

# **GIT**

**GAS IMAGING TECHNOLOGY, LLC**



# **Sherlock<sup>®</sup>**

**Remote Gas Leak**

**Imaging & Quantification**

**DOCK NORTE S.A.**

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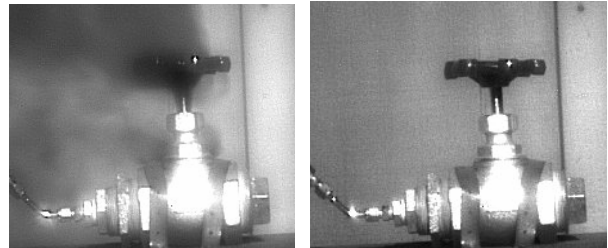


Sherlock is a small hand held; battery operated imaging spectrometer that has been designed for gas leak imaging, quantification and analysis. Sherlock has been field tested at numerous petrochemical, refining and processing plants where it has demonstrated that it has the sensitivity to see gas leaking at flow rates as low as 1 gram per hour. Applications for the Sherlock range from environmental monitoring, safety and risk mitigation to process control for all types of industries; oil, gas, chemical, power generation, mining, pulp & paper, just to name a few.

Sherlock is based on patented IMSS spectral imaging<sup>1</sup> technology that has been proven for several Department of Defense related applications. Now this technology is available to the commercial market and has been developed for several applications related to gas imaging, analysis and quantification.

Sherlock comes in various models with different infrared spectral sensitivity depending on the application.

**Sherlock VOC** – designed specifically for fugitive gas leak imaging of hydrocarbon species The Sherlock sees the invisible. The battery operated Sherlock can easily be carried by a technician around a plant facility looking for leaking gas. Sherlock can be used for leak detection and repair activities as well as risk mitigation and safety. Using Sherlock to locate large leaks before a source can ignite the volatile gas causing a catastrophe with potential injury or even fatality and undue damage to facilities, and equipment.



*Propane Leaking form a valve.*

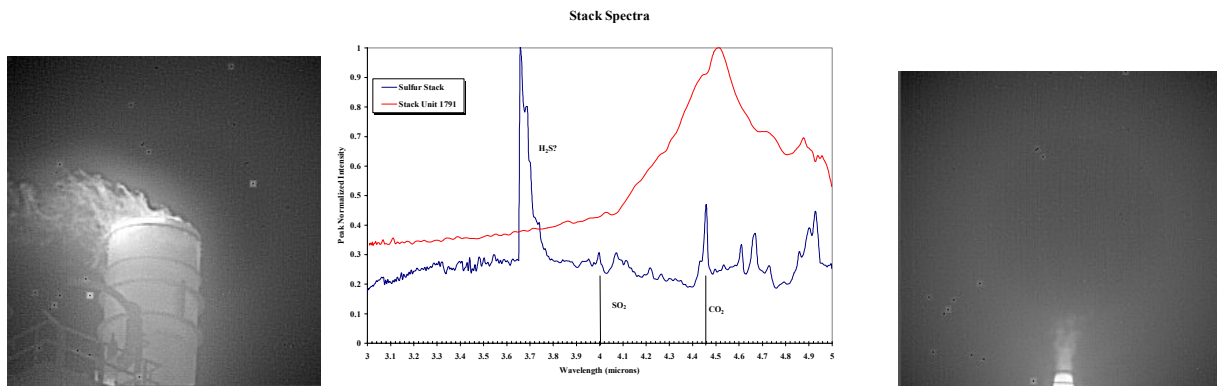
<sup>1</sup> U. S. Patent numbers: 5,479,258; 5,867,264; 6,680,778

**Sherlock SF6** - tuned to detect sulfur hexafluoride gas leaks. SF6 is a greenhouse gas that is used by the Power Industry. In addition to being a greenhouse gas SF6 is also an expensive gas and undetected leaks can cause considerable economic loss to a facility.



**Sherlock FE** – infrared imaging spectrometer designed for monitoring the efficiency of flares, stack emissions and the greenhouse gas CO<sub>2</sub> emission from vent and smoke stacks. Sherlock's ability to image and monitor emission from stacks is demonstrated the images below taken remotely of a stacks on the right and a flare on the left which are examples of a typical Sherlock Image and the resultant spectra. The enclosed flare as imaged on the left has a large CO<sub>2</sub> emission as indicted by the broad spike in the red spectra. The stack as imaged on the right is releasing what appears to be H<sub>2</sub>S (a deadly gas) into the atmosphere as indicated by the blue spectra. Sherlock can be used to monitor numerous stacks in a plant form a single remote location and thus save considerable cost in stack emission monitoring as well as flare analysis.

Sherlock can also be used for flare and stack efficiency analysis. In this manner it can be used for process control by feeding back the efficiency measurement from a remote location via Ethernet to the control room, where the process can be adjusted for maximum efficiency which can save added cost in the use of unnecessary fuel oil. In this manner it can be used for continuous emissions and efficiency analysis.



*Sherlock remotely monitoring stack emissions and flares in real time*

# Specifications

## Sherlock Mechanical Characteristics

Weight	12 pounds without battery 15 pounds with battery
Size	12(H) x 6(W) x 8(T) inches
Power	12 volt batter or AC

## Sherlock VOC Optical Characteristics

Spectral Range	tuned for hydrocarbon gases
F number	f/2.5 at 3 microns
Focal Length	75 mm at 3 microns
Instantaneous Field of View	0.4 mrad
Field of View	7.3° x 5.5°
Spatial Resolution	340 x 240 pixels
Minimum leak rate	1 gram/hr (propane @ 1.5 m)

## Sherlock FE Optical Characteristics

Spectral Range	3 to 5 microns
F number	f/2.5 at 3 microns
Focal Length	75 mm at 3 microns
Instantaneous Field of View	0.4 mrad
Field of View	7.3° x 5.5°
Spatial Resolution	340 x 240 pixels

## Sherlock SF6 Optical Characteristics

Spectral Range	10.6 microns
F number	f/2.38 at 8 microns
Focal Length	70 mm at 8 microns
Instantaneous Field of View	0.4 mrad
Field of View	7.3° x 5.5°
Spatial Resolution	340 x 240 pixels
Minimum leak rate	TBD

## Basic Sherlock Includes

1. All embedded software
2. User Interface – push button or windows GUI when connected to external computer

*Specification can change without notice*

## *Gases that can be detected with the Sherlock VOC*

*Methane  
Ethane  
Propane  
Butane  
Acetone  
1,3 Butadiene  
Ethylene  
Butene  
Propene  
Propylene  
Mixed Xylenes  
Pentene  
Isoprene  
Accetylene  
Formaldehyde  
Hexane  
Heptane  
Octane  
Benzene  
Toluene  
Ethyle-benzene  
Methylchloride  
MeOH  
MEK*

## *Gases that can be detected with the Sherlock FE*

*All of the above  
CO<sub>2</sub>  
CO  
Sulfur compounds  
And many others*

## *Gases that can be detected with the Sherlock SF6*

*SF6*