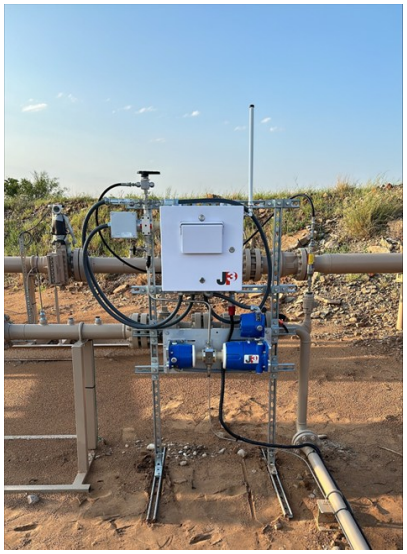
JP3 Digital Sampling with XSPCT™

Bringing Automation to Sampling and Analysis

Critical Data. Real Time.

Current Sampling Processes are Manual and Inefficient

In upstream oil and gas operations, fluid sampling plays a crucial role in ensuring the accurate assessment of reservoir properties, fluid compositions, and overall well performance. Moreover, reliable samples are integral for complying with regulatory requirements. However, sampling remains a highly manual activity: trained personnel travel over long distances to pull samples from remote well sites, gathering stations, and separators. This is costly, time-consuming and carries a high risk of invalid or non-representative samples.



A Digital Field Solution for Automated Upstream Sampling

The JP3 XSPCT system can be placed inline with the fluid to be measured, providing continuous, accurate digital samples which can be monitored from anywhere via a cloud-based system. For a similar cost to current methods, the XSPCT system can take data every 15 seconds, increasing the number of data points by orders of magnitude. This enables operational decisions to be made in real time. Continuous data increases transparency for all stakeholders, allowing outliers to be easily identified and removing the risk that a sample may be non-representative of actual fluid properties. Fluid properties are dynamic and the timing of a manual sample can have a significant impact on ROI depending on what the properties are on a given instant. Conversely, the ability to see a trend of continuous data provides a more accurate and complete picture of the fluid.

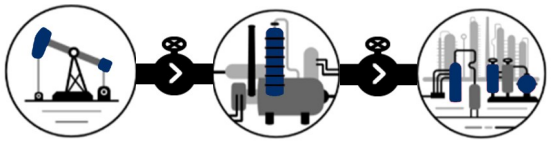
Automated = Accurate

Manual sampling is a challenging process to execute correctly. Digital sampling eliminates bias associated with environmental factors, process issues and technical limitations. While periodic manual samples can still be taken as a secondary check, the XSPCT digital sample provides a reference validation, increasing confidence in the manual sample. Taking a digital sample with the XSPCT system is executed according to GPA 2119, the industry standard for in-situ process measurements. There is no standard process for taking a manual sample, regularly leading to inconsistencies in sampling results.

XSPCT™ NIR Analyzer:
The ideal solution for simultaneous monitoring of BTU, Composition, RVP, and many other fluid properties.

Designed from the Start for Field Operations

Many analyzer and monitoring systems are intended for lab use and not durable for field operations. They are fragile and require trained operators. The JP3 XSPCT analyzer was designed from the ground up as a field analyzer. With a Class I Div. 1 rating, it can be installed outdoors with no shelter and adjacent to operating equipment. Remote operations are practical and cost-effective with a XSPCT system since there are no required utilities or consumables. Each XSPCT system carries a cellular antenna, allowing diagnostics and operation 24 hours a day in remote locations.



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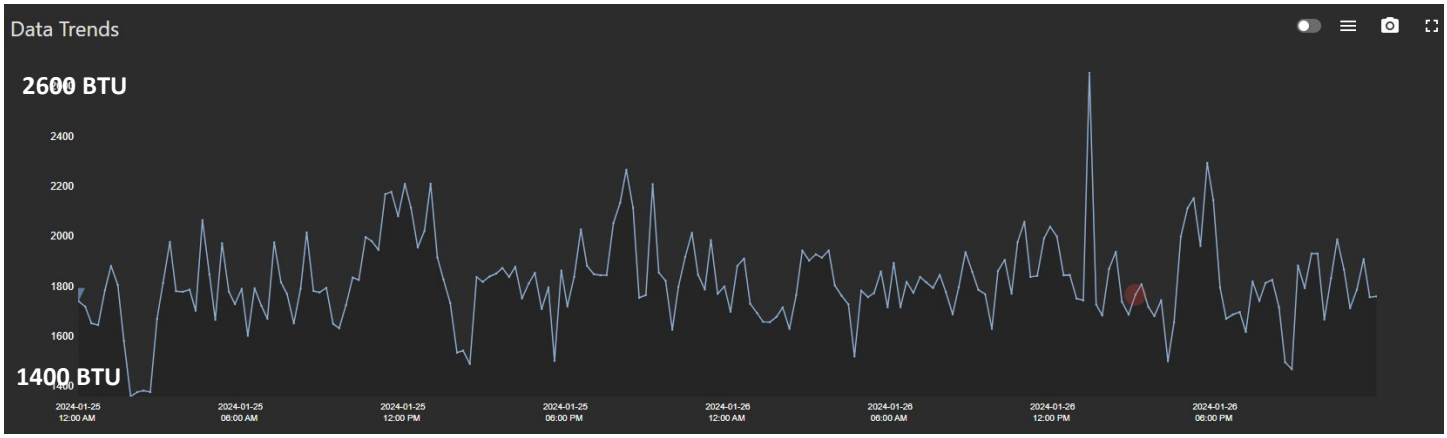
NIR Spectroscopy for Upstream Measurement

The JP3 XSPCT system uses a near infra-red (NIR) spectrometer to determine the composition of a sample. The chemical composition of a liquid or gas determines its properties, such as its vapor pressure, API gravity, and composition. Therefore, with an accurate compositional correlation updated every few seconds, the XSPCT system automatically provides rapid sampling results with zero manual intervention, moving parts, regular maintenance, or emissions.



JP3 Viper: Real-Time Web-Based Monitoring Software

Case Study

The above data trend from a natural gas production operation shows the BTU over 24 hours. The variability in these measurements can be clearly seen. The impact of taking a sample at the peak of 2600 BTU vs taking a sample at the minimum value of 1400 BTU would be significant for an owner or operator being paid for BTU value of the fuel. This impact compounds if manual samples are only taken once per quarter. Neither of those values are representative of the 1844 BTU average of this gas stream. The example in the table below (data from the above chart) demonstrates this impact. Spot samples taken at 1pm vs at 5pm on this particular day would result in an almost $500,000 difference in total value over a month. Only with the continuous trend can an accurate assessment of the gas quality be made and therefore an accurate accounting for contract execution.

Impact of Spot Measurement vs Average

	1pm	Average	5pm
BTU/scf	2250	1844	1626
Volume MMscf/D	10	10	10
$/MMBTU	$2	$2	$2
Value/Day	$ 45,000	$ 36,880	$ 32,520
Value/Month	$ 1,350,000	$ 1,106,400	$ 975,600
Difference	$ 243,600	$ -	$ (130,800)
Annual Difference	$ 2,923,200	$ -	$ (1,569,600)

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