

OIL & GAS PROJECT OPPORTUNITY

Detection & Monitoring of Fugitive Methane Emissions using Passive and Active Infrared Advanced Technologies

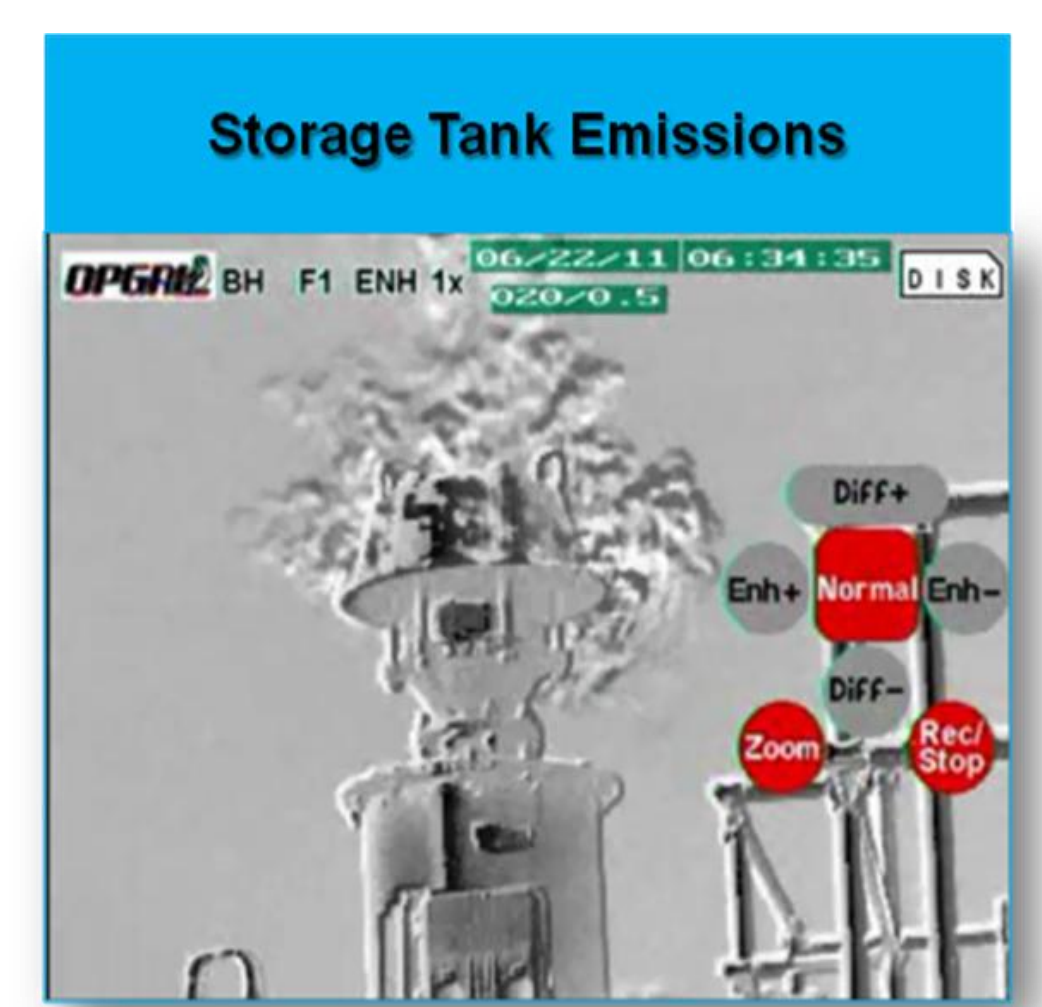
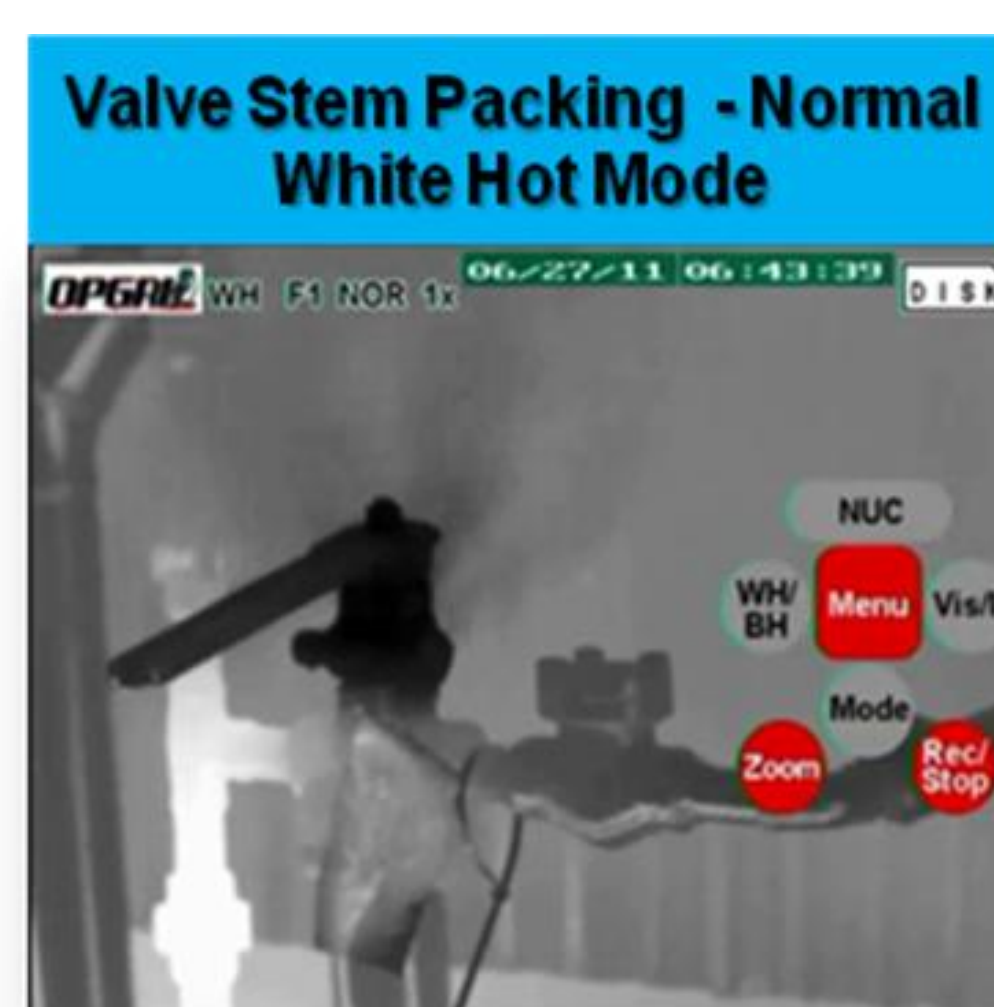
OVERVIEW OF OIL & GAS PROJECT : Heath Consultants Incorporated has been in the business of leak detection since 1933. As a manufacturing and supply company, Heath Consultants. has introduced to the market state-of-the-art advanced technologies, in the way of active and passive infrared gas leak detectors. These come as a result of considerable research and development and engineering coupled with a vast amount of service expertise in the leak detection field for the natural gas industry.

