

GO FROM LAGGING TO LEADING: WHY INVESTMENT IN GAS DETECTION MAKES SENSE

Much of the discussion around environmental responsibility is often framed as a trade-off between sustainability and profitability. It creates the impression that making a business more sustainable is an expensive luxury – a nice option for those who can afford it, but it’s an acceptable business strategy to sit back and let others lead the fight against climate change.

Recent years have shown that this premise is fundamentally flawed. Overwhelming public sentiment and legislative action have made it clear that business growth cannot be separated from genuine action on our environment. Being left behind is bad for business, and being shut out of the conversation around climate change is even worse.

However, just like in any potentially contentious discussion, it’s absolutely critical to ground any action in facts – and this is impossible without data. Businesses that have the capability to gather data will therefore be in the best position to lead the way into a brighter future for our planet.

Cutting methane emissions is anything but straightforward

Using data to create a full, detailed picture of the problem is particularly important when discussing the complex problem of methane emissions. Methane is a very potent greenhouse gas that traps around 80 times as much heat as carbon dioxide when first emitted into the atmosphere. However, it degrades quickly once in the atmosphere and can dissipate within ten years – much faster than carbon dioxide, which takes over a century to fully dissipate. This means methane emissions are a serious threat, but also a big opportunity. They are accelerating our drive towards the climate cliff edge but cutting them is our fastest route to reversing the damage. As a result, methane has been a subject of intense focus from scientists and governments in recent years.

Further complicating the picture, however, is the fact that a large proportion of methane emissions – roughly 40%, according to NASA data[1] – are emitted from natural sources such as wetlands (or, more accurately, the biomass-digesting microbes that call these wetlands home). However, as an example of the many intricate and interconnected factors influencing climate change, this figure can be indirectly affected by human action. For example, human-related global heating is causing the world’s permafrost regions to thaw unnaturally quickly, creating thermokarst – large gouges in the terrain that become new marshlands. These wetlands are home to billions of methane-emitting microbes, contributing to the continued rise in global methane emissions, even as industrial activity declined during the pandemic. This issue was exacerbated by the resulting fall in hydroxyl radicals – methane-eliminating particles that are produced in part by air pollutants. As long as we live on this planet, we can never fully separate human and natural emissions.

All of this means that the route to tackling methane emissions is anything but straightforward. It is hugely complex and dependent on many interconnected environmental factors. In this landscape, clarity is absolutely essential – and that clarity can only be provided by data.

The problem is that the information gathered so far paints a very different picture from the one reported by many energy suppliers. Early findings suggest there are large discrepancies between reported and actual emissions. This could be down to under-estimation, poor monitoring, or occasional wilful misrepresentation, but ultimately the outcome remains the same; vast quantities of gas are being emitted into the atmosphere, often going undetected until it is too late.

Data collection is becoming increasingly viable at every level

Thankfully, there is a growing international awareness of the threat that methane emissions pose and the importance of monitoring them. Around the world, commitments are being made to act on methane by the energy sector and governments



alike, and methane emissions have been top priorities at recent COP conferences. COP28 saw the conversation progress meaningfully, with multiple new signatories to the Global Methane Pledge including several top super-emitters.

More than 150 nations have now signed up to this pledge aiming to cut anthropogenic methane emissions by 30% by the end of the decade. These countries were joined by representatives from oil and gas companies based around the world. Combined, they have the power to reverse the growing methane problem – but they need to know what to do.

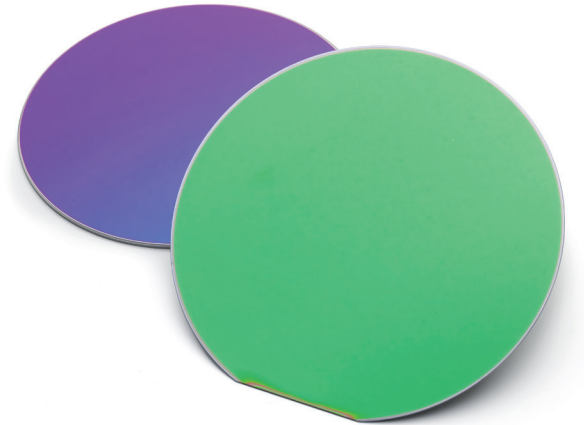
This suggests that initiatives such as the Data for Methane Action campaign – launched by the Global Methane Pledge organisation after COP28 – could be pivotal in ensuring a healthier future for our planet. This program will equip energy suppliers with the necessary tools and funding to better understand their emissions profiles. For the first time, it will be economically viable to monitor emissions from energy operations and generate precise data, enabling the sector to intensify its efforts.

As a result, innovations in laser absorption spectroscopy and other methane detection methods are more accessible than ever, leveraging cutting-edge advances in optical coatings to create sensors that can monitor emissions at global, national, and hyper-local scales. Mounted on satellites, these sensors can detect invisible leaks from pipelines covering thousands of miles. On the other end of the scale, they can be used in handheld devices to detect leaks from small pipes within buildings. Businesses need to look at both ends of the scale – and everything in between – to drive the required action on methane. Doing so today could cut human-caused emissions by as much as 45% within 10 years[2]. If achieved, this would stop global temperatures from warming by almost 0.3°C by 2045.

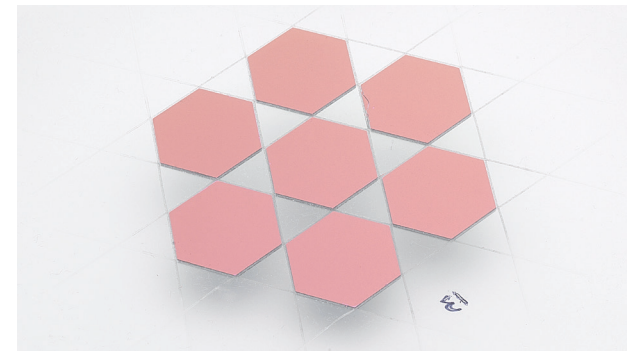
Investing in a healthier tomorrow

Thanks to the groundwork that has already been laid, this is a realistic ambition that shows the power of setting the agenda. Businesses looking to build on this can seize the initiative and redefine their own stories, going from climate laggards to industry leaders within a decade. With increasing public and regulatory pressure, coupled with technological advancements and growing financial incentives, the time to act is now.

Collaborating with top filter coating producers, such as Umicore Coating Services, greatly boosts the capabilities of gas detection technology, allowing for more precise and dependable emission monitoring. As sensing technologies evolve and become more scalable, the extensive use of infrared gas detection could revolutionise global climate policy.



Umicore delivers tailored solutions from concept to full-scale production, specialising in NIR to FIR filters on Ø100mm/4" wafers with deep blocking.



Umicore Coating Services is one of the leading manufacturers and suppliers of infrared precision optical filters and coatings to some of the most demanding specifications and applications.



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