



Flaring & Venting Methane Emissions

IKM Methane Emissions Quantification (MEQ) Service



Introductions



Sam Rowley

Development/ Operations
Engineer

+44 7543 664510



Scott Morton

Decom, Renewables
& Technical Manager

+44 7473 366335



Radha Bhasker

Stimulation Technical Advisor
& IP Manager

+44 7701 338097

Email - MEQ.IKMTesting@uk.ikm.com



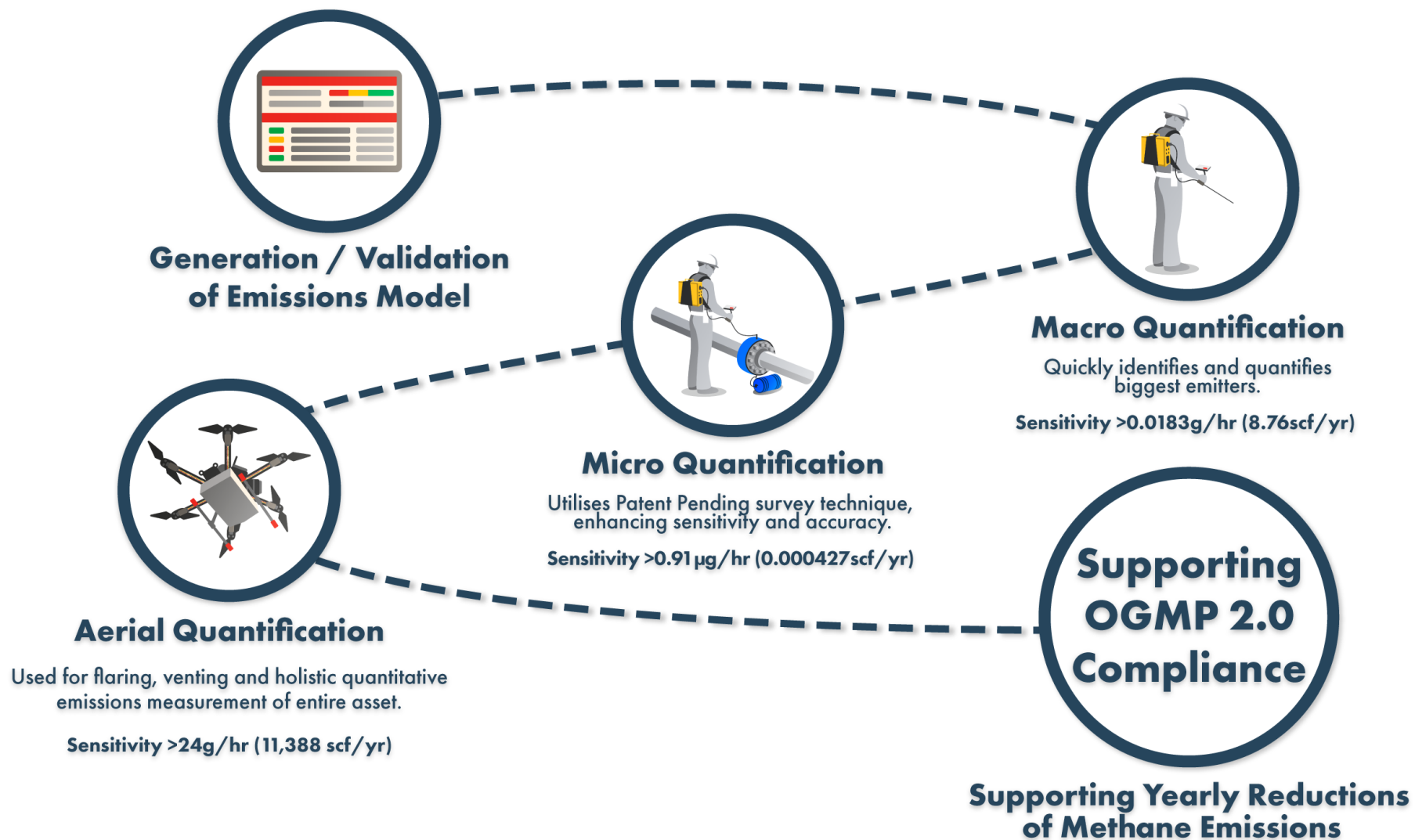
IKM's Vision

Future emission quantification will be completed by a combination of shore-based UAVs & satellite emissions data .

