

QUANTIC

The UK Quantum Technology Hub
in Quantum Enhanced Imaging



GasSight : Low-cost Gas Imaging



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GasSight - Low-cost Imaging

How can we detect and image invisible gases? Although gases are invisible to the naked eye, they do interact with light, just not at wavelengths the human eye can see. The key to imaging invisible gases is making a camera that can see at the correct wavelength.

Gas sensing has relevant applications in sectors such as oil and gas, building and construction, food processing, inspection of industrial plant and water treatment. There is a gap in the market for a low-cost, small-sized, low-power and highly portable remote gas detection system.

Working with M-Squared Lasers Ltd., QuantIC has developed a low-cost imager that can produce real time video of methane gas. GasSight uses a telecoms laser diode to illuminate a scene at $1.65\mu\text{m}$, exactly the wavelength corresponding to the absorption of methane gas. This image of the methane cloud is overlaid upon a high resolution RGB image of the overall scene, giving a composite full colour image where the methane appears as a red cloud.

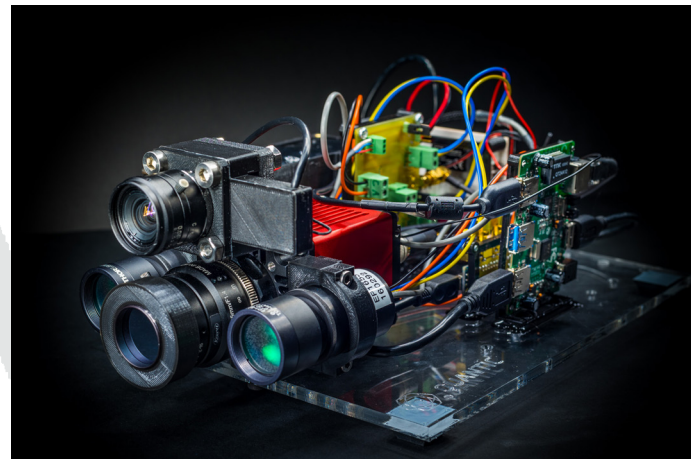
The prototype camera has already demonstrated pure methane detection in a laboratory setting. Our challenge for the next stage will be to increase the sensitivity of the system so that its operational range can be increased to 3 meters or more.

QuantIC is continuing to develop this methane imaging system whilst also exploring the possibility of extending it to other gases

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Resolution	128x128 @ >10 FPS
Camera size	80 x 150 x 250 mm
Gas detection	0.05 litres/min real-time leak at 3m range
Latest Publications	Portable handheld gas imaging camera using highly tunable active-illumination and computer vision, K Nutt, N Hempler, G Malcolm, M Padgett, G Gibson Optics Express 28 (13), 18566-18576, 2020