

HOW TO TRANSFORM COMPLIANCE INTO NEW REVENUE

- ✓ How to use the ProMax 6.0 Data Exchange feature for best practice emissions measurement and calculations
- ✓ The three steps to generating investment-grade data (that a buyer will pay a premium for)
- ✓ How to add direct-measurement in your designs and minimize future EPA methane taxes



MARCH 28, 2024
1:00 PM CST



Kelly Bott, *Guest Host*
Senior Vice President, Corporate Affairs
PureWest Energy



Jason Oates, *Guest Host*
Vice President, Sustainability
PureWest Energy



Justin Slagle, *Co-host*
Senior Consulting Engineer
Bryan Research & Engineering



Mark Houston Smith, *Host*
Co-founder & President
CleanConnect.ai



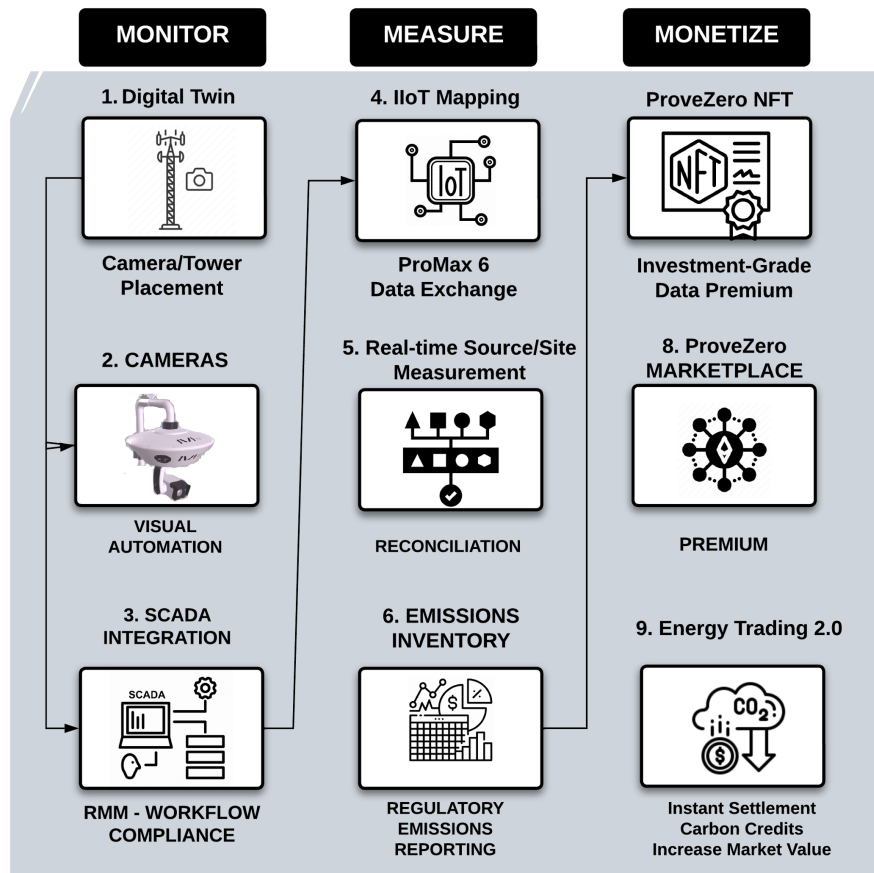
David Conley, *Co-host*
Co-founder & CEO
CleanConnect.ai

What You'll Discover On This Live Case Study with PureWest:

The three steps to generating investment-grade data (that a buyer will pay a premium for).

How to future-proof upstream sites to enable remote monitoring & management and eliminate unnecessary call-outs.

How to add direct-measurement in your designs and minimize future EPA methane taxes.



CleanConnect.ai
Visual Automation

ProveZero

Your webinar hosts



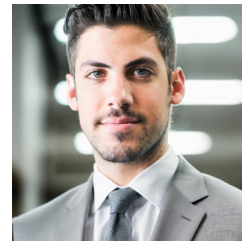
Kelly Bott
Senior Vice
President, Corporate Affairs



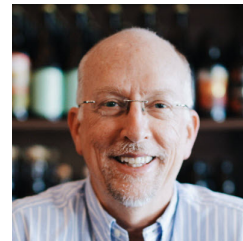
Jason Oates
VP,
Environmental
& Regulatory



Justin Slagle
Senior Consulting
Engineer



David Conley
Co-founder & CEO



Mark Houston Smith
Co-founder
MODERATOR





Vision and Mission

PureWest is a mission driven organization

Vision

*To be the most responsible and profitable
Rockies-focused natural gas company*

Mission

*To advance modern life by producing natural gas in a safe,
environmentally-responsible, and cost-conscious manner*





PureWest Gas Marketing Overview

Clean, large-scale, low decline natural gas production with broad pipeline connectivity

PRODUCTION & RESERVES



Feb'24 marketed gas production
PDP decline profile (1-year / 3-year)
Proved developed net reserves / PV10

613 bbtu/d
17% / 10%
1.0 tcf / \$1.5 billion

ACREAGE & DEVELOPMENT



Net acreage (WI/% operated)
Operated wells
Annual development capital (1 rig)
Undeveloped locations

108k acres (96%/100%)
~3,500
\$150-180mm
>1,500

ENVIRONMENTAL PERFORMANCE



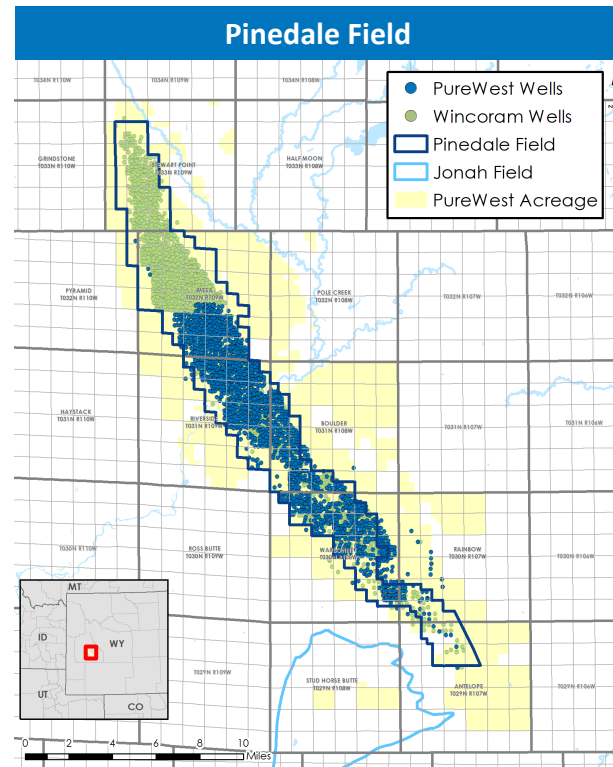
2022 Methane Intensity (EPA Subpart W reported)
% Trustwell platinum / gold certified
Environmental accounting platform
Hart Energy ESG awards

0.06% -- 85% below US avg.
>99%
EarnDLT
2021, 2023

PIPELINE CONNECTIVITY



Processing Plant	Feb'24 bbtu/d	Pipeline Connectivity					
		Kern	NWPL	Ruby	OT / REX	CIG	QPC
Opal	199	✓	✓	✓	✓	✓	
Pioneer	216	✓	✓	✓	✓		
BlacksFork	<u>198</u>	✓	✓		✓	✓	✓
	613						





Verified Culture of Safety and Environmental Excellence

Advancing the differentiated gas market with industry-leading safety and environmental performance



0.06%
Industry leading
low methane
intensity rate⁽¹⁾



TrustWell Ratings

Certified	99%
Platinum	88%
Gold	12%
Wells	3,421

"PureWest Energy stands at the forefront of sustainability, pioneering a cleaner future with unwavering dedication."

David Conley
Founder & CEO

CleanConnect.ai
Visual Automation



- Comprehensive, measurement-based reporting framework
- Improves the accuracy and transparency of methane emissions reporting



A decentralized platform to quantify, track, and monetize [environmental attributes](#) powered by [blockchain technology](#) and a fungible token.

The DGCC is a coalition of [stakeholders across the natural gas supply chain](#) dedicated to [facilitating a pathway](#) for policymakers, regulators, utilities, and gas consumers to utilize differentiated gas as an important option to [meet their climate goals](#).



