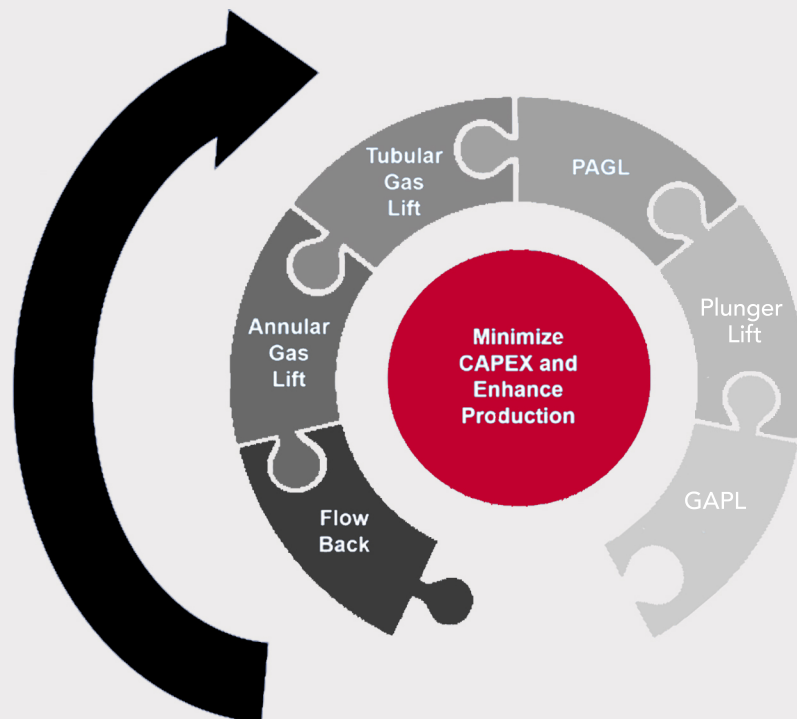
**GAPL:** The gas injection assists and extends the economic life of the plunger-lift system by supplementing the reservoir drive. The amount of time that a plunger-lift system can operate towards the end of the life cycle, before switching to another form of lift, can be extended.

Another way to imagine the difference from an applications standpoint in the majority of cases is:

**PAGL:** Continuous gas-lift, typically assisted by a continuous-run plunger.

**GAPL:** Plunger-lift assisted by continuous or intermittent gas injection.

While the proper application of PAGL and GAPL can both bring improvements to production over one form of lift alone, they are also distinct forms of lift that can be planned for in the life-cycle of the well. By designing the well to anticipate the changes and minimize the workover costs, production and economic efficiency can be optimized.





## WHAT CAN PAGL DO FOR ME?

- The plunger not only helps to sweep liquid fallback to the surface and reduce Bottom Hole Pressure, but it effectively improves the ability of the gas to move the liquid so that injection rates can be reduced, and the effect of slippage can be minimized.
- Even in a gas-lifted well that is fully optimized, the addition of a plunger can reduce injection rates by 25 to 40% and improve liquid rates by 10 to 30%.
- This changes the economic viability of a gas lift system at lower rates and can delay the capital expense of moving to another form of artificial lift.
- Plungers also bring the proven benefit of helping to clean up scale and paraffin issues. The plunger can operate as deep as 60+ degrees for optimum Bottom Hole Pressure management.