New procedures and advanced infrared technologies for monitoring and detecting fugitive methane emissions are fast becoming an industry best practice. The impact of this approach to the gas industry on fugitive methane emissions is resulting in a considerable improvement to safety, reduced lost and unaccounted for gas, profitability, and environmental stewardship from well head to burner tip.

ESTIMATED ANNUAL EMISSION REDUCTIONS: >25,000 Mcf/yr, 10,000 MTCO₂E/compressor station

PROJECT DETAILS

- ❖ Modified conventional leak screening protocol to include the Active Infrared Laser “Heath Remote Methane Leak Detector” in conjunction with the Passive Infrared Optical Gas Imaging “Opgal EyeCGas™” Camera.
- ❖ Training for leak screening on above and below ground piping (with the exception of elevated OELs) evolved into a combined effort whereas the technician employing the active laser (RMLD™) directed the technician screening with the passive infrared gas imaging camera (EyeCGas) whenever a positive leak indication was confirmed. This process contributed to speeding up the leak screening process and vastly improved performance in centering and pinpointing leaks.
- ❖ Focused on gathering and production, offshore, processing, transmission and LNG facilities in the natural gas industry.
- ❖ Identified primary methane emission sources as unit valves on blown down compressors, blow down valves on pressurized or running compressors, reciprocating rod packing seals on both pressurized and running compressors, wet seals on running centrifugal compressors and scrubber dump valves from liquid condensate storage tanks. These sources can typically be accurately screened with only the infrared EyeCGas Imaging Camera as they are designed to be open ended lines (for safety) which generally do not provide a reflective backdrop required for an active infrared methane laser.