¹⁾ Methane intensity rate (MIR) calculated as methane emissions released / total methane produced

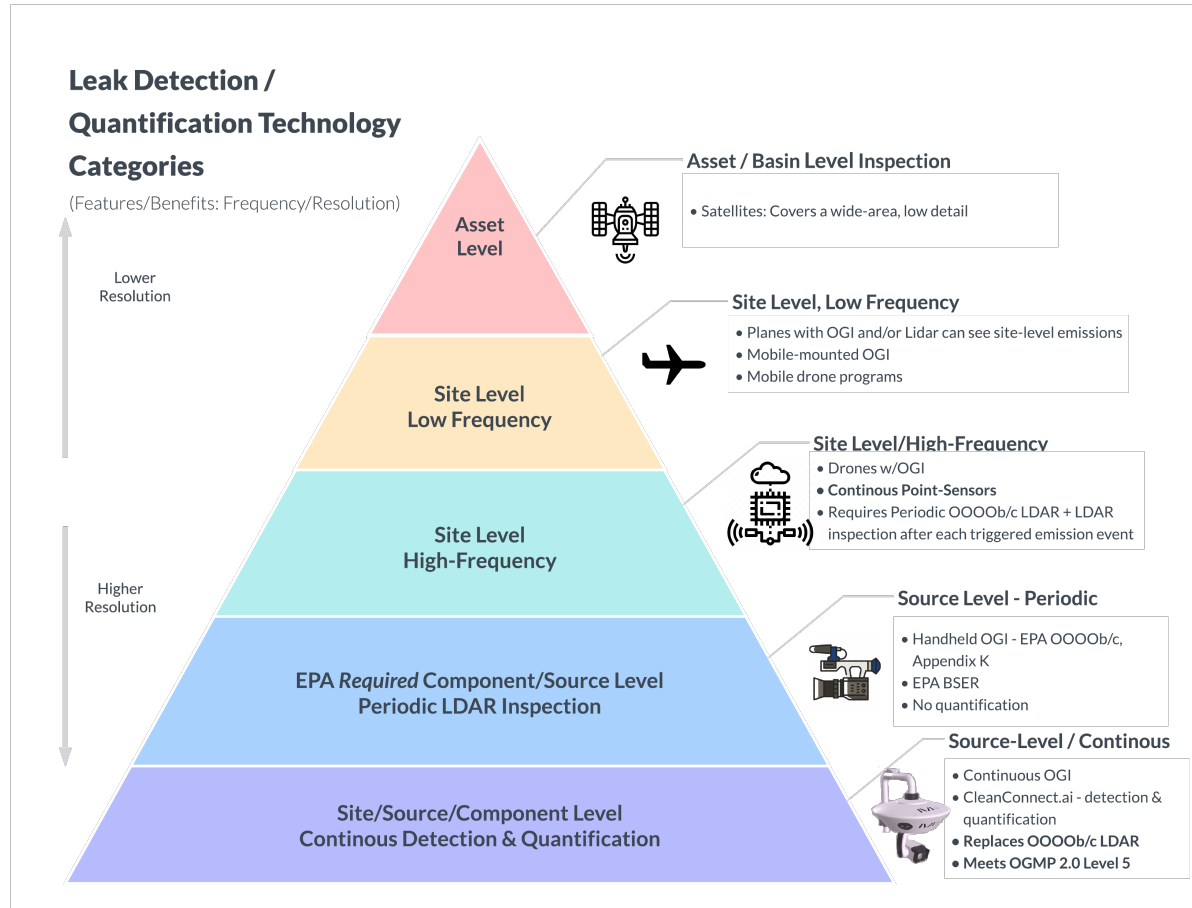
The Challenge:



1. To be the most responsible (cleanest) Rockies-based producer and;
2. Empirically prove it to regulators, investors, customers, and buyers

We analyzed the options..

- From satellites to sensors
- We analyzed the technology options
- We analyzed the “certification” options
- And we produced this criteria..



In a *perfect world*, we could find a single platform that would meet the needs of HSE, Ops, and Sustainability



Automated Regulatory Compliance

- Subpart W Reporting
- Autonomous LDAR



Autonomous Operator

- Gas & liquid leak detection
- Autonomous Gate Guard
- Fire/smoke detection
- PPE Detection
- Tank level monitoring
- AI-RMM



MMRV

- Repeatable
- Scalable
- Available
- Defensible
- Tradeable

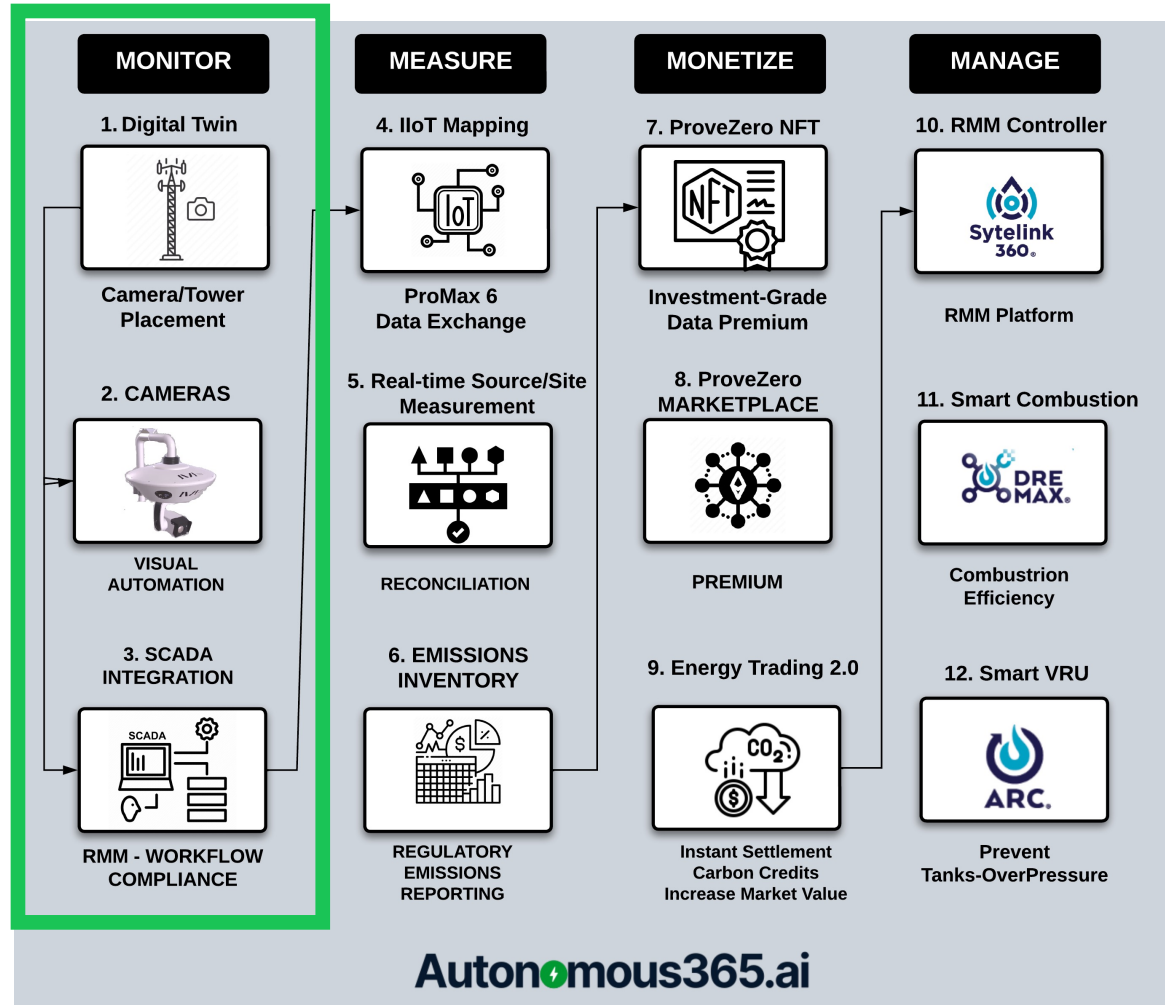
CleanConnect.ai DNA to build “Minerva”- AI autonomous operator

1. Automate as much as possible so our customers can get their life back
2. Focus on remote monitoring & management (RMM), so we can reduce call-outs (i.e., 682,000 LDAR in CO alone)
3. Engineering-first principals. Unpack & automate regulations afterwards.
4. Give Minerva a sensor-fusion platform so she can perceive the physical world instantly in all weather conditions
5. Give Minerva fast “brain” so she can process hundreds of data points in seconds



Featuring M⁴: Our Repeatable Process

- **MONITOR** – Automate compliance & operations using visual automation
- **MEASURE** – Automate OGMP, Subpart W, and MMRV reporting
- **MONETIZE** – Automate digital energy that can be traded for a premium
- **MANAGE** – Autonomous management of combustion & VRU's w/RMM platform



