

Mundus Group Studies Potential for UAV Natural Gas Inspection in Light of Recent San Bruno, CA Gas Explosion and Fire

Mundus believes this is where its UAV technology will open doors in inner space over the next few years. PG&E flies airplanes to inspect gas lines, but not low or often enough.

Global progress in high-resolution remote sensing and image processing technology has made it possible to design natural gas pipeline monitoring systems with remote sensors and context-oriented image processing software. UAVs provide the appropriate platforms for a remote sensing-based inspection system. Methane sensors are light, cheap and readily available, UAV's could fly a pre-programmed GPS monitoring pattern and log Methane levels against a GPS coordinate.

San Bruno fire levels neighborhood - Gas Explosion

September 10, 2010|By Marisa Lagos, Kevin Fagan, Michael Cabanatuan and Justin Berton, Chronicle Staff Writers

'With a thunderous roar heard for miles, a natural gas line explosion ripped through a San Bruno neighborhood Thursday evening, sending up a geyser of fire that killed at least one person and injured more than 20 others, and igniting a blaze that destroyed 53 homes and damaged 120 more, authorities said.

The wind-whipped blaze leaped from structure to structure in the neighborhood near Skyline Boulevard and Sneath Lane, west of Interstate 280, raging unabated for almost an hour as emergency crews rushed in and residents streamed out.

The central ball of fire, fed by the Pacific Gas and Electric Co. gas line, raged past nightfall before abating. By then, houses on several blocks and thick stands of trees were engulfed in flames.



Photo Credit: Brant Ward

Fireman on Claremont Drive in San Bruno tried to fight a fire which had burned down the neighborhood. A blast believed to be caused by a natural gas explosion destroyed a San Bruno, Calif. neighborhood Thursday September 9, 2010'.

Full article: http://articles.sfgate.com/2010-09-10/news/23996646_1_gas-line-explosion-wind-whipped-blaze-smoke-inhalation

Mundus Group Positioned with Solutions

There is increasing legislation and regulatory pressures in the USA to improve the safety and integrity of pipelines carrying hydrocarbons. In the USA, there are 3,476,000 Km of pipelines carrying hydrocarbons.

The disaster that occurred was not an isolated accidental incident. This was a wake up call to the American people that our infrastructure is in dire need of maintenance and repair, including, and with most severe consequences, the natural gas lines that run through our nation's communities and neighborhoods. In California, where earth quakes wiggle and jerk hundreds of thousands of pipelines, Natural gas leaked out of a Pacific Gas & Electric (PG&E) pipeline in San Bruno, CA, exploding homes and killing an unknown number.

This was an all American neighborhood and could have been anywhere in the USA.

The buried Natural Gas infrastructure is beginning to age and UAV's are capable of flying low enough, quiet enough and able to follow GPS maps of the gas companies known gas lines. With the focus of creating a map of Natural Gas concentration, monitoring where rogue concentrations occurred would be paramount to any maintenance and trouble shooting activities that need to be implemented. Identifying any unacceptable levels of pathogens or target gas leaks will require a regular monitoring of the air quality and precise analysis of the air samples.

UAV Natural Gas Technology Applications also may include:

- Differential thermal imaging to detect leakage in underground pipelines using a 320 by 240 pixel microbolometer camera sensitive to wavelengths from 7.5 to 13 mm
- Hyperspectral imaging involving the use of three imagers to cover the wavelengths from 100 nm to 2,300 nm with 960 spectral slices, each slice 2.5 nm wide
- Cesium magnetometer such as the Scintrex CS-3SI. Four such instruments could in principle be used to derive a vector magnetic field measurement
- Gas sensing using a quantum cascade laser to detect minute amounts of ethane and other gases.

The above applications could in principle be managed by a Mundus UAV with a 22-lb payload capability