



Methane elimination made simple



Kathairos eliminates methane venting from well sites using nitrogen – an inert, non-polluting gas – to operate pneumatic devices. In doing so, the system replaces the need for methane as instrument gas, and the subsequent venting of the highly potent greenhouse gas during routine operation.

- ① Liquid nitrogen pneumatic fuel source
- ② Reliable, effective, economical, scalable
- ③ No onsite emissions, no power required
- ④ Empirical decarbonization data, not estimates
- ⑤ North America-wide coverage



The backbone of our technology: liquid nitrogen

VERSATILE

Any well, anywhere

The Kathairos solution is highly effective at addressing small legacy well sites, providing producers a simple, effective, and affordable way to meet incoming regulations and timelines.

ADAPTABLE

Every site, every size

On both electrified and off-grid sites, Kathairos' larger tanks are an economical, reliable solution for new facilities, where a single tank can power dozens of wells and hundreds of devices.

RELIABLE

Expansive power

Tanks range in size from 180L to 5500L storage capacity. Thanks to the 700x expansion ratio of liquid to gaseous nitrogen, supply lasts 30-60 days depending on the device count and actuation frequency.

SUSTAINABLE

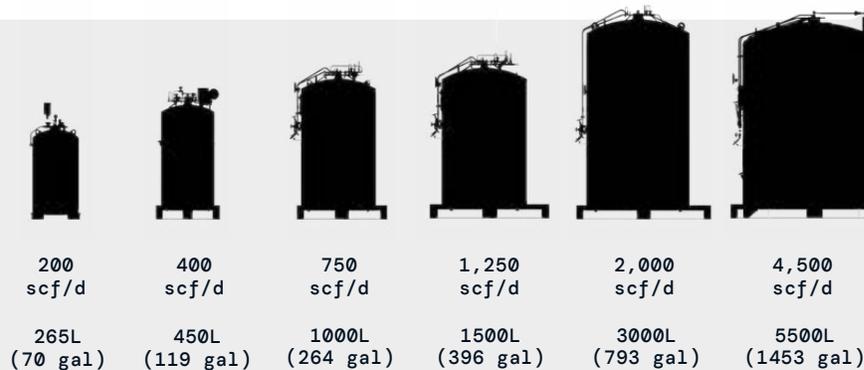
Zero onsite emissions

Emissions created in liquid nitrogen production and delivery account for <2% of the total CO₂e eliminated. These Scope 2 emissions are tracked and accounted for in the customer's net abatement reports.



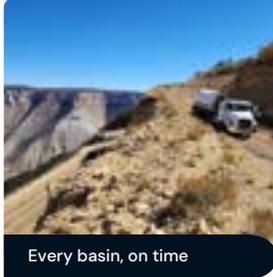
A single tank can power anywhere from one to 50 wells, with no moving parts, repairs or operator involvement

Estimated methane vent rate and associated tank size





Fuel-switching made smart, simple, effective and reliable



Every basin, on time



Speed and scale



Dedicated field operators



Meticulous monitoring



Strategic field offices



Uptime and peace of mind



Fit-for-purpose transports



Abundant supply

Anywhere there's methane being used as a high-pressure fuel source, the Kathairos solution provides the ideal off-grid powerdrive replacement. But that's not the full story.

- No system failure or production downtime
- No upfront capex requirement
- No supply chain or inventory issues
- System delivery in eight weeks or less
- No ongoing repair and maintenance costs
- Zero operator involvement
- No power requirement
- Hands-off, worry-free operations
- No seasonal, weather or temperature implications
- No moisture or freeze-ups
- No introduction of oxygen in pneumatic lines
- Measurable fuel gas savings
- Immediate methane fee (WEC) / tax avoidance
- Empirical source data for reporting and system sizing
- Continuous tank monitoring and crew dispatch
- Easy system up and downsizing as needed
- Flexible term agreements
- Real-time process condition insights
- 24/7 data access plus SCADA tie-in option
- Dedicated local Kathairos field crew
- Competitive N2 pricing from range of suppliers
- No asset ownership and depreciation





Proudly partnering with oil and gas producers across North America to bring methane emissions to zero.



Cross-continental coverage

Kathairos' North America-wide liquid nitrogen distribution network pairs our extensive field personnel and vehicle fleet with a wide array of air separation units and local storage systems.

The result: trusted remote operations and ample, affordable nitrogen supply.