DISCLAIMER: The information and predictions contained within this poster are based on the data provided by the site owners and operators. The Global Methane Initiative cannot take responsibility for the accuracy of this data.

PROPOSED TECHNOLOGIES

1) Opgal EyeCGas™ Optical Gas Imaging Camera. (Passive Infrared)

- ❖ Used to screen open ended lines (described above). In conjunction with the Active Infrared RMLD Laser; pinpoint small leaks associated with leaking pipe connectors (all types), weld and pipe fractures, valve packings and leaks from underground pipes venting to atmosphere.
- ❖ Certified for ATEX II 3G Ex nL IIC T6 – For Europe
Certified for Class I Division 2 hazardous environments, Groups A-D, T6 – North America
- ❖ A design formed by the demands of the gas industry.
- ❖ Specially designed for the applicative market of natural gas, oil, and petrochemical industries.
- ❖ Detector: Cooled High Sensitivity, 320x240 pixels, Spectral Range 3-5μm
- ❖ Detection of 29 confirmed gases within spectral range.
- ❖ Water and Dust Protection (IP 65)
- ❖ Push button recording with 8 hour (16 GB) memory.
- ❖ Rugged and durable by design to be used as a tool in the field.



2) Heath Consultants Incorporated - Remote Methane Leak Detector (RMLD™) (Active Infrared)

- ❖ Used to rapidly and accurately screen hundreds of pressurized natural gas pipe components per hour. Recommended as the prime screening tool for below ground leak inspection and above ground piping, including compressors.
- ❖ Detection Method: Tunable Diode Laser Absorption Spectroscopy (TDLAS)
- ❖ Measurement Range – 0 – 99,999 Parts Per Million – Metered.
- ❖ Sensitivity: 5 ppm-m at distance from 0 to 50 ft (15 m), 10 ppm-m or better at distance from 50 to 100 ft (15 to 30 m)
- ❖ Detection Distance: 100 ft (30 m) nominal. Actual distance may vary due to background type and conditions.
- ❖ Beam Size: Conical in shape with a 22" width at 100 ft (56 cm at 30 m)
- ❖ Intrinsically Safe, Class 1, Div 1 for Hazardous Environments.
- ❖ Detection Alarm Modes: Digital Methane Detection (DMD): Audible tone relative to concentration when detection threshold exceeded. Adjustable Alarm Level from 0 to 255 ppm-m. Pure Tone: Continuous audio tone relative to concentration.
- ❖ Battery Operating Life: 8 hours at 32° F without backlight on (internal battery). Internal Rechargeable Lithium Ion battery pack.



PROJECT CHALLENGES

Heath Consultants Incorporated, through continuous improvement and ongoing evaluation, will work with industry to refine training requirements with the goal of insuring repeatable results that can be realized with a successful leak detection and monitoring team. Challenges that have been observed range from the following:

- ❖ Identifying key people in the organization who will perform the leak monitoring.
- ❖ Insuring adequate training of selected personnel and proper skill set prerequisite to job selection.
- ❖ Determining the cost/benefit of owning the technology compared to outsourcing the service.
- ❖ Securing funding on short notice as this type of capital cost typically requires budgeting in advance.

ECONOMIC ANALYSIS/BENEFITS

Expected payback is typically less than a year or sooner depending on the number, age, and type of facilities and maintenance practices. It is not unusual for large operators to realize a payback from just one facility inspection which in terms of payback time could be less than one month.

TYPE(S) OF ASSISTANCE SOUGHT

Technical Assistance: Generally speaking, one approach that can prove helpful in determining when to purchase and how many teams to train up could come in the form of a pre-feasibility or measurement study by a third-party expert. Multiple service providers are available today to assist companies in the prioritization of leak data and the implantation of Directed Inspection and Maintenance (DI&M) Programs.

PROJECT FINANCES

Project capital costs of both infrared technologies together: US\$ >100,000

FOR MORE INFORMATION

Heath Consultants Incorporated

Milton W. Heath III
Senior Consultant
9030 Monroe Road
Houston, Texas 77061
USA
Phone: +1-713-844-1300
Fax: +1-713-844-1309
Milt.Heath3@HeathUS.com

Global Methane Initiative

Carey Bylin
U.S. Environmental Protection Agency
Natural Gas Star Program Manager
1200 Pennsylvania Ave., NW (6207J)
Washington DC, 20460
United States
+1-202-343-9669
Bylin.carey@epa.gov