## HOW DO I KNOW IF MY WELL IS A CANDIDATE FOR PAGL?

**Nodal Analysis is used to predict when a plunger may improve well performance, but some of the key signs are:**

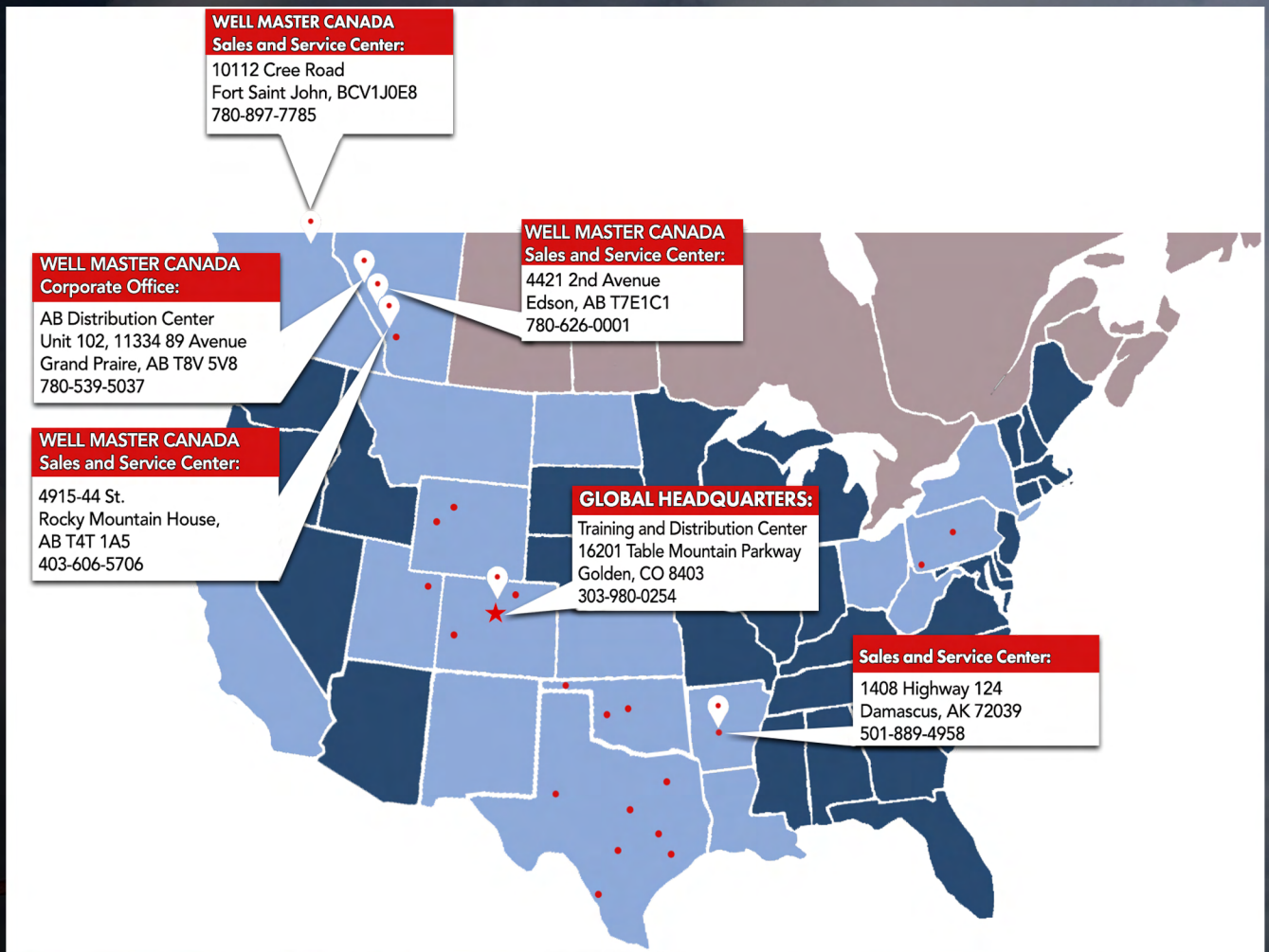
- Liquid rates below 450 BPD
- Production is becoming unstable and starting to surge or head
- On multi-well pad sites where injection rate capacity is needed by other wells
- Scale or paraffin buildup is impacting production

## WHAT CAN GAPL DO FOR ME?

- If you are looking to extend the production and life-cycle of your plunger-lift system, then Gas Assisted Plunger Lift may be a valuable option. At lower reservoir pressures and rates – GAPL is the application of gas lift to assist a plunger lift system.
- GAPL can be applied when the formation drive is below the requirement to operate a plunger system independently, or when improved plunger performance can be created by utilizing gas compression.
- Key points like “when should a horizontal well be shut in after the plunger arrives?” is critical to the production results and overall success.
- Planning ahead and using a “life of well strategy” can make significant savings and simple transitions from Gas lift/PAGL/Plunger Lift/GAPL successful throughout the life of the well.



# Contact Well Master today to find out how we can help optimize your oil and gas well production



## Service Areas

- |              |                  |            |               |
|--------------|------------------|------------|---------------|
| Argentina    | Alberta          | Arkansas   | North Dakota  |
| Australia    | British Columbia | California | Ohio          |
| China        |                  | Colorado   | Oklahoma      |
| Germany      |                  | Kansas     | Pennsylvania  |
| India        |                  | Louisiana  | Texas         |
| Pakistan     |                  | Montana    | Utah          |
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