

Quantum-enabled gas imaging camera to dramatically cut methane leaks

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Credit: Pixabay/CC0 Public Domain

Methane gas concentrations in the atmosphere have increased by about 150% since 1750, and if released into the atmosphere, methane is approximately 80 times more potent as a greenhouse gas than carbon dioxide (CO₂) over a 20-year time frame (IPCC, AR6). The mitigation

of methane emissions will play a vital role in enabling climate change strategies.

QLM Technology Ltd, a spinout from the University of Bristol, have developed a new quantum-enabled gas imaging camera aiming to help the oil and gas industry cut environmentally damaging methane leaks. The camera is designed to visualize and quantify the amount of gas being lost through leaks from process pipework by remote measurement and aims to offer significant improvement on current methods of detection which are infrequent and labor intensive.

The challenge with any environmental measurement technique is taking a system from the lab into the field. Through the Innovate UK funded SPLICE (Single Photon Lidar Imaging of Carbon Emissions) project, NPL is working with QLM to conduct initial field trials of the camera. NPL's Controlled Release Facility (CRF) can produce multiple, [emission](#) sources of different gases, including methane, in bespoke configurations against which companies, such as QLM, can validate the performance of their system in realistic field scenarios.

Using NPL's CRF, QLM were able to assess a range of the systems performance characteristics of their system including the minimum resolvable source separation and acquired over 16 hours of data in recent tests. This has helped QLM accelerate the development of the camera, image analysis algorithms and the method by which the system finds and reports emissions to the end user.

The next steps of the project will see QLM deploy the camera on a range of industrial sites to detect real emissions, and NPL's field teams will provide further support by collecting comparative data based on conventional leak detection and quantification methods.

Jon Helmore, Senior Research Scientist at NPL "The Emissions and

Atmospheric Metrology Group at NPL are delighted to support [innovative companies](#), such as QLM Technology, in developing novel emissions monitoring instruments and methods, through projects such as SPLICE. NPL can provide assistance to companies through the application of specialist metrology expertise, and access to unique measurement capabilities and significant breadth of industrial experience. It is through the standardized application of these new technologies in the environmental domain that we can have confidence on our efforts to achieve net zero carbon emissions."

Provided by National Physical Laboratory

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