CleanConnect.ai AI Solutions For Energy

Downstream · Refining · VOC Compliance

Closing the Accountability Gap in Barge Loading Operations

How CleanConnect.ai's Minerva Pro and Visual AI platform give refiners verifiable, source-level evidence of VOC emissions — 24/7 — without extra boots on the ground.

SECTOR	KEY COMPOUNDS	PRODUCTS USED	OUTCOME
Downstream · Refining	Benzene · 1,3-Butadiene	Minerva Pro · Visual AI	Verifiable Attribution

THE CHALLENGE

Refineries face mounting regulatory pressure to monitor and report VOC emissions — particularly benzene and 1,3-butadiene — under EPA fenceline programs. When elevated readings appear, the critical question is: who is responsible? Existing programs often detect spikes but cannot prove whether emissions originate from plant infrastructure or third-party barge operations.

■ WITHOUT CLEANCONNECT.AI

- Fenceline monitors detect VOC spikes but can't identify the source
- Refinery ops and barge loading indistinguishable without visual corroboration
- EHS staff make frequent, time-consuming trips to remote barge docks
- No timely feedback — events may go unmitigated for hours
- Difficult to hold external barge operators contractually accountable

✓ WITH CLEANCONNECT.AI

- Gas detections instantly correlated with synchronized video evidence
- Source-level attribution is clear and defensible with regulators
- Remote monitoring eliminates routine site visits
- Near real-time alerts drive rapid intervention before limits exceeded
- Visual proof supports contract enforcement with third-party operators

THE SOLUTION

CleanConnect.ai deploys a purpose-built remote monitoring system combining Minerva Pro VOC gas detection hardware with its Visual AI software. Positioned near the barge loading area, the system creates an always-on, evidence-generating sentinel that correlates gas readings with real-time visual data.

1. **Continuous Gas Detection**
   Minerva Pro quantifies VOC emission rates in real time at the barge loading zone, distinguishing emissions from plant infrastructure versus third-party operations.
2. **AI-Synchronized Visual Evidence**
   The Visual AI model correlates every gas detection event with simultaneous OGI video footage — flagging specific release points or contractor actions.
3. **Near Real-Time Alerting**
   EHS and Operations receive immediate alerts the moment a threshold is breached, enabling rapid intervention and minimizing exceedance duration.
4. **Automated Compliance Reporting**
   All detection events — timestamped, geo-tagged, and video-corroborated — are stored and exportable as PDF reports for regulatory submissions and audits.

RETURN ON INVESTMENT

24/7
Continuous monitoring — zero gaps regardless of shift or weather

↓ 80%
Reduction in routine EHS site visits to remote barge locations

100%
Video-corroborated evidence for every gas detection event

Regulatory Defensibility

Demonstrate to regulators that fenceline exceedances originate from barge operations — not the refinery — with verifiable evidence.

Third-Party Accountability

Video evidence gives refiners undeniable leverage when barge operators dispute responsibility for emissions events.

Staff Safety & Efficiency

Personnel monitor from the control room, reserving in-person visits only for confirmed incidents and higher-value work.

Rapid Incident Response

Near real-time alerts mean detection-to-mitigation is measured in minutes — keeping operations within compliance limits.

Ready to close your accountability gap?
See how CleanConnect's Visual AI can be deployed at your barge loading facility.

Book a Demo → cleanconnect.ai

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