Achieved by:

- IKM's methane emissions model – a combination of precise direct and aerial measurements.
- Correlation between model and emissions recorded during aerial surveys.

IKM's MEQ Service



Macro & Micro Quantification

- IKM's emissions specialists conduct field verification survey of selected connections to verify accuracy of source-specific emission factors used in the emissions model.
- MiQ - isolates the joint from the elements providing a highly accurate reading
- QR barcode tags used to identify & track source elements.



Macro Quantification using Sample Wand

Quickly identifies, locates and quantifies methane leaks, characterising leaks using traffic light system.

Sensitivity >0.0183g/hr (8.76scf/yr)



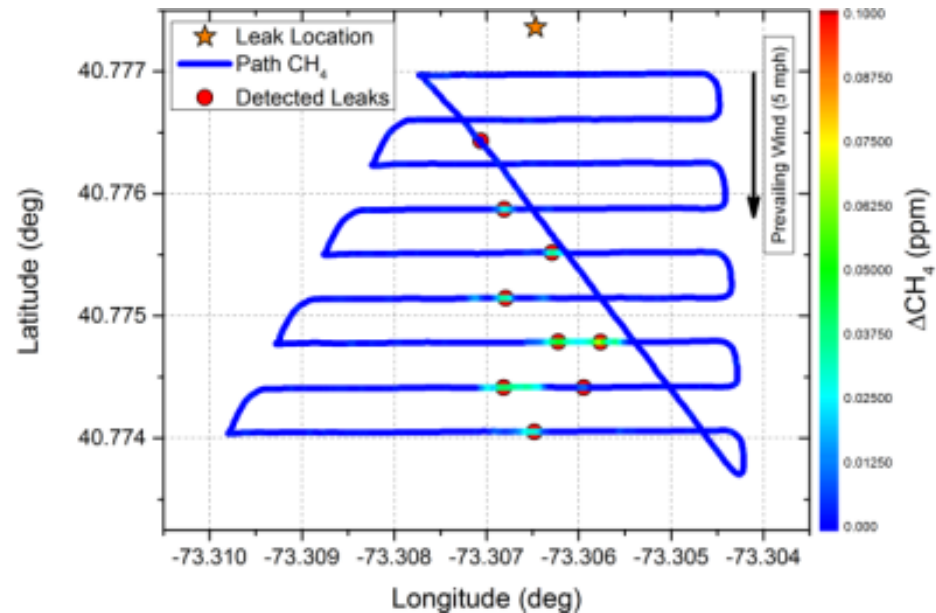
Micro Quantification using Probe

Incorporates IKM patent pending survey technology, providing highly accurate and precise measurements.

Sensitivity >0.91µg/hr (0.000427scf/yr)

Aerial Quantification

- Enhanced accuracy and reliability of source identification using integrated sonic anemometer to correlate sensor data with wind direction.
- Analyser provides best in class sensitivity & accuracy.
 - **24g/hr or 210Kg/year** (11,388scf/yr) with high precision
 - Accuracy removes the need for conservative estimation of emissions, compared to less accurate instruments.
- Provides accurate picture of flare and vent methane emissions values



