

An aerial photograph of a natural gas drilling site. In the center, a tall drilling rig stands on a large, flat, light-colored area. Surrounding the rig are various pieces of equipment, including storage tanks, trailers, and smaller vehicles. To the left, there's a road and some greenery. In the background, a large, rectangular, blue-tinted area, possibly a water reservoir or a large storage tank, is visible. The overall scene is a typical industrial drilling operation.

Drones In The Natural Gas Industry: Technology and Regulatory Changes

11/17/2021

Agenda

- Sensors
 - Visual
 - Non Visual
- Aircraft
 - Available Today
 - Future Needs
- Obstacles to Drone Use
 - FAA
 - State and Local
 - Business
- Regulatory Changes
- Remaining Challenges



- Methane is visually detected at **3.3** microns on the electromagnetic spectrum
- Thermal Radiation is visually detected at 7.5 – 13.5 microns on the electromagnetic spectrum
- While both are in the IR range, a thermal sensor alone cannot visually detect methane.



Handheld OGI System



Airborne OGI System



Laser Detection



IR Mapping Camera

Aircraft

- What's Available



Microdrones



DJI Matrice Series



- What We Need
 - The ideal aircraft is one that is quickly deployable, with integrated sensors, controls, and flight planning software that enables single pilot operations



Obstacles To Drone Use

FAA Regulations

- BVLOS limitations prevent efficient collection of long corridors

State and Local Regulations

- Prior Permission Required
- Critical Infrastructure

Business Obstacles

- Can't beat the Cessna
- Efficient inspection free from constraints of repair crew schedules



From the *PIPES* Act of 2020:

(B) ADVANCED LEAK DETECTION TECHNOLOGIES AND PRACTICES DESCRIBED.—The advanced leak detection technologies and practices referred to in subparagraph (A)(i) include—

“(i) for new and existing gas distribution pipeline facilities, technologies and practices to detect pipeline leaks—

“(I)(aa) through continuous monitoring on or along the pipeline; and

“(bb) in the case of an existing facility, that do not impose any design or installation requirements on existing facilities that would be inapplicable under section 60104(b); or

“(II) through periodic surveys with handheld equipment, equipment mounted on mobile platforms, or other means using commercially available technology;

But, they may not relax the timelines for repair and remediation.....today

“(I) STANDARDS.—If a report under subsection (k) indicates that it is practicable to establish technically, operationally, and economically feasible standards for the use of a safety-enhancing technology and any corresponding operational practices tested by the testing program described in the report, the Secretary, as soon as practicable after submission of the report, may promulgate regulations consistent with chapter 5 of title 5 (commonly known as the ‘Administrative Procedures Act’) that—

“(1) allow operators of interstate gas or hazardous liquid pipeline facilities to use the relevant technology or practice to the extent practicable; and

“(2) establish technically, operationally, and economically feasible standards for the capability and deployment of the technology or practice.”.

Remaining Challenges

- Return On Investment and Scalability
 - \$30k-\$80k per system
- Full System Integration
- Regulatory timeline from detection to repair

Possible Solution:

- Use of Manned Aircraft with IR Mapping equipment
- Separate Collection from Detection to coordinate with repair crews



Questions Comments and Contact Info

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