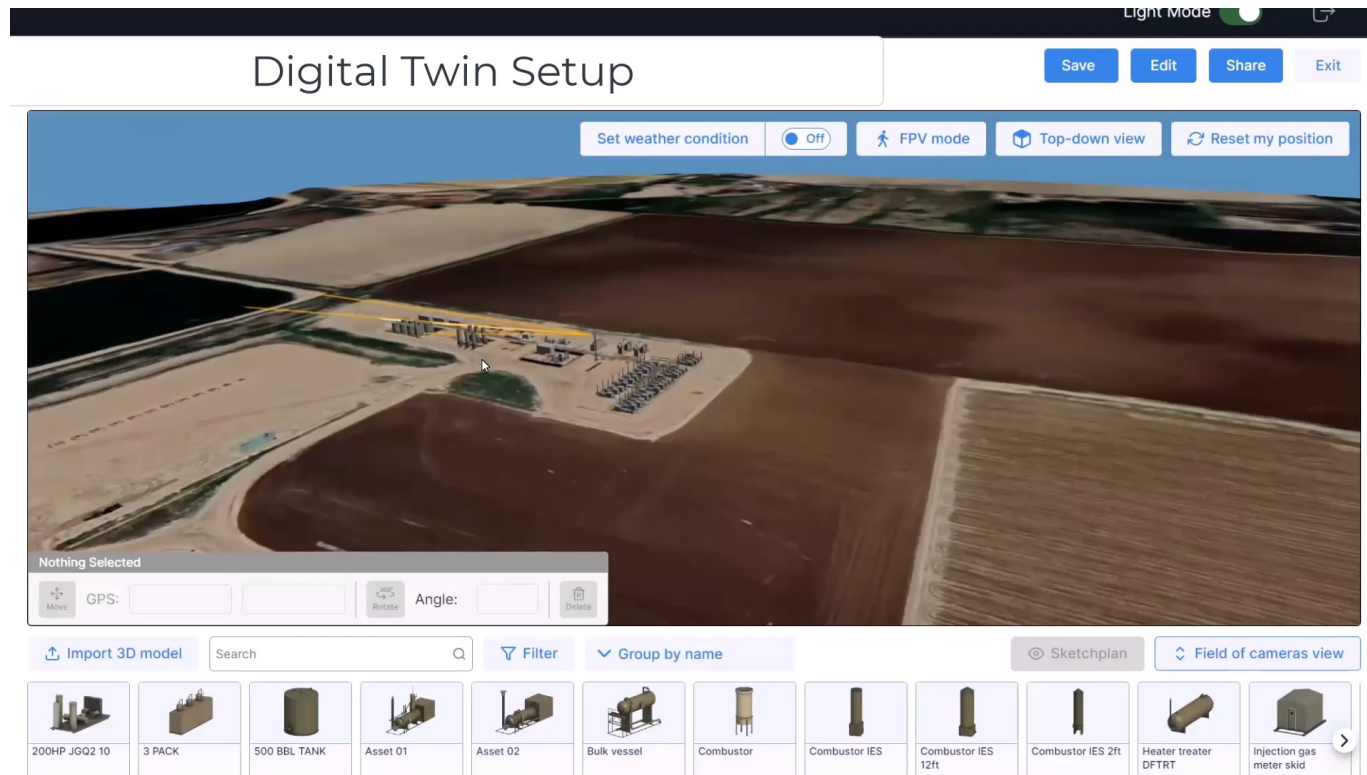
1. Digital Twin



Camera/Tower Placement

- Digital Twin system allows us to find the proper camera tower location
- Configure the camera tour stops
- Allows operators to virtually walk the site
- Allows us to do component-level detection & diagnosis
- Allows us to associate IIoT device tag & ProMax model to digital twin
- **DEMO: 30-minute setup**

Autonomous365.ai Digital Twin



VISUAL
AUTOMATION

Minerva Sensor-Fusion™ Platform

Camera Features

- VOC or Methane-only OGI
- 360-degree optical / IR cameras
- Sound array
- Weather-proof casing
- Built-in Gimbal
- 360-degree pan-tilt
- Up to 4 Nvidia AGX
- Comms package



AI Workflow

- Gas leak detection
- Gas leak quantification
- Liquid leak detection
- Fire & smoke detection
- Autonomous gate guard
- Tank-level monitoring
- PPE Detection
- Compressor monitoring



VISUAL
AUTOMATION

2. Install Minerva camera package – fine-tune tour stops

You can configure the tour stop location
Set pan & tilt



- Locations
- Nodes
- Devices
- AI Manager
- Gas Leak Events
- System Settings
- Webgl Dashboard

Service Annotations

GAS LEAK LIQUID LEAK HARD HAT FIRE SMOKE

Selected zone: N/A Selected service: N/A

Annotations List

Name	Polygon	Annotation Type
No data to display		

0-0 of 0

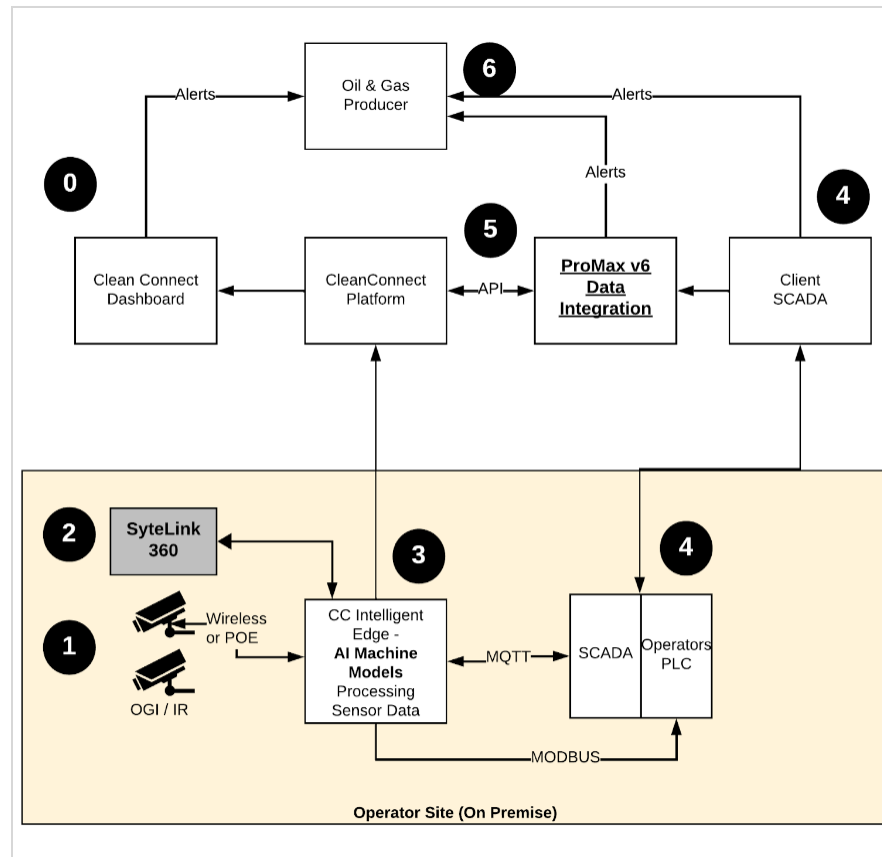
On this page you can set up annotations for a selected service for a specific zone. You can open up a dialog to configure your zones as well as set up a pan tilt API with the provided buttons.

[CONFIGURE ZONES](#)
[SET PANTILT API IP](#)



System Architecture

- OGI cameras send raw data to edge
- Optional: SyteLink360 sends data to edge
- Edge device processes
- Integrated with SCADA via MQTT / Modbus
- Data pushed/pulls from SCADA to Promax 6, then to Clean Connect platform
- Alerts sent to O&G producer



CleanConnect.ai's Autonomous LDAR Is Government-Approved Source-Level Monitoring



CleanConnect.ai autonomous LDAR was approved by Colorado as an alternative approved instrument monitoring method or **Alt-AIMM**. To complete CDPHE's Alt-AIMM requirements, CleanConnect.ai achieved six key milestones in the application, including:



Source-level Detection

Demonstrate visual source-level leak detection of emissions, including the ability to distinguish between fugitive and permitted emissions.



Alt Work Practice

Provide an automated LDAR work practice that demonstrates how we detect, enable operators to diagnose and fix any problem found. Diagnosing and fixing leaks remotely is acceptable & encouraged.



Blind Testing

Demonstrate detection performance with blind testing at various distances and leak sizes on a production facility. 2kg/hour at 100m.



Operator Endorsement

Colorado operators provided letters of support for the Alt-AIMM application and participated in actual production and field data collection that was included in the application.



LDAR Equivalency

Prove emissions reduction equivalency against current CO (Regulation 7) regulatory **monthly** OGI LDAR requirements.



EPA Region 8 Approval

The CleanConnect.ai system is currently engaged with the EPA Region 8 for approval. EPA is adopting a very similar process to Colorado's Alt-AIMM process.