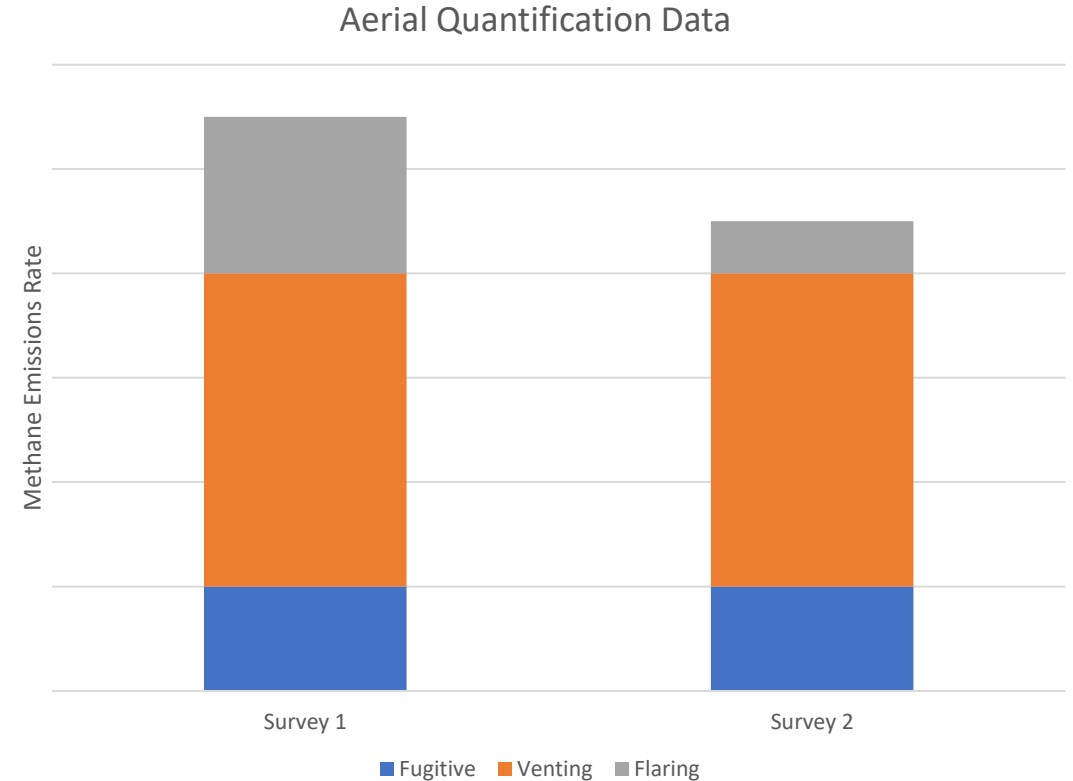
Aerial Quantification Methodology

Method for analysing flare emissions/efficiency

- Two surveys conducted at varied asset flaring rates.
- Platform provided flaring rates used in conjunction with survey results to calculate combustion efficiency.

Asset emissions breakdown enhanced using MiQ & MaQ.

- Provides granularity of emission sources.
- Verifies site specific Emission Factors (EFs).



