

Case Study of Gas Leak Detection using Infrared Optical Imaging

Johan Tegstam
Product Manager
FLIR Systems AB
Sweden

So what am I talking about?





User Problems to be Solved

Finding Gas Leaks

Environmental Compliance

Safety

Loss of revenue/product



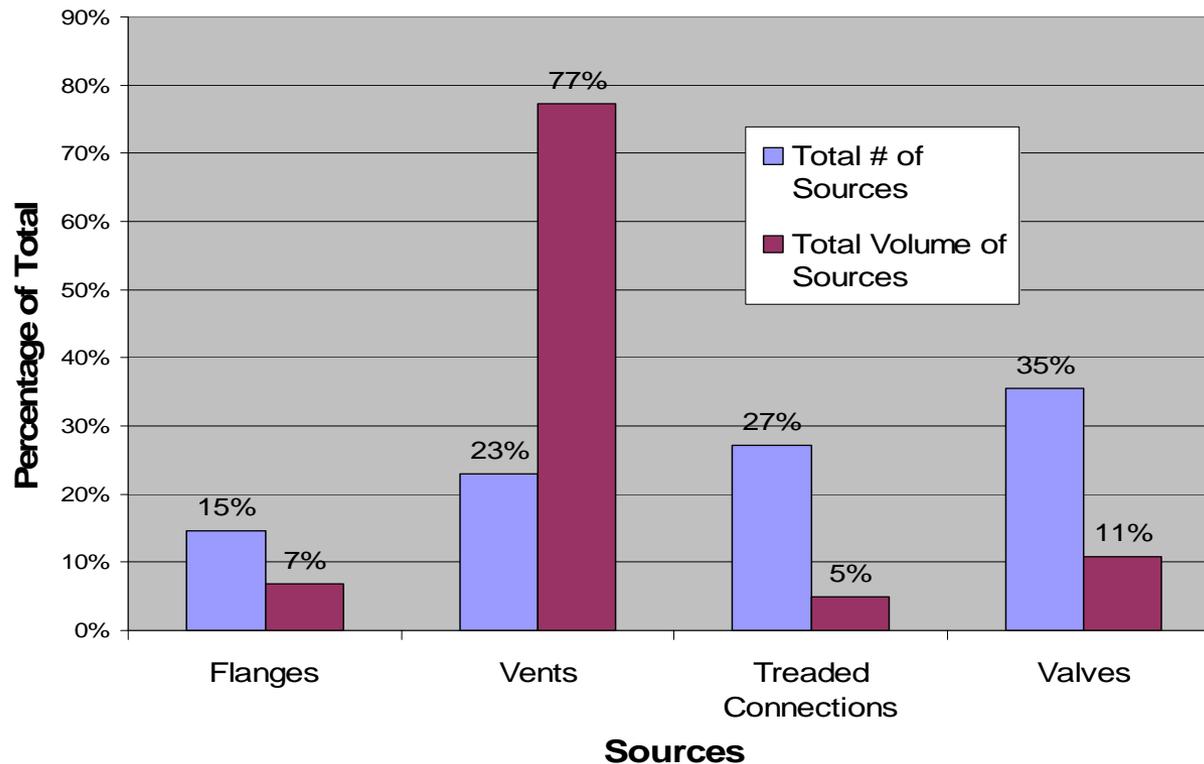
Natural Gas Compressor Stations



Source information

of Sources

- **77%** leaking components (111)
- **23%** other fugitive emission sources (33)
- **92%** economical to repair (133)





Measurement Technology

Hi Flow[®] Sampler

- volumetric leak measurement
- vacuum flow rate detection uses dual-element hydrocarbon (methane) detector
- measures hydrocarbon concentrations in the captured air stream and determines the leak flow rate (+/- 10%)



Benefits :

- offers a much higher accuracy of measurement (compared to conventional methods)
- allows an objective cost-benefit analysis of each repair opportunity



Outdoor – Storage Tanks



Result of Tank Inspection

Service	Type	Emission TCT ton/year	Emission API ton/year	# Leaks (FLIR)
Crude oil slops	EFRT double seal	4	3	1
Crude oil	EFRT double seal	35	4	4
Crude oil	EFRT double seal	120	4	22
Reformate	IFRT double seal	<1	0.2	0
Heavy fuel oil	External roof	<1	1	0

Results from a study where the emissions from tanks have been measured with TCT (one of Fluxsenses two methods), calculated with the API model and leak search has been conducted with an infrared camera (FLIR).

Gases that can be detected

Gas	Gas
Methane	Isoprene
Ethane	1-Pentene
Propane	Benzene
Butane	Toluene
Pentane	Xylene
Hexane	Ethyl-Benzene
Heptane	Methanol
Octane	Ethanol
Ethylene	Methyl Ethyl Ketone (MEK)
Propylene	MIBK



"New GasFindIR" FLIR GF320



Visualization of gas leaks
Dual-use, radiometric
Internal storage
Digital camera & GPS
LCD & Tilttable Viewfinder
Multi-angle handle
-40 °C to +350 °C



Let's Fix the Leak!





Gas Detection with IR Cameras

User Benefits

Visualize and trace gas leaks

Reduced inspection time

Improve worker safety

Efficiently reduce revenue losses



Seeing is Believing!