

# Gas lift operation insights unlock 26% production increase from first well

Real-time reservoir performance information from a Zenith™ downhole monitoring system fuelled the right decisions for increasing production from an already optimised well.

## Challenge

Gas lift is one of the most established forms of artificial lift, benefiting from relatively inexpensive subsurface equipment and minimum repair and maintenance expense.

Gas lift optimisation is typically performed by measuring data from well test and pressure/temperature surveys, surface pen charts can be used to record injection and production pressures during operation. Typical problems resulting in lost production are tubing leaks, faulty or out of calibration gas lift valves, and under or over injection of lift gas.

## Solution

Downhole pressure and temperature monitoring systems have established their place as an important part of any artificial lift well completion, and gas lift is no exception.

The first Zenith C-Series dual pressure downhole gauge was installed on a gas lift system in June 2005, providing real-time downhole pressure and temperature data allowing continual monitoring of operational and well performance fluctuations.

The system uses an electric instrument line to communicate signals to surface, reducing the frequency of slickline operations required to monitor gas lift valves, and providing streaming information on reservoir performance.



## CHALLENGE

The volume of gas injection required for optimised oil production varies based on well conditions. Over- or under-estimation of the amount of gas required results in less than maximum production at surface.



## SOLUTION

Zenith C-Series dual pressure downhole gauges replace the need to run wireline gauges, delivering real-time, detailed and accurate information about the operation of the well, reservoir and artificial lift system.



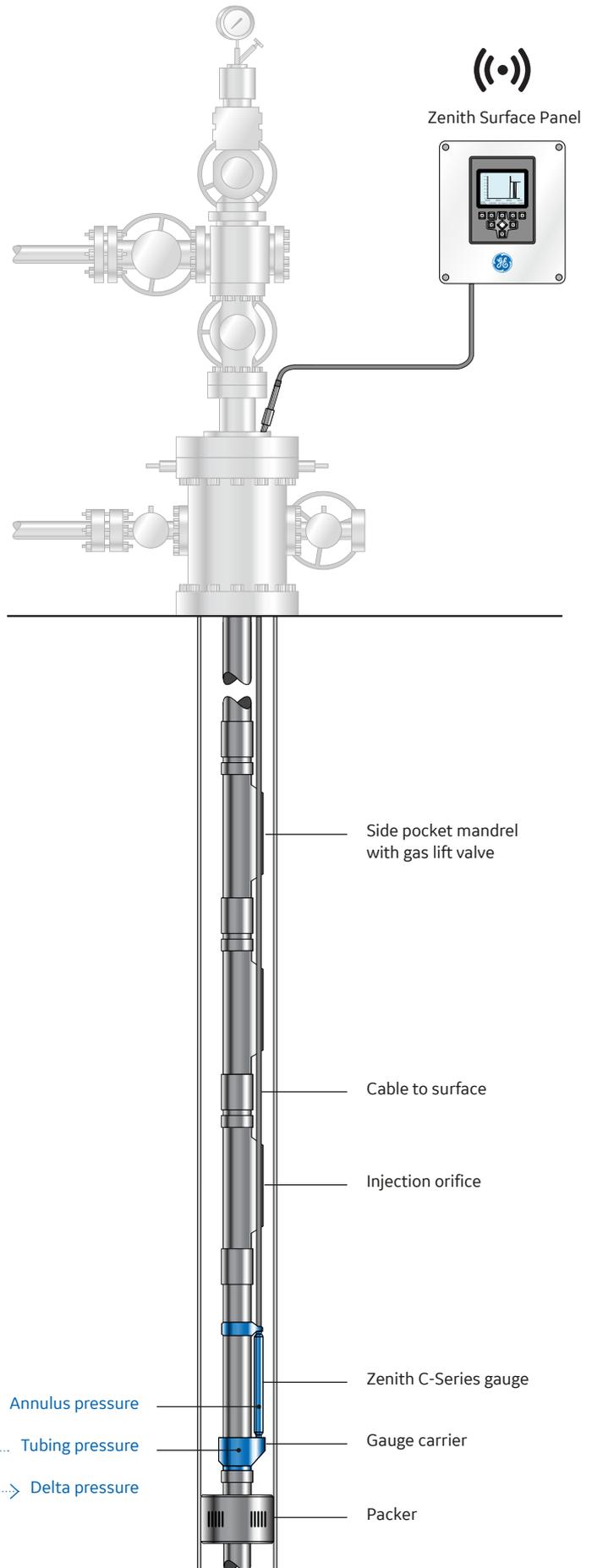
## BENEFITS

Reliable delivery of both annulus and tubing pressure data from the Zenith C-Series gauge provides the knowledge to enable increased production with a decreased requirement for injected gas, improving overall efficiency.

Measuring both tubing and annulus pressure downhole enables full validation of pressure gradients in the tubing and annulus. Gradients can be matched to the measured pressure below or above the orifice allowing diagnosis of injection point. Tubing pressure is critical in calculating bottom hole flowing pressure and therefore well performance.

In this case, the dual pressure Zenith C-Series gauge was installed below the injection orifice measuring:

- ✓ Annulus pressure
- ✓ Tubing pressure
- ✓ Delta pressure across the orifice
- ✓ Annulus temperature
- ✓ Tubing temperature
- ✓ Vibration
- ✓ Current leakage



“The gains achieved using data from the Zenith C-Series gauge installed in the first well lead to an additional order for twenty systems from the operator.”

Xavier Ortega, Field Manager, GE Oil & Gas

## Benefits

**The additional information provided by the gauge immediately contributed to an additional 25 barrels of oil per day, over and above previous optimisation campaigns.**

The downhole data, used in conjunction with surface pressures and temperatures, well test and injection rate information, enabled a more accurate model of the well to be produced in nodal analysis software; matching gradient plots of the injected gas and producing fluid to the measured pressures from the Zenith gauge. An updated gas lift performance curve was plotted and the resulting analysis enabled the lift system to be fine-tuned to increase production by 26%, resulting in \$10,000 per week additional revenue.

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