CleanConnect.ai

Seeing is Believing



CDPHE Alt- AIMM Approval Letter

Issued on: August 16, 2023

David Conley
Clean Connect AI, Inc.
7352 Greenridge Road, Unit A9
Windsor, CO 80550

RE: Approval of Request for Clean Connect Monitoring System and Work Practices to be an Alternative Approved Instrument Monitoring Method for statewide Colorado Air Quality Control Commission (AQCC) Regulation No. 7, Part B, Section II STEM and LDAR Requirements

Dear David Conley:

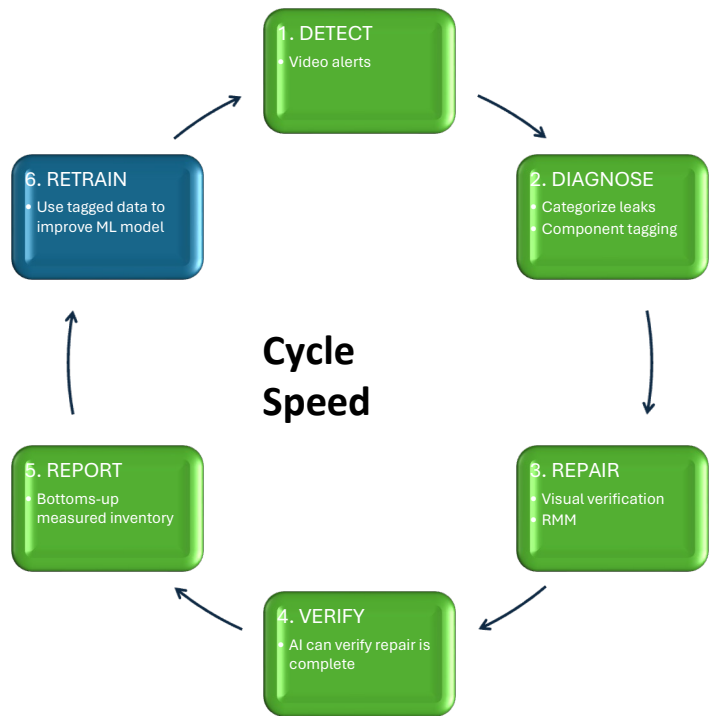
The Air Pollution Control Division (division) reviewed Clean Connect AI, Inc.'s application dated February 28, 2022, applying for approval of the Clean Connect Monitoring System and Work Practices (Clean Connect) as a proposed Alternative Approved Instrument Monitoring Method (Alternative AIMM) for purposes of AQCC Regulation No. 7 Storage Tank Emission Management (STEM) monitoring and Leak Detection and Repair (LDAR) requirements. That application, along with information provided to the division as described in the supplemental information and division summary, is sufficient for the division to issue an approval letter for Clean Connect as an Alternative AIMM under the Non-Quantitative Classification. Please review AQCC Regulation No. 7, Part B, Section II.E. for the requirements for terms of use under the Non-Quantitative Classification.

This division approval of Clean Connect as an Alternative AIMM for operators of facilities subject to AQCC Regulation No. 7 STEM monitoring and LDAR requirements is granted for use to comply *only* with statewide requirements of Regulation No. 7, Part B, Sections II.C.2, II.E, and III.F, *including AVO inspections* required by Section II.E.4. An operator using Clean Connect at one or more facilities within the 8-hour ozone control area or northern Weld County that are subject to Regulation No. 7, Part B, Section I.L.1.-7. must separately comply with *all* requirements of Part B, Section I.L.1-7 as noted in #3 below. The use of Clean Connect is approved provided the following additional conditions are met:

- The first government-approved continuous OGI-AI autonomous LDAR solution:
- Using CleanConnect.ai replaces:
 - Regulatory monthly **LDAR**
 - Regulatory **AVO** inspections
 - Regulatory **tank** emission monitoring
- Eliminates 92% of the regulatory scheduled call-outs

Alt-AIMM Approved Autonomous Operator Workflow

Alt-AIMM Approved Workflow



AI-Assisted Workflow Explained

1. **DETECT** is done using our AI computer vision – operator gets video alerts
2. **DIAGNOSE** allows operator to categorize leak at the component-level
3. **REPAIR** – operator can use diagnosis to repair remotely if possible
4. **VERIFY** repair is complete using AI
5. **REPORT** bottom-up measured inventory
6. **RETRAIN** – ML detection/diagnose model is continually improving

Sensory ☐



Recent activities (2 new alerts)

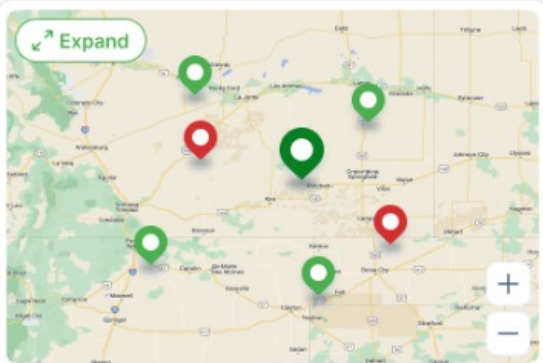
All time

All locations ☐

Nº	ALERT	DEVICE	LOCATION
1	Tank Level 9:30 AM 05/27/2023	Observer	Miami
2	Fire/Smoke 9:30 AM 05/27/2023	Camera 360	Los Angeles
3	Gas Leak 9:30 AM 05/27/2023	Tower 23525	New York
4	Hard Hat 9:30 AM 05/27/2023	Camera 12345	San Francisco
5	Gate Guard 9:30 AM 05/27/2023	Observer	Miami
6	Liquid Leak 9:30 AM 05/27/2023	Digital Watchdog Multi	New Orleans
7	Gas Leak 9:30 AM 05/27/2023	Observer	New York
8	Gas Leak 9:30 AM 05/27/2023	Tower 23525	Los Angeles
9	Gas Leak 9:30 AM 05/27/2023	Camera 360	Los Angeles
10	Hard Hat	Camera 360	New York

Rows per page: 10 ☐

1-5 of 13 ☐



24 LOCATIONS ☐

Gas Leak DEVICE 1
LEAKING DETECTED: Field overview
24 HOURS EVENTS: 3

Fire/Smoke DEVICE 3
FIRE/SMOKE DETECTED: Fire machine
24 HOURS EVENTS: 3

Hard Hat DEVICE 3
24 HOURS EVENTS: 0

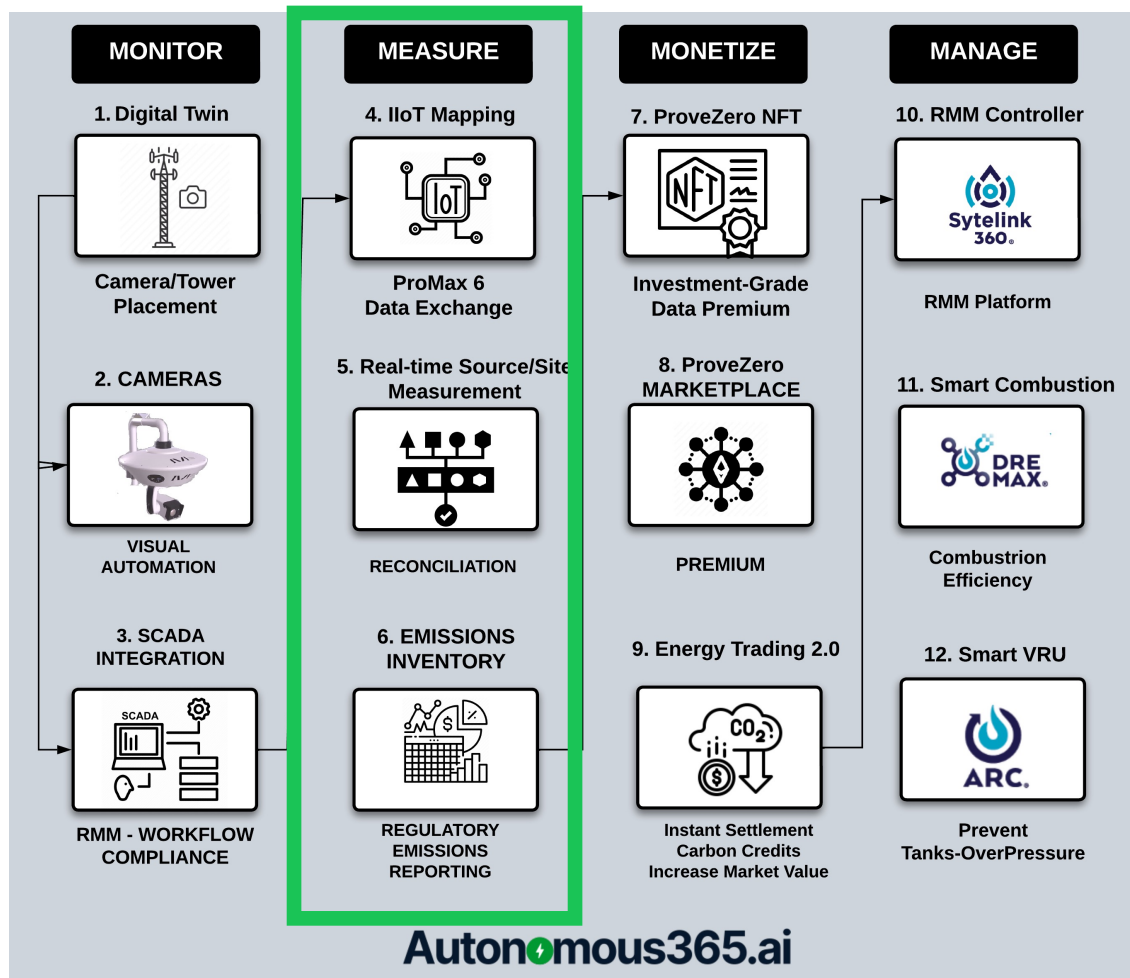
Gate Guard DEVICE 6
24 HOURS EVENTS: 6

Tank Level DEVICE 6
24 HOURS EVENTS: 6

Autonomous365

MEASURE Process

- **MONITOR** – Automate compliance & operations using visual automation
- **MEASURE** – Automate OGMP, Subpart W, and MMRV reporting
- **MONETIZE** – Automate digital energy that can be traded for a premium
- **MANAGE** – Autonomous management of combustion & VRU's





ProMax 6
Data Exchange

Why ProMax 6.0 Data Exchange?