No power, no problem

There is virtually zero complexity to the Kathairos solution, with no moving parts on or in the tank and no operator involvement required. The system works flawlessly regardless of region and weather conditions, and requires no outside power to operate.



Powered by thermodynamics

Stored at -320°F in a cryogenic vessel, liquid nitrogen wants to return to a gaseous state. We take advantage of this thermodynamic property to actuate pneumatic devices on well sites of every size, location and configuration.

Expansively economical

Why liquid nitrogen? When the cryogenic liquid warms back to its gaseous state, it expands by 700x. This allows a single tank to last an average of 30 days or longer, while providing ample economical power to off-grid pneumatic control systems.



Precisely pressurized

The proprietary system vaporizes the liquid nitrogen internally, converting it to high-pressure nitrogen gas at exactly the pressure and volume required for well site operation.

Clean, dry, inert, ambient

Nitrogen gas leaves the tank at ambient temperature, and powers pneumatics with a dry, inert, emissions-free gas. Once the device has been activated, the nitrogen is simply vented back to where it came from – atmospheric air.

The process is as simple as the solution itself



"Liquid nitrogen is a key part of SWN's portfolio approach to reducing methane emissions. Automatic dispatching from Kathairos has led to zero downtime since the program's inception."

BRANDON YAW, PRODUCTION MANAGER, SWN ENERGY

"There's a lot of good technologies out there today, and when we stacked it all up, the Kathairos technology was the best fit for us."

ELDON SIEGLE, SUPERINTENDENT EMISSIONS, OVINTIV

"Kiwetinohk has implemented Kathairos nitrogen equipment and made significant progress toward our goal of reducing our Scope 1 methane emissions to 50% of our 2022 baseline by 2025."

2023 ENVIRONMENT, SOCIAL & GOVERNANCE REPORT

"This is the latest in a series of successes for the Bayswater team in targeting a specific source of operational emissions and successfully identifying and deploying an innovative solution to reduce, eliminate or offset those emissions."

STEVE STRUNA, PRESIDENT & CEO, BAYSWATER EXPLORATION & PRODUCTION

"The operators in the field really love nitrogen. Once it's hooked up, it's so simple. You just tie it in and it's hands off – it runs itself. The fact that we can also see the data on a dashboard is very appealing."

JERRY DISMUKES, AIR COMPLIANCE MANAGER, CAERUS OIL & GAS

"An area where Kathairos has really helped PennEnergy Resources is at remote legacy facilities that are a good distance from the road and electrical power. The ability to drop in a solution and solve a problem quickly and effectively has been a great part of our environmental program."

DOMENIC TEDESCO, DIRECTOR - AIR QUALITY & SUSTAINABILITY, PENNERGY RESOURCES

"The more empirical operating data and measurements the better. Direct measurement close to sources is one of the best ways to gain a fundamental understanding of operating emissions."

ADAM REDLING, FACILITIES ENGINEERING & EMISSIONS MANAGER, RANGE RESOURCES

"From our evaluation of the Kathairos process, it is an innovative yet simple solution to completely eliminate methane emissions on these pneumatic controllers and significantly reduce maintenance of that process."

JOHN LANDIS, PRODUCTION MANAGER, NORTHEAST NATURAL ENERGY



Just three simple, straightforward fees



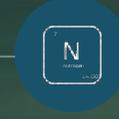
One-Time Commissioning Fee

This flat fee covers the delivery of the liquid nitrogen units to your staging yard, and the initial cooldown and commissioning of the tanks.



Monthly System Rental Fee

The monthly rental cost of the Kathairos liquid nitrogen storage tank and telemetry system is priced according to the size of system required.



Monthly Nitrogen Consumption Fee

A variable monthly fee based on nitrogen consumption that includes our all-in service offering: dedicated field personnel, nitrogen delivery and 24/7 monitoring.



The System

The system is comprised of a proprietary double-walled vessel designed for the long-term storage of liquid nitrogen, automated to maintain preferred nitrogen pressure and flow from an array of circuitry and telemetry.



The Services

Kathairos' all-in service offering includes delivered liquid nitrogen to the well site, 24/7 tank monitoring, management and refilling, ongoing system optimization analysis, consumption data and abated emissions reporting, and optional carbon credit management, verification and serialization.



TOGETHER, THEY FORM The Solution

The Kathairos solution is a highly innovative methane abatement system, complemented by a suite of best-in-basin services.

We look forward to partnering with you to bring your well site methane emissions to zero.

kathairos.com

