

WHITEPAPER

Rapid Replacement of Solar Instrument Air Systems with Liquid Nitrogen

Accelerated Deployment
Restoring Uptime Across DJ Basin
Operations



TITLE

Rapid Replacement of Solar Instrument Air Systems with Liquid Nitrogen: Accelerated Deployment Restoring Uptime Across DJ Basin Operations

CUSTOMER

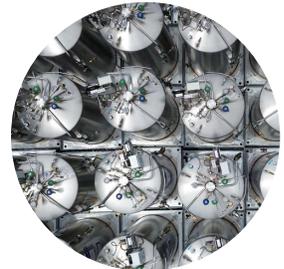
E&P Operator in the Rockies

SITE TYPE

Legacy satellite wellsites (2–3 wells per pad) tied into centralized tank batteries, plunger lift operations

APPLICATION

Kathairos liquid nitrogen tanks replacing solar and battery-powered micro instrument air (IA) skids to power pneumatic controls and plunger lift motor valves



Scenario

A globally integrated exploration and production company operating legacy assets in the DJ Basin had previously invested in a fleet of solar and battery-powered micro instrument air skids to support plunger lift operations on satellite wellhead sites. Due to each well's relatively low daily production volumes, intermittent performance issues with the IA skids were initially overlooked. However, following repeated outages, well shut-ins, and escalating maintenance requirements, an engineer identified that these isolated downtime events were compounding into material production losses across the asset base.

As the number of outages increased and the overall cost of operations continued to rise, executive leadership made the decision to fully replace the existing solar IA fleet. Based on prior positive experience with Kathairos' nitrogen systems on other assets, the operator elected to replace all 61 solar IA skids across 45 locations with Kathairos liquid nitrogen tanks.

Event

By early December 2025, persistent performance issues with the solar micro-IA skids had reached a critical threshold, resulting in costly production downtime even before entering winter operations. Lease operators, well tenders, and maintenance crews were spending an increasing amount of time troubleshooting and repairing IA systems to bring wells back online—time that would have otherwise been spent optimizing production.

The operator recognized the need for a reliable, immediate solution. Having previously used liquid nitrogen to power pneumatic controls, the operator saw clear value in the Kathairos system's turnkey installation, inherent reliability (no mechanical or electrical power required), and real-time operational data that provided insight into actual pneumatic demand at the facility level.

Despite having sunk capital in the existing solar IA skids, the ongoing performance issues were introducing unplanned operating expenses. In a low commodity price environment—coupled with external pressure to reduce opex—management required a solution that could be deployed rapidly while minimizing additional operational burden.

Results and Next Steps

Kathairos was contacted on a Friday afternoon in early December and asked to confirm how quickly more than 60 units could be procured, delivered, deployed, and commissioned. The catch? The operator wanted all IA skids replaced by end of year.

A work order was executed the same day. Within one week, two trucks carrying all of the nitrogen tanks were dispatched from Kathairos' Georgia manufacturing facility to Colorado. Kathairos project managers coordinated directly with the operator's field and client's team to align on delivery logistics, installation procedures, and tank-setting requirements. A detailed deployment plan was developed to minimize downtime during system

changeovers. Through close coordination, 10–12 sites per day were successfully deployed, commissioned, and placed into service. The rapid replacement of the IA systems resulted in immediate improvements to well uptime and production continuity, with minimal disruption to ongoing operations.

Given the operator's sensitivity to operating expenses, the project was structured to be fully capitalized. This allowed the operator to recognize long-term savings while reducing ongoing opex exposure and improving operational reliability across the asset.

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+39MM | **99.99%** | **+900K**

OPERATING
HOURS

UPTIME

TCO2E
ELIMINATED

