LIFTING SOLUTIONS

Tackling Free Gas Challenges in PCP Systems

Extending Pump Life and Boosting Efficiency with TaperAL™ and GasAL™

CHALLENGE

Our client was faced with free gas and foam at the pump intake that caused reduced volume efficiency, premature failures and operational instability including torque fluctuations, vibration and overheating equipment. These challenges are common in heavy oil, coalbed methane (CBM) and coal seam gas (CSG) applications.

SOLUTION

Lifting Solutions introduced two complementary technologies that our special R&D test program and modelling implied would significantly help solve their challenge:

- **TaperAL PCP**: A tapered stator design that promotes uniform pressure distribution, reducing localized stress and extending run life.
- **GasAL Separator:** A modified poor-boy separator that diverts free gas before it enters the pump, dramatically improving liquid volumetric efficiency.

PERFORMANCE

When combined, the TaperAL PCP and GasAL Separator delivered a synergistic solution. The GasAL improved natural **gas separation** reducing the amount of free gas entering the pump, while the TaperAL geometry improved **gas handling** that inevitably entered and flowed through the pump by promoting a more uniform pressure distribution along the pump length. This prevented overloading of progressing short sections, a common condition with gas intake that typically results in premature top-down stator failure.

Our client saw a one-year runtime where, historically, it had only ran for about six months. They also increased the volumetric efficiency from ~10% up to 85% saving them OPEX.

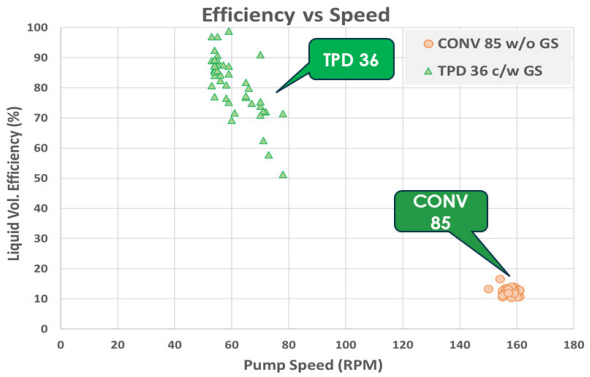
TaperAL PCP Performance

- Over 90 installs in Canada since July 2024.
- 35+ units exceeded 6 months, many approaching one-year runtime (historical average: ~6 months).
- Reduced torque fluctuations and smoother operation reported by operators.
- Trials in CBM wells confirmed adaptability across reservoir types.

GasAL Separator Impact

- Installed in 150+ wells since March 2025.
- Increased volumetric efficiency from ~10% to 50–85% in high-viscosity (up to 5,000 cP) applications.
- Enabled smaller pumps to operate at lower speeds while maintaining or increasing flow rates.

METRICS



SUCCESS

The wells using TaperAL and GasAL generated higher volumetric efficiency that enabled running a smaller capacity pump model at lower speed while maintaining/exceeding production rates. In the above example, utilizing an ~60% smaller capacity Model (36 vs 85) and running at ~60% lower speed (60 vs 160) resulted in ~75% power/energy costs savings.

By managing gas both before and within the pump using TaperAL and GasAL, this integrated solution delivered:

- Improved reliability and operational stability.
- Reduced wear and fatigue on downhole and surface equipment.
- Optimizes production in challenging gassy, foamy, and viscous environments.
- Extended pump life and reduced intervention costs.

For wells with high GVF or foamy oil, TaperAL and GasAL together deliver the most robust performance and delivered a 75% energy cost savings.

Experience Performance. Artificial lift products and services that consistently outperform the market and reduce OPEX.
LiftingSolutions.com or call us toll free 1.877.879.5727