PureWest Reasons

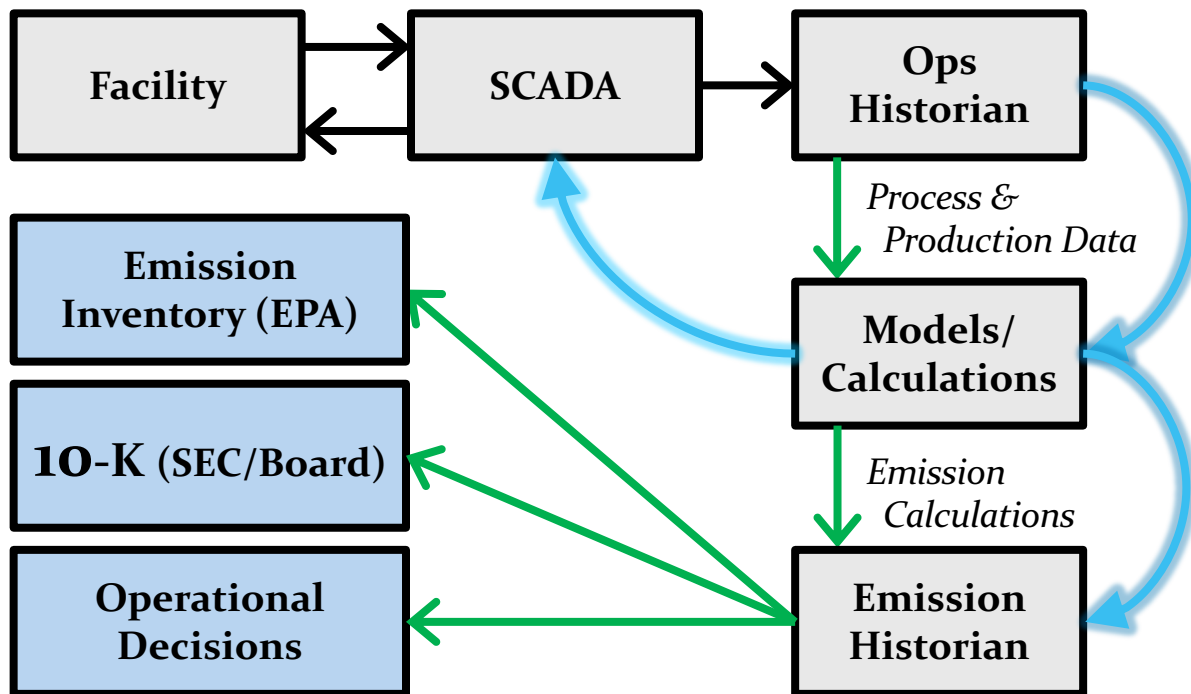
- Regulatory acceptance
- Industry standard
- Instant credibility
- Defensible
- It helps verify measurements

CleanConnect.ai Reasons

- Standard process mapping tool for upstream
- Comprehensive
- Make the ProMax model live
- We can use it for site-level reconciliation
- It helps us create a continuous feedback loop to improve our AI machine models

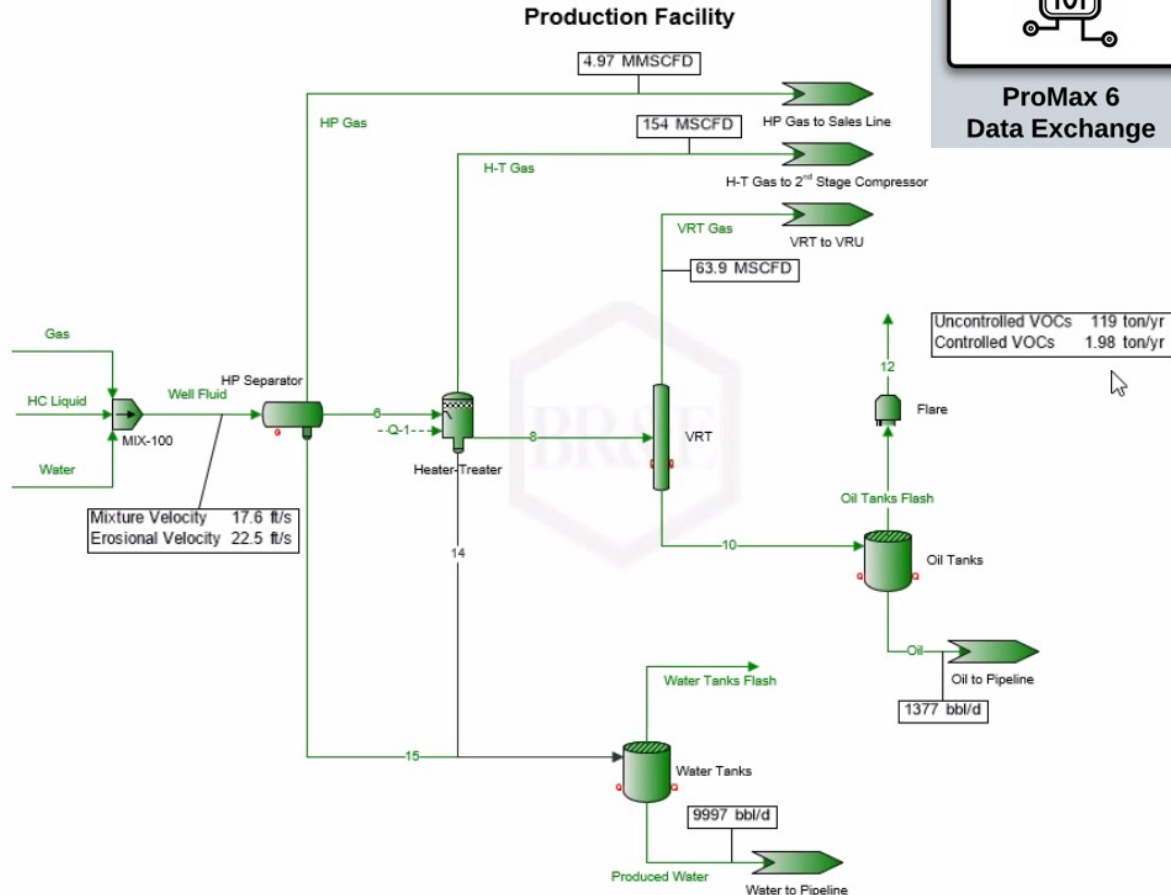


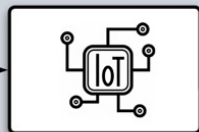
Automated Emissions Tracking with ProMax 6.0 Data Exchange?



IIoT Mapping to ProMax 6.0 Data Exchange

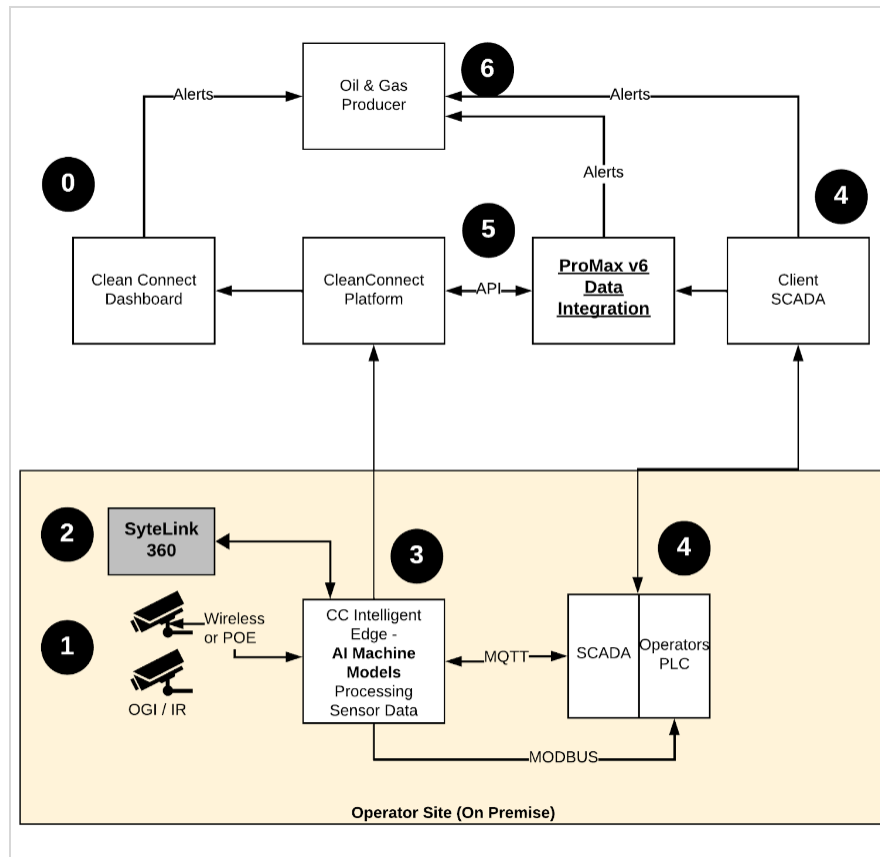
- We map IIoT devices/meters into ProMax
- We run the live model to get a real-time mass balance
- Better data = higher “fidelity” score





