CASE STUDY

HALLIBURTON

North Dakota

Integrated services streamline CO_2 injection monitoring for CCUS operator

Cemented DataSphere® Array system gauges + Clariti® View services provide all-inclusive data acquisition, storage, and alerting

CHALLENGES

Cost-effective permanent monitoring system to monitor CO_2 containment zones.

- Reduce complexity
- Provide data access, storage and alerting

SOLUTIONS

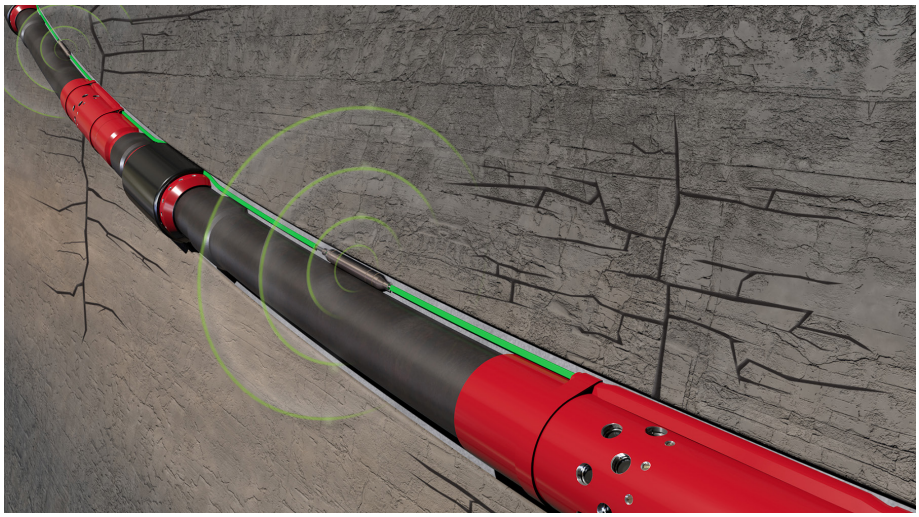
DataSphere® Array permanent monitoring system and Clariti® View visualization services.

- Long-term monitoring of CO_2 containment zone
- Data and alerting for regulatory reporting

RESULTS

Real-time reservoir pressure and temperature monitoring with quick access to data insights.

- 24/7 CO_2 containment zone monitoring
- Easily access data from cloud historian via Clariti® View service dashboard



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Overview

A carbon capture, utilization, and storage (CCUS) developer in the Williston Basin needed an effective method to monitor formation pressures and temperatures from previously identified "containment zones" in which carbon dioxide (CO_2), the byproduct of ethanol production facilities, would be injected.

Monitoring standards set by federal and state government entities present significant challenges for CCUS operators. During the CO_2 injection phase, the operator must provide proof that their injection pressures is below the formation frac pressures, mainly to avoid any potential channeling or fracturing into nearby formations or water tables. Following CO_2 injection, the integrity of such containment zones must be monitored for a mandated period. In this case, the operator had to monitor the containment zone for a minimum of 10 years; however, regulatory entities in other areas might require monitoring for up to 100 years.

Currently established solutions for formation pressure monitoring use perforating systems, along with permanent monitoring gauges, which can be cumbersome, costly, and slow to deploy. Such systems use multiple connections (potential failure points) and perforating charges that pose health, safety, and environment (HSE) risks, whick ultimately led this CCUS developer to explore alternative solutions within the market.

Challenges

Regulatory standards required that the developer provide CO_2 injection data to ensure the integrity of the targeted containment zone. The operator wanted a cost-effective CCUS monitoring solution that would increase the speed of operations, reduce complexity and ultimately provide accurate reservoir pressure and temperature measurements, all while providing remote data access, data storage, and alerting in the event of an issue.

