



## DIGITAL WELL INTEGRITY PROVIDES ARTIFICIAL LIFT OPTIMISATION

During a workover to install a gas lift system in a Middle Eastern well, our client chose to install our Digital Well Integrity solution to monitor and optimise well production. DTS data from across the production interval was used to enable better understanding of lift performance over time with a dramatic reduction in the requirements for traditional pressure gradient surveys. The measured inflow profile and depletion trend has proved invaluable in the design and placement of subsequent wells in the field.

### CLIENT REQUIREMENTS

The operating company calculated in excess of 270,000 barrels of production were being deferred each year from the field due to sub-optimal intervention, production and remediation planning. There was an immediate need to provide increased and improved production information to the reservoir engineering team allowing them to better justify and utilise limited intervention opportunities.

### THE MONITORING GAP

The unmanned offshore location and small jacket size meant production logging and intervention operations were difficult to justify. Production and reservoir engineers were looking for viable solutions to analyse underperforming wells. A lack of communications and power infrastructure on the platform meant that limited permanent monitoring options were available. By using the Sensornet DTS acquisition unit we were able to supply the ideal solution to provide an accurate flow profile along the length of the well to ensure events were detected immediately.

### THE SENSORNET SOLUTION

Using a fibre optic distributed temperature sensing (DTS) system with a market leading temperature resolution, better than 0.01°C, readings were obtained every meter along the wellbore, from the surface to the toe. This allows the operator to monitor events as they occur in real time. The robust SureSight™ sensing cable was deployed to ensure years of operation without degradation or loss of signal performance. Our compact, high performance, surface monitoring units have low power consumption and operate over a wide temperature range. This allows the DTS to be located in harsh environments, providing the ideal solution for locations such as remote well sites and platforms where infrastructure is limited.



## SUBSTANTIAL BENEFITS

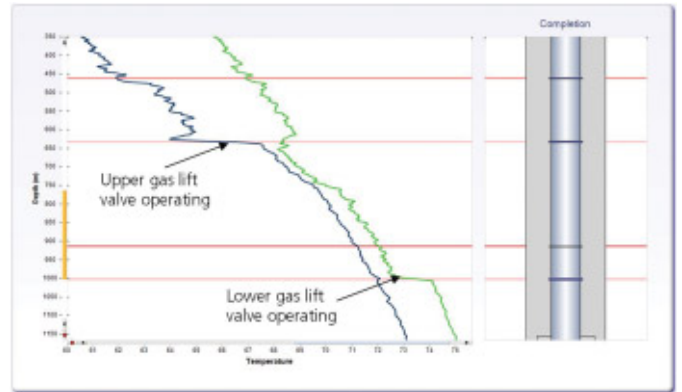
During well start-up the operator estimated they saved 6 hours when the DTS temperature profile clearly detected a slugging faulty valve, allowing the component to be replaced immediately. Previously each valve would have been sequentially checked and replaced, requiring multiple slickline trips.

During gas lift operation, cooling occurs as injection gas loses pressure entering the production string. This is clearly identified on the DTS profile. The time and location of cooling events allows the operator to determine which valves are operating, the sequence in which they are opening and even to detect if they are continuously injecting, or slugging. The high resolution of the Sensornet acquisition unit, even at fast update rates, also allows intermittent valve operation to be detected.

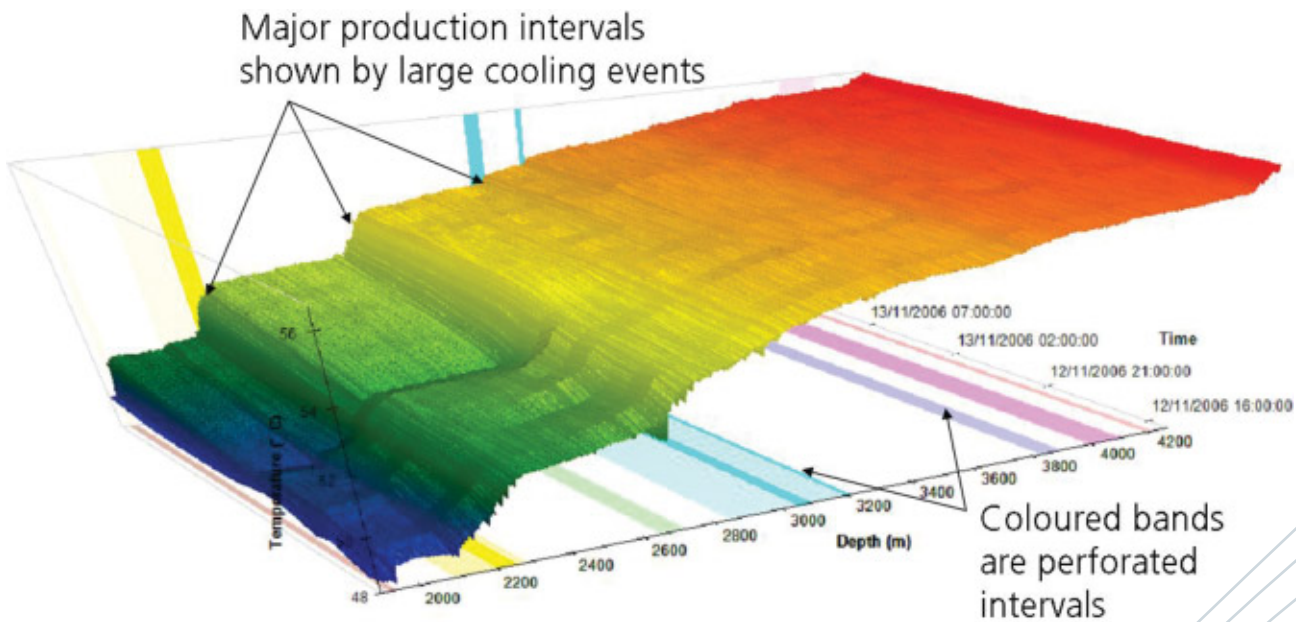
The distributed measurement means any events above or below the valves will also be detected. If there is a tubing or packer leak the operator is quickly able to detect the precise location of the event and determine the most effective course of remediation. Without complete coverage it is possible to misinterpret well integrity issues, mistaking leaks for improper valve operation.

## MEASURABLE PERFORMANCE

Installation of the Sensornet Digital Well Integrity solution was quick, efficient and ensured little interruption to conventional well deployment. Being permanently installed, the real time, high resolution measurements of at least 0.01°C ensure leaks are detected immediately throughout the entire 4.4km well length. This provides the reservoir engineering team highly valuable information to better understand lift performance, effectively optimise well production and minimise operating costs.



DTS data visualisation showing the completion diagram and location of gas lift mandrels alongside DTS temperature traces



High resolution temperature data captured across the production intervals

To close your monitoring gap, call +44 20 8236 2550 or visit [www.sensornet.co.uk](http://www.sensornet.co.uk)