System Architecture

- OGI cameras send raw data to edge
- Optional: SyteLink360 sends data to edge
- Edge device processes
- Integrated with SCADA via MQTT / Modbus
- Data pushed/pulls from SCADA to Promax 6, then to Clean Connect platform
- Alerts sent to O&G producer



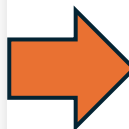
The Evolution of Emission Reporting

EPA -> OGMP 2.0 -> MMRV

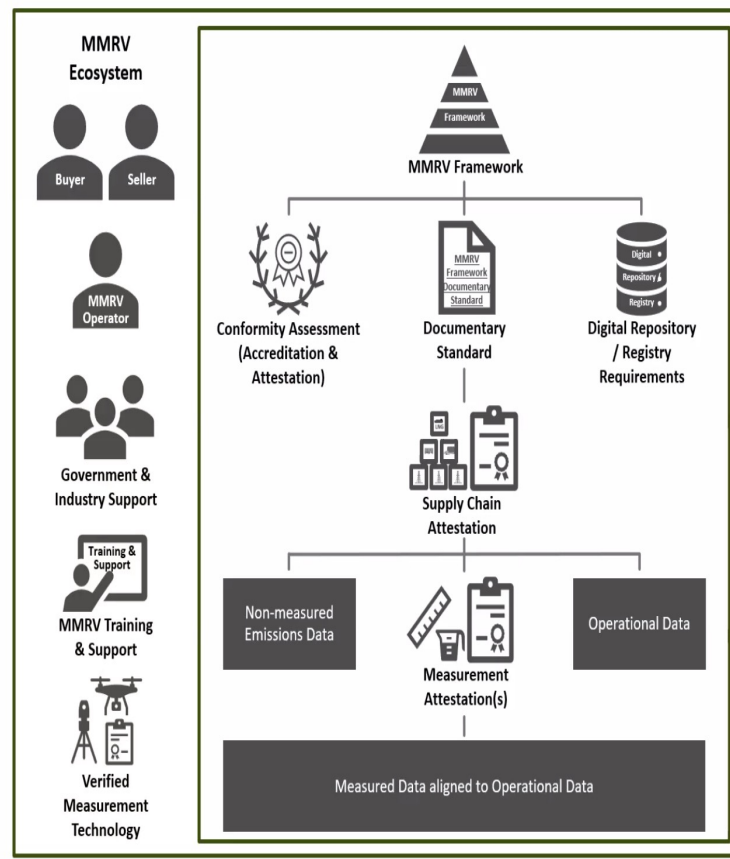
- 1** Venture/Asset Reporting
 - Single, consolidated emissions number
 - Only applicable where company has very limited information
- 2** Emissions Category
 - Emissions based on Methane Emission Category (IOGP and [Marcoz](#))
 - Estimates based on generic emissions factors
- 3** Generic Emission Source Level
 - Emissions allocated to detailed source type
 - Based on generic emissions factors
- 4** Specific Emission Source Level
 - Emissions reported by detailed source type using specific emissions and activity factors
 - Based on **direct measurement** or other methodologies
- 5** Source (Level 4) + Site Level Measurement Reconciliation
 - Level 5 reconciles the source-level estimates of Level 4 with independent site-level measurements
 - Based on **direct measurement** methodologies

Current EPA Subpart W

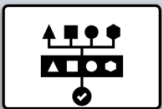
NOTE: Once an operator signs up, they have 3 years to achieve Level 5 and keep their gold status



Measurement, Monitoring, Reporting & Verification (MMRV)



18-country working group (e.g. US, EU, Canada, etc.)



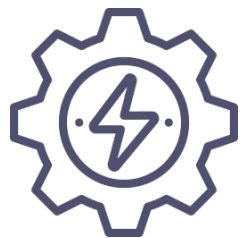
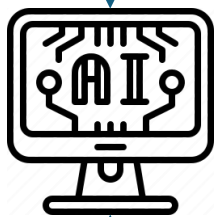
RECONCILIATION

We convert raw image data into actionable insights and transparent proofs.

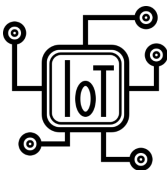


Computer Vision

Source-level gas detection (fugitive + non-fugitive)



Energy Producer



IIoT Telemetry

Mass Balance / Top-Down

ProMax



- Temperature
- Pressure
- Throughput

Step 6: Real-time source & site-level reconciled emissions inventory

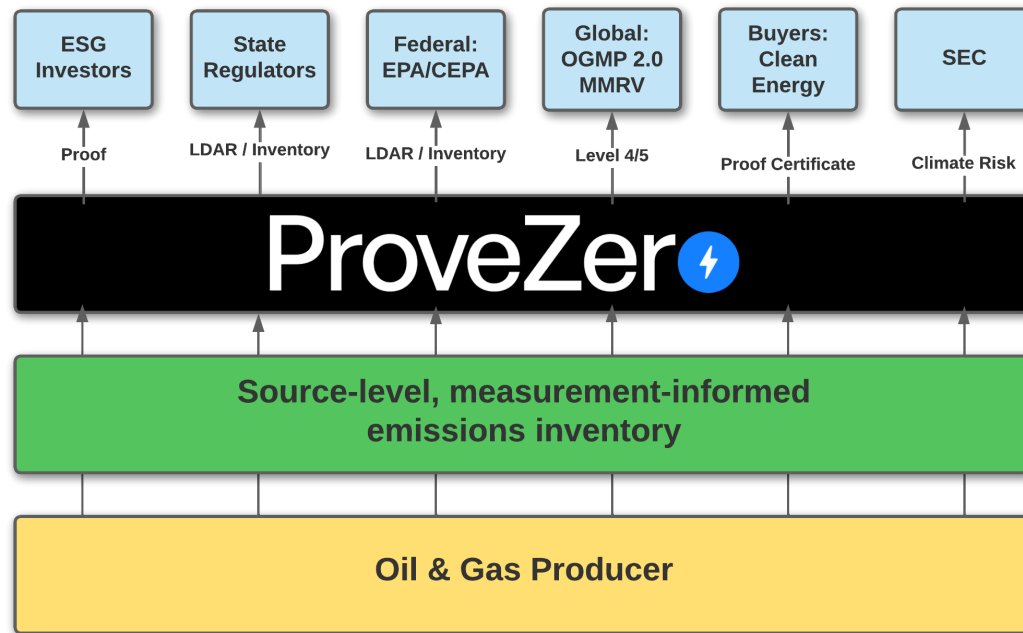
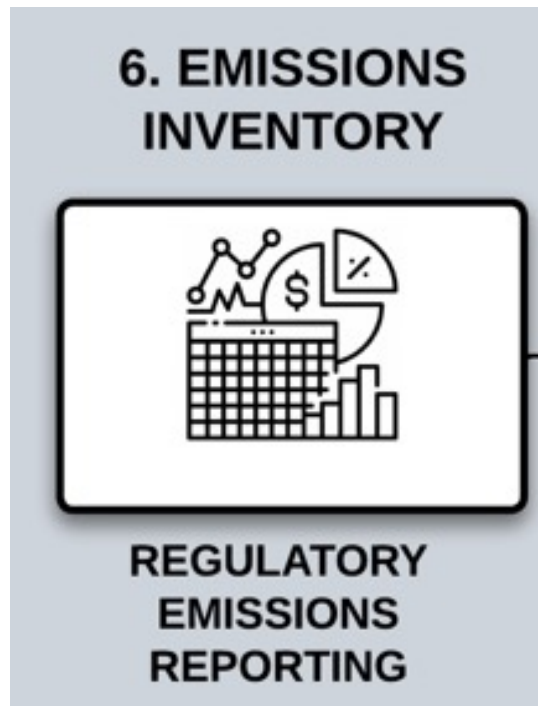
Attribute Type	Example
Provenance	Site, Date, Time, Well, etc.
Fugitive	Leak source, duration, size
Meter	Produced gas, fuel gas, flash gas, buyback gas, gas lift, sales gas
Equipment Group	Pumps, controllers, tanks,
IoT device	Pressure, temp, throughput
Weather	Temp, wind, humidity,
ProMax	Mass balance loss over duration Gas composition