CASE STUDY

Solutions

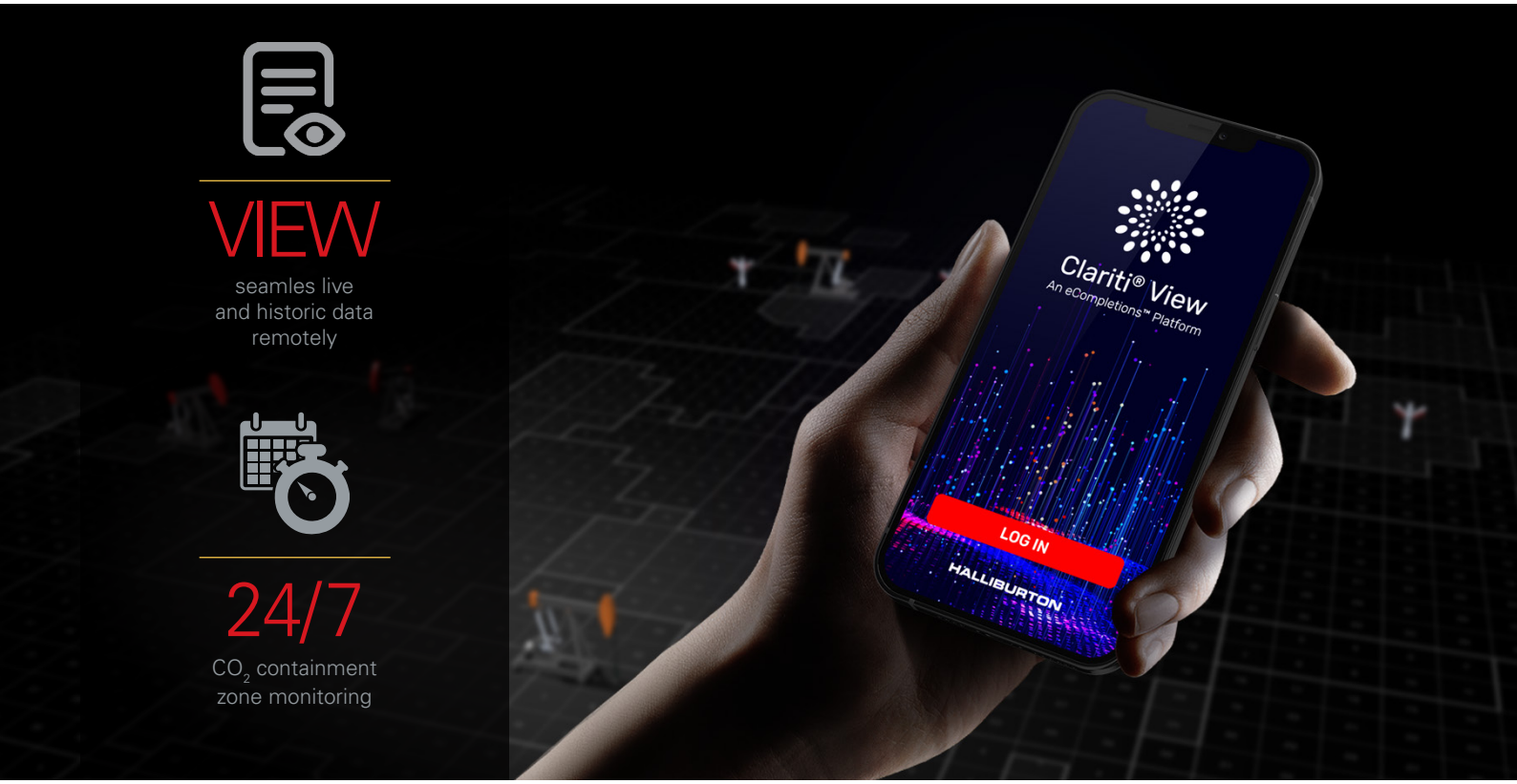
Halliburton proposed a cemented, casing-deployed DataSphere® Array permanent monitoring system for long-term monitoring of the containment zone in conjunction with Clariti® View reservoir management services for alerting, ease of data visualization, and access for accurate reporting.

Results

The integrated services provided a cost-effective, reliable, and efficient solution for long-term CCUS monitoring that met the developer's objectives and maximized asset value.

Using the cemented DataSphere Array system helped the operator decrease deployment time because the system has no connections, no mandrels, and simply clamps to the casing along with fiber-optic cable. In addition, the capability to measure formation pressure and temperature through cement eliminated the need for perforting charges, and the associated costs and HSE risks.

Clariti View provided a seamless solution to access array sensor data remotely from any device, without the developer having to install or maintain the infrastructure necessary. The monitoring platform stores data in a secure cloud and provides access via the Clariti View service visualization dashboard, where the developer can view live data, download historic data, and set alert triggers to stay ahead of any potential remediation needs. This also helps ensure the developer meets regulatory agency reporting.



For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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