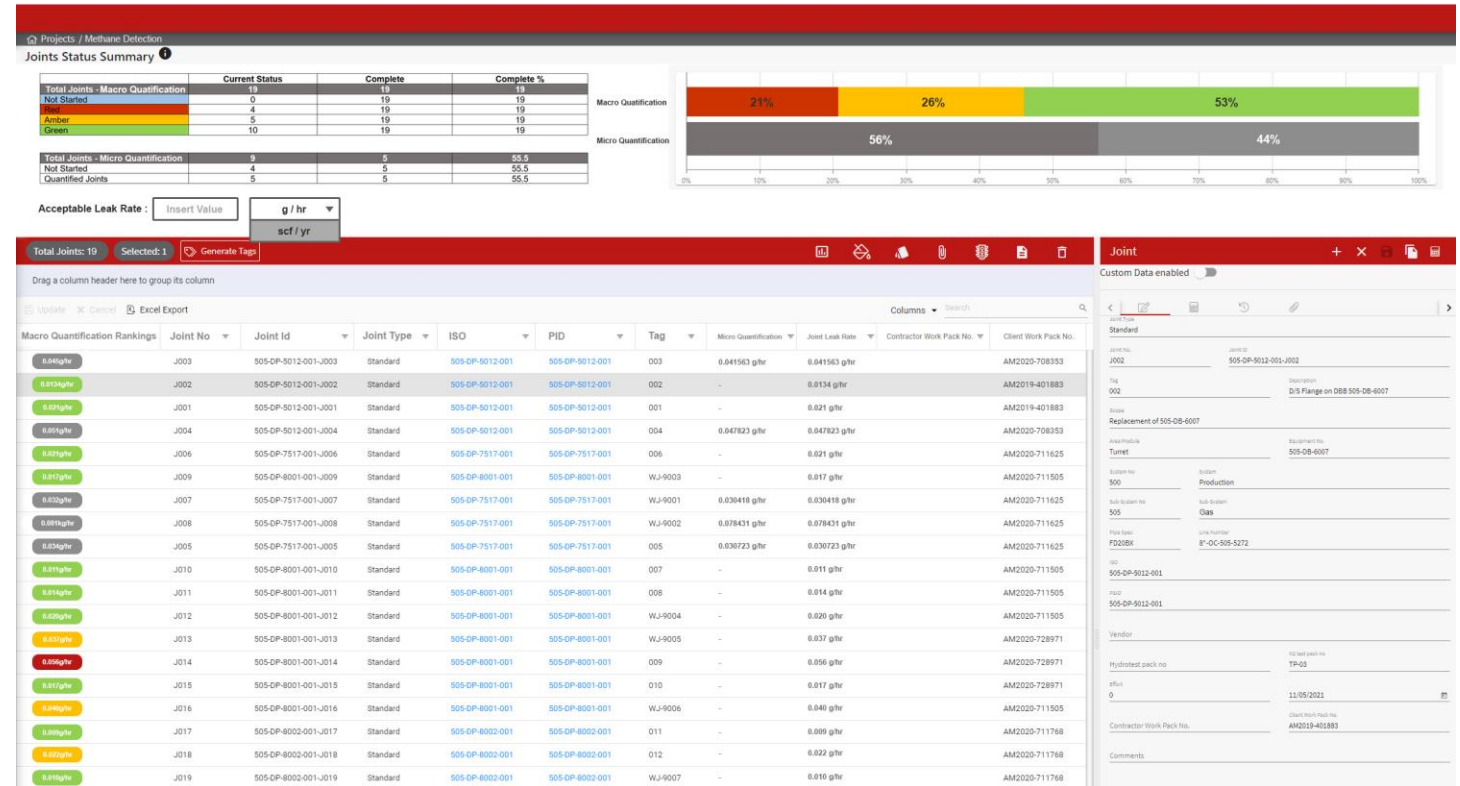
Vent Quantification Methodology

- Variety of methods available to correspond with varying vent types and compressor exhausts.
 - Bagging of vents for accessible discharge points.
 - Stack sampling using ABB analyser & probe.
 - Use of drone measurement of individual vent exhausts.
- Provide correlation between measured values and identifiable process parameters.



