

Safeguarding industrial plants and protecting the environment are top priorities today.

A **toxic gas leak** can cause substantial damage. A recent case in California, where 1200 tons of methane was inadvertently released, led to the evacuation of 1800 homes. Faced with ever more stringent governmental regulations, industrial companies are implementing **gas detection solutions**.

To **detect** a gas leak in the spectral absorption band, the best solution is to take an **infrared image**. Infrared **cameras** can be used either in portable or fixed systems within a range of a **few miles**.



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GAS DETECTION



SAFETY OF
INDUSTRIAL SITES



ENVIRONMENTAL
PROTECTION

SAFETY OF INDUSTRIAL PLANTS

By their nature, petrochemical sites are in constant risk of accidents occurring from gas explosions; endangering people's lives and lowering air quality.

By using infrared cameras to identify gas leakages and associated risks, petrochemical companies can ensure the safety of employees and facilities.

Another important benefit is the financial gain linked to limiting the occurrence of gas leakages. Having the ability to identify where gas leaks are occurring along pipeline installations could translate into real cost-savings, and thus generate additional revenue.



ENVIRONMENT

Recent RIO and COP 21 agreements focused on the importance of all countries significantly reducing greenhouse gas emissions.

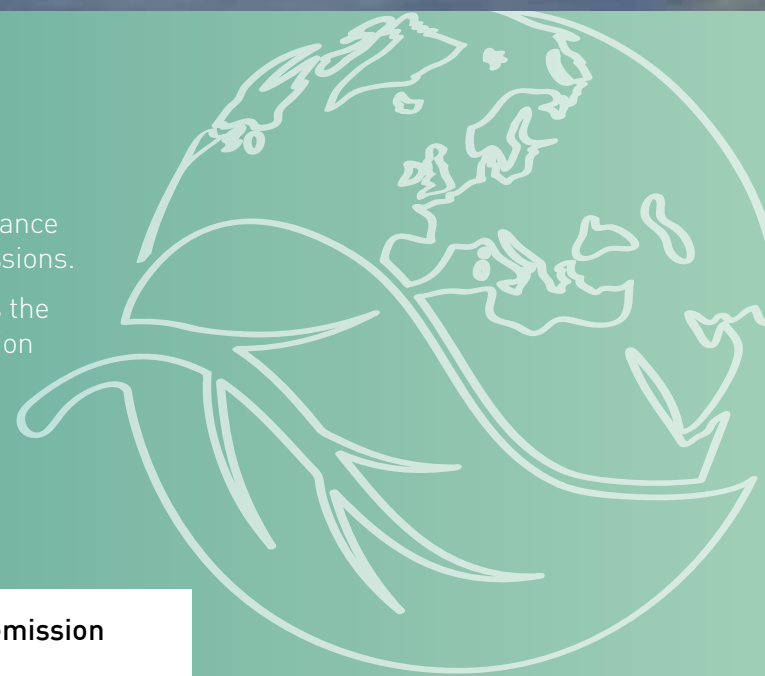
Volatile Organic Compounds (VOCs) have been identified as the worst for the environment. These gases have their absorption spectrum within the infrared band, allowing infrared cameras to easily track and identify them.

Methane has a heat effect 28 times higher than CO2 over a 100-year-period and up to 86 times higher over a 20-year-period.

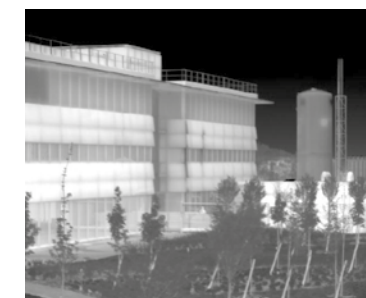
Key figures

3% of natural gas flows in methane emission (in addition to « torched » gas).

Reducing this by **1%** could provide **2.4 billion** in m³ which represent **1,120 million** of equivalent CO2 tones per year.



KEY ADVANTAGES OF INFRARED IMAGING



→ Infrared cameras can be used in Short Wave IR (0.4 to 1.7 μm), Mid Wave IR (3 to 5 μm) and Long Wave IR (8 to 12 μm). These spectral bands detect all gases.

→ Infrared detector sensitivity allows the detection of low gas concentration. Imaging can help in localising leakages.

→ An infrared detector is a passive sensor - no radiation occurs, unlike other technologies such as X-ray or millimeter waves.

→ Smart cameras using complex algorithms are able to measure the level of gas concentration within the atmosphere. This could provide a real advantage for air quality measurement.

KEY FEATURES

High sensitivity

Low concentration level detection (few %).

24/7 operations reliability

Night and day operations conditions.

VGA (640x512) large-format with 15 μm pixel pitch

Quick analysis capability.

Sofradir's offer based on COTS

• Broadband products in 3 to 5 μm and 8 to 12 μm

• Narrow-band product dedicated to these applications

For example, 3.2 to 3.4 μm filtered product dedicated to methane detection



Absorption bands covered by Infrared cameras

3.2 – 3.4 μm : Hydrocarbons

Benzene
Butane
Ethane
Ethylene
Heptane
Hexane
Isoprene
Methane
Octane
Pentane...

4.52 – 4.67 μm : Carbon Monoxide

Arsine
Bromine isocyanate
Carbon monoxide
Chlorine isocyanate
Chlorodimethylsilane
Dichloromethylsilane
Nitrous oxide
Silane...

8.0 – 8.6 μm : Refrigerants

R125
R134A
R143A
R245fa
R404A
R407C...

10.3 – 10.7 μm : SF6 & Ammonia

Acetic Acid
Acetyl Chloride
Allyl Bromide
Allyl Chloride
Anhydrous Ammonia
Bromomethane
Chlorine Dioxide
Ethylene
FREON-12
Furan
Hydrazine
Methyl Ethyl Ketone (MEK)
Methyl Vinyl Ketone
Propenal
Uranyl Fluoride
Vinyl Chloride
Vinyl Cyanide
Vinyl Ether...