Database

Approved for:
Oil and Natural Gas Methane Intensity Verification Protocol

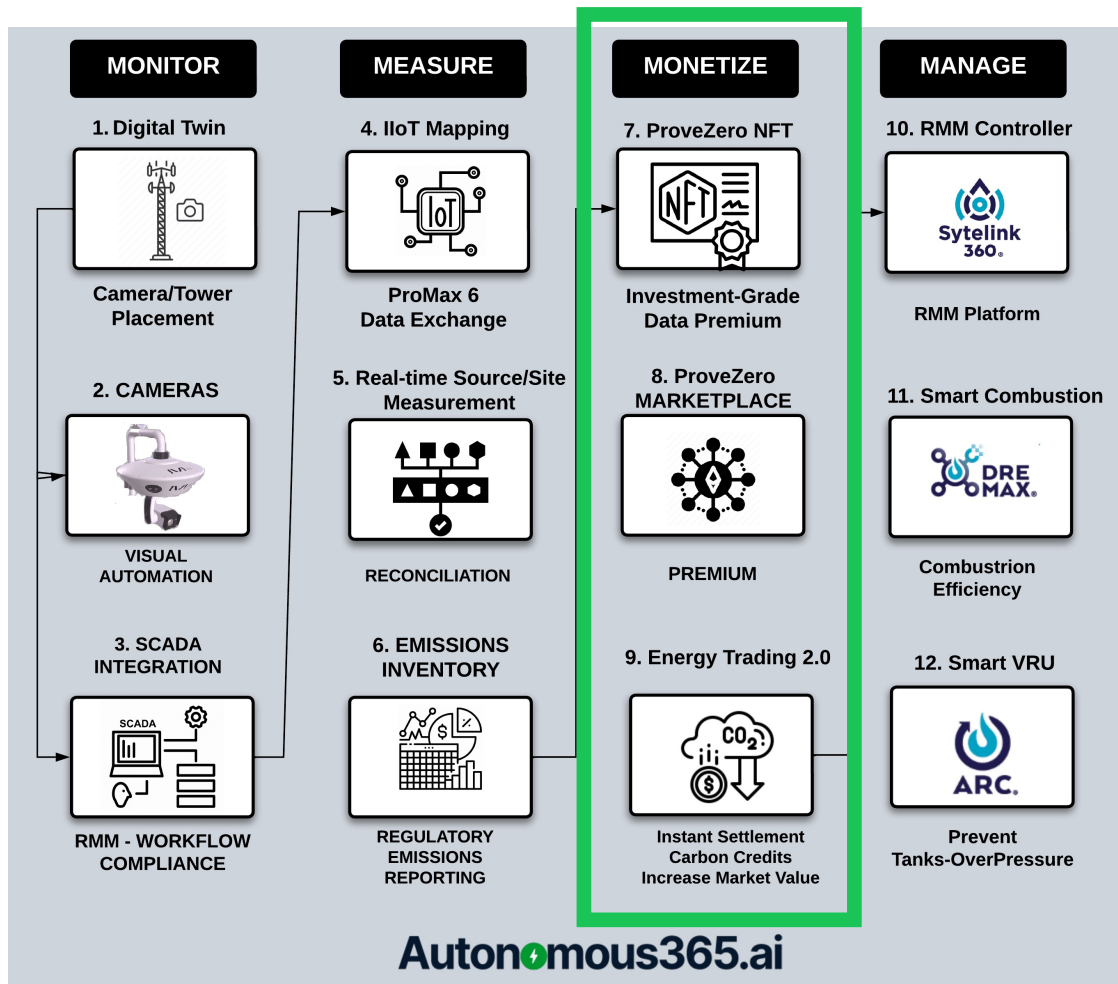


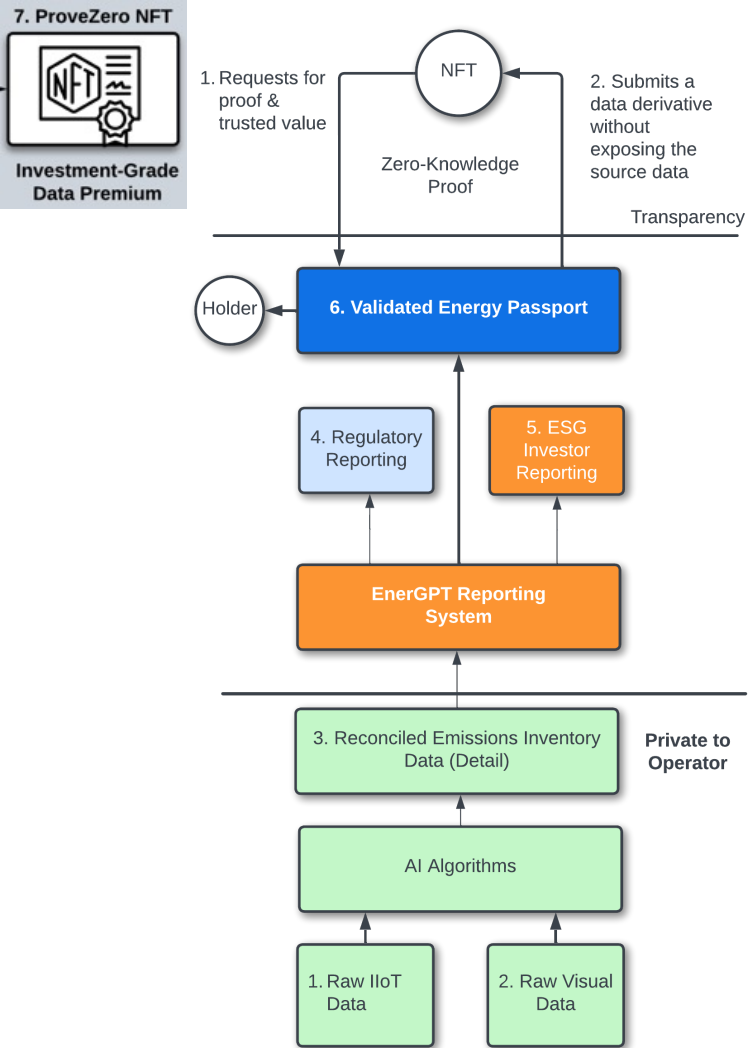
Empirical Source / Site Level, Reconciled, Emissions Inventory



MONETIZE PROCESS

- **MONITOR** – Automate compliance & operations using visual automation
- **MEASURE** – Automate OGMP, Subpart W, and MMRV reporting
- **MONETIZE** – Automate digital energy that can be traded for a premium
- **MANAGE** – Autonomous management of combustion & VRU's





Data Layers

1. Raw IoT telemetry
2. Raw OGI footage com
3. AI-enhanced source-level measurement-informed inventory
4. Summarized data for regulators
 1. OGMP 2.0
 2. Subpart W
 3. MMRV
5. Summarized data for financial stakeholders
 1. Ex: SEC
 2. Others: Insurance, investors
6. ProveZero Energy Passport

7. ProveZero NFT



Investment-Grade
Data Premium

- Day's production data & reconciled emissions data is written to NFT on ETH blockchain
- Stored in operator's digital wallet

ProveZero

My NFT's

Marketplace



Measured and estimated properties

Fuel Gas, MSCF	225.6311
Gas Lift, MSCF	N/A
Version	v0.1
Flare Gas, MSCF	50.6613
Flash Gas, MSCF	N/A
Sales Gas, MSCF	16199.3271
Buyback Gas, MSCF	N/A
CO2 Emitted, MSCF	240.9081
N2 Produced, MSCF	29.0059
NoX Emitted, MSCF	0.007
Sold Oil, barrels	N/A
CO2 Produced, MSCF	8.0096
Produced Gas, MSCF	16248.1815
CC Fidelity Rate, %	0.7

Camera Model	Methane Only
Production End	2024-02-25
Gas Composition	TRUE
Oil Composition	TRUE
Producer Name	warbonnet-ogi
WEC Threshold, mtCH4	0.6221
OGI-Detection	N/A
OGI-Measurement	N/A
Percent Difference, %	1.3203
Produced Oil, barrels	N/A
Production Start	2024-02-25
Methane Density, kg/scf	0.0192
Visual Verification	TRUE
CO2e Intensity, mtonne/kBOE	6.6848

Meter Proving Schedule	TRUE
Methane Emission Rate, MSCF	0
Methane Emission Intensity, %	0.0713
OGI-Inspection-Frequency, MCF	72
Sales Gas CH4 Concentration, %	94.7423
Expected Emission, MSCF and Tonne	10.9808
Produced Gas CH4 Concentration, %	94.5721
Gas Composition Report Date	03-12-20
Oil Composition Report Date	07-17-18
Sum Methane Emitted, MSCF and Tonne	10.9808



PREMIUM

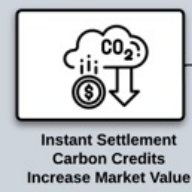
ProveZero Marketplace

- Sellers can list NFT's for sale (emissions claims)
- Buyer's can buy with fiat currency and transfer ownership of NFT's to their wallet
- Buyer's can keep, resell, retire NFT's

ProveZero [My NFT's](#) [Marketplace](#)

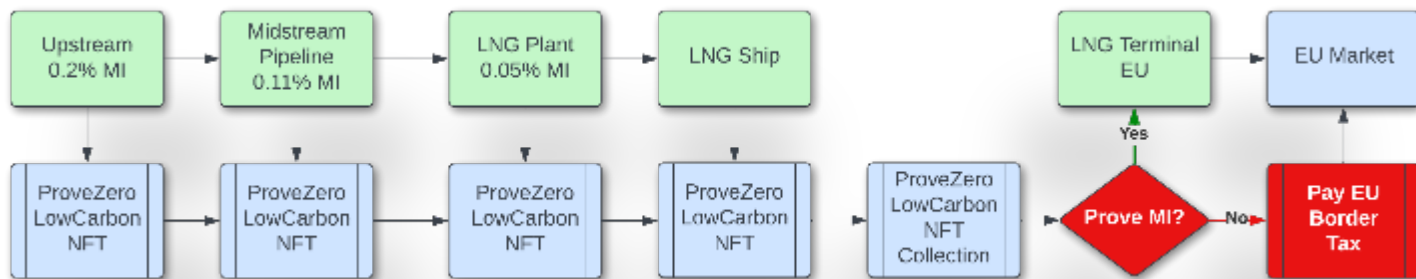
[All](#) [Listed](#) [Not listed](#) [Minted](#) [Purchased](#)