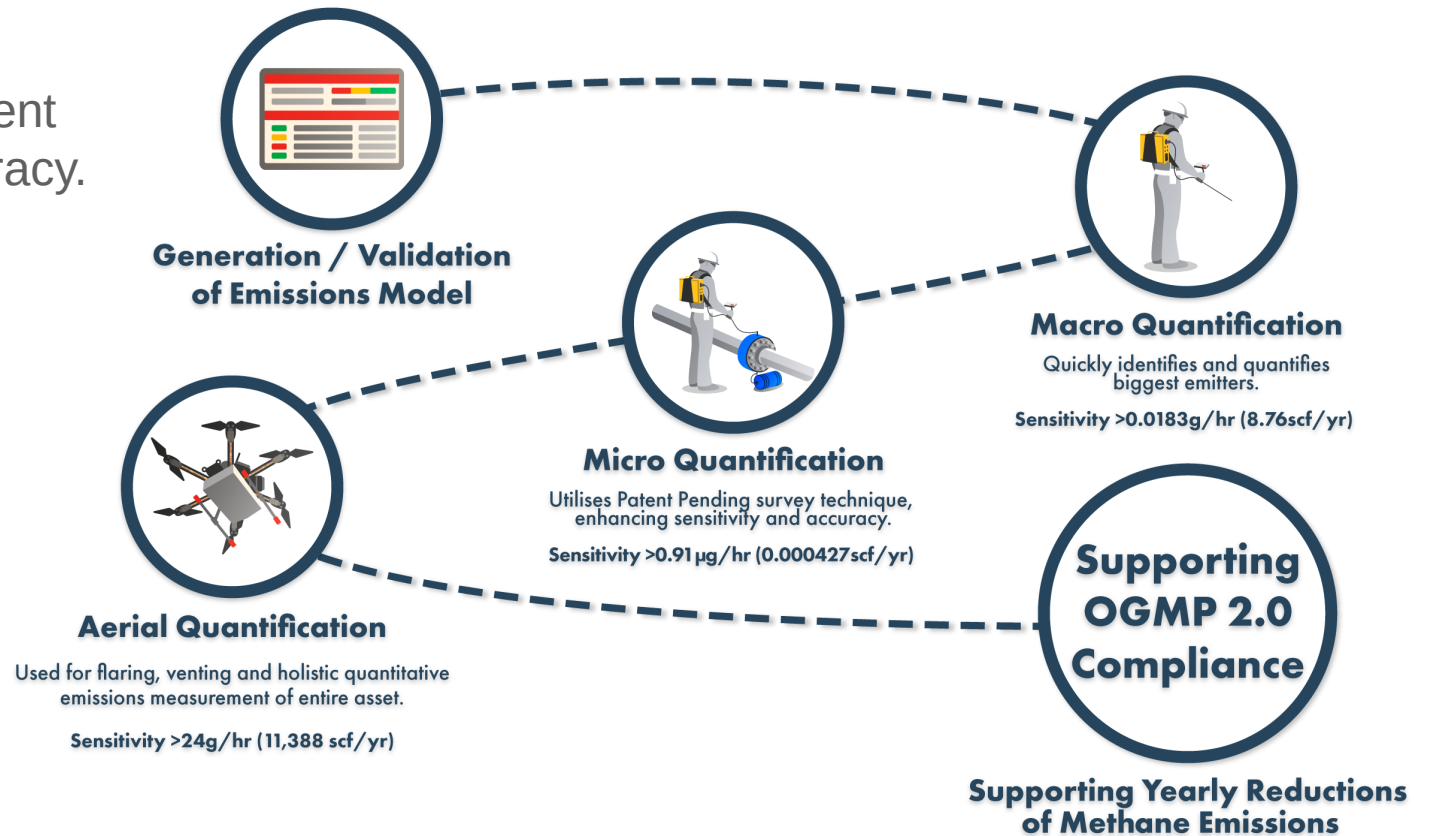
Data Management Software (I-OPS)

- Real time analytical platform providing correlation between all measurement methods.
 - Ability to incorporate survey data from other sources.
- Solution for capturing, trending, and tracking emissions data.
- Development of methane emissions model.
- Highly customisable platform
 - Output can be tailored to client system/software
 - Bespoke dashboards



Summary

- Flare & vent methane emission measurement providing unparalleled sensitivity and accuracy.
- IKM's MEQ Service enables OGMP 2.0 compliance.
- Public assurance that methane is being responsibly managed through credible emissions model.
- Expansion of service to meet the ultimate industry goal - no additional POB.



We are looking for industry leaders to deliver our vision.

1st Step – Site Survey



IKM

Questions?

Email - MEQ.IKMTesting@uk.ikm.com

