Vopak tank terminals measure the chemical quality and concentrations in the air with Aeromon

Vopak Terminal Vlissingen and Europoort tested airborne emissions from their storage tanks using Aeromon's solutions.
"We used Aeromon's solutions because it can predict concentrations in the air, and it gives us an indication of the fugitive emissions as well as the individual chemicals that are emitted. That is an advantage above other methods," according to Willem van der Zon, Environmental Advisor of Royal Vopak.

Vopak is a multinational independent tank storage company, storing and handling products ranging from oils, gases, and liquefied natural gas to biofuels and vegetable oils. The company is developing new infrastructure solutions to actively contribute to the introduction of vital future products, focusing on zero- and low-carbon hydrogen, ammonia, CO2, sustainable feedstock, and long-duration energy storage.

Reducing the impact of chemicals

The company's goal is not only to reduce the absolute emissions (tons) but also to mitigate the environmental and societal impact of these emissions. Moreover, information about the locations of major emission points aids in the scheduling of maintenance work, thus reducing emissions as swiftly as possible.
"Some chemicals can have a higher impact than others; therefore, we can prioritise our efforts to reduce the emissions of the chemicals that have the highest impact," van der Zon explains.

Ensuring more efficient maintenance

Aeromon's analysis increases the speed and effectiveness of maintenance work.
"We could measure a complete area of one of our locations within a day. And we can get the analysis for every square metre. So, we know exactly what and where we have fugitive emissions. Therefore, we can direct our maintenance efforts to a specific spot, without climbing up every tank to measure. So, the time and effectiveness of the maintenance is a huge advantage."

Improving workplace safety

Further, from a safety perspective, flying above ground level is much safer than climbing up large tanks (30 to 40 metres high) and walking around. However, safety involves more than merely avoiding falling; constant exposure to certain chemicals can also pose an advanced risk.
"When we can do the measurements remotely, we don't have to be there ourselves, so we cannot be exposed. Safety is our first priority," van der Zon emphasises.

MAIN ADVANTAGES

- Real-time and visualised emission data
- Improved maintenance prioritisation and planning
- Reduced product loss and air pollution
- Support to process development & optimisation
- Enables data-driven decision making

Other calculations can be validated

Aeromon's solutions also provide an opportunity to validate other calculations.
"Validating calculations is useful not only for ourselves, but we can also show authorities that our calculations are valid and, thus, reliable," according to van der Zon

Best combined with other methods to detect emissions

Vopak also has experience with using infrared detectors to search for leaks.
"We can see with infrared that product is escaping, but we don't see what and how much," according to van der Zon, who sees the advantage of combining different methods to detect emissions.
"If you use a bottom-up method, you can search for the exact spot of the leak. However, you don't have the chemical and you don't have the concentration. Satellites can also help in detecting emissions in large areas, but it is error-prone, and you are also missing the information about the chemicals and concentrations. If you use different methods together, you can get the best of different worlds."

"So, the time and effectiveness of the maintenance is a huge advantage."

Detecting VOCs

Vopak Vlissingen uses drones equipped with detectors for volatile organic compounds (VOCs).
“VOCs are molecules that evaporate into the atmosphere and not into the layer where they would be speeding up the climate change. But from the atmosphere, they will come back to Earth and have a harmful impact. That’s why they are included in the impact model of our emissions,” van der Zon explains.
“We have been measuring several chemicals from propane (C_3H_8) to benzene (C6H6) and other petrochemicals.”
“We are very satisfied with Aeromon’s approach and satisfied with how they present the data.”

Vopak invests in Aeromon

Vopak has also invested in Aeromon via its venture arm, Vopak Ventures.
“The activities of Aeromon very well match with the ambition of Vopak Venture’s sustainability fund in which we identify investment opportunities in start-ups and scale-ups in new technologies to make the industry more sustainable,” according to Leo Brand, CIO of Royal Vopak and Chairman of Vopak Ventures.
Aeromon’s services are used by companies throughout Europe to verify and quantify emissions from industrial plants. Their modular unmanned aerial vehicle (UAV)-assisted emission monitoring solutions have proven to create value in complex and demanding environments within, for example, the oil and gas, chemical, waste management, energy, and mining industries.