PW-1711565595617 ⓘ 70 Quantity 17112 MMBTU Emission rate 0.00e+0 MCF Methane intensity 713e-2% Minting date Feb 24, 2024 --/mmbtu	PW-1711565632330 ⓘ 70 Quantity 16474 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.40e-2% Minting date Feb 23, 2024 --/mmbtu	PW-1711566159300 ⓘ 70 Quantity 17112 MMBTU Emission rate 0.00e+0 MCF Methane intensity 713e-2% Minting date Feb 24, 2024 --/mmbtu	PW-1711566184493 ⓘ 70 Quantity 16814 MMBTU Emission rate 7.88e-5 MCF Methane intensity 7.26e-2% Minting date Feb 26, 2024 --/mmbtu
PW-1711565874334 ⓘ 70 Quantity 17122 MMBTU Emission rate 0.00e+0 MCF Methane intensity 710e-2% Minting date Feb 10, 2024 --/mmbtu	PW-1711565883493 ⓘ 70 Quantity 16956 MMBTU Emission rate 0.00e+0 MCF Methane intensity 713e-2% Minting date Feb 11, 2024 --/mmbtu	PW-1711566210786 ⓘ 70 Quantity 16821 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.17e-2% Minting date Feb 28, 2024 --/mmbtu	PW-1711565896700 ⓘ 70 Quantity 16910 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.19e-2% Minting date Feb 12, 2024 --/mmbtu
PW-1711566220059 ⓘ 70 Quantity 14920 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.99e-2% Minting date Feb 29, 2024 --/mmbtu	PW-1711565981144 ⓘ 70 Quantity 16777 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.25e-2% Minting date Feb 17, 2024 --/mmbtu	PW-1711566233089 ⓘ 70 Quantity 16451 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.29e-2% Minting date Mar 01, 2024 --/mmbtu	PW-1711565994143 ⓘ 70 Quantity 16718 MMBTU Emission rate 0.00e+0 MCF Methane intensity 7.32e-2% Minting date Feb 19, 2024 --/mmbtu



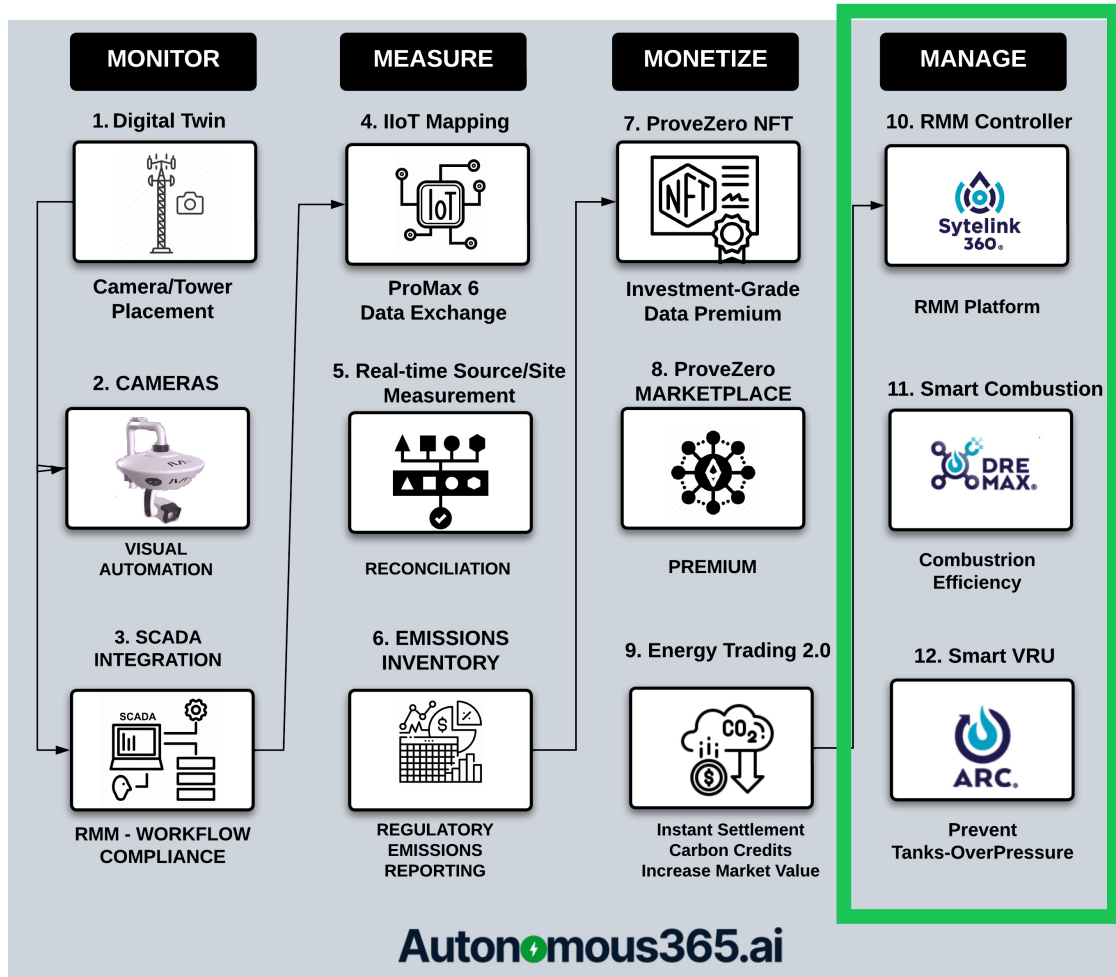
MMRV will impact the entire LNG supply chain

MMRV could be required for each step in the supply chain



MANAGE

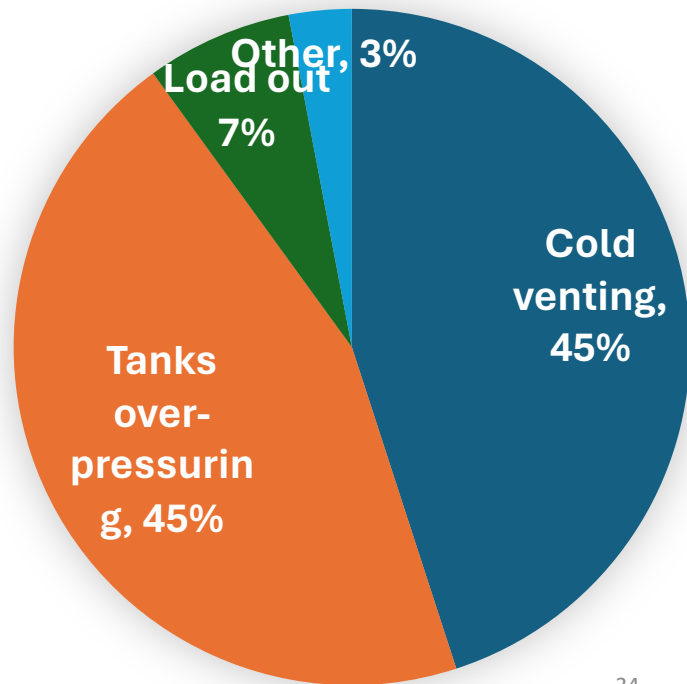
- **MONITOR** – Automate compliance & operations using visual automation
- **MEASURE** – Automate OGMP, Subpart W, and MMRV reporting
- **MONETIZE** – Automate digital energy that can be traded for a premium
- **MANAGE** – Autonomous management of combustion & VRU's



After analyzing over a million OGI+AI leak videos..

What type of emissions did we find, and can they be repaired remotely?

Problem	Cause	Fix
Cold venting	- Pilot light is out – sensor is incorrect. - Over-aeration from air blower – unburned methane escapes through flame	- Remotely reboot pilot light – reset sensor. - Remotely adjust air blower speed
Tanks over pressuring	PRV (pressure relief valve) opens, tanks can't handle surge pressure	AI investigating with tank-level monitoring & IoT monitoring models
Loadout	Pumper truck operator error	Show 3 rd party the video proof
Other	Blowdowns, compressor leaks, etc.	Fix remotely?



10. RMM Controller



RMM Platform

11. Smart Combustion



Combustion Efficiency

12. Smart VRU



Prevent Tanks-OverPressure



CleanConnect.ai
Visual Automation



Autonomous365.ai is a ***single platform*** that meets the needs of HSE, Ops, and Sustainability



Automated Regulatory Compliance

- Subpart W Reporting
- Autonomous LDAR



Autonomous Operator

- Gas & liquid leak detection
- Autonomous Gate Guard
- Fire/smoke detection
- Tank-level monitoring
- AI – RMM (Manage)



MMRV

- Repeatable
- Scalable
- Available
- Defensible
- Tradeable



Early Adopter Program

-
1. Schedule an appointment with:
 1. Mark Smith – mark@cleanconnect.ai
 2. David Conley – David@cleanconnect.ai
 2. We will send you our ProveZero whitepaper that details our entire process
 3. We will discuss your situation and see if you're a fit for the program

Q & A

Type your questions in the Q&A box

