

Case Study

Helping NWG Bioenergy to monitor methane, oxygen and hydrogen sulphide risks



“The **T4 portable gas detector** covers all components of risk for us in a robust, personal unit. We know they are used across the rest of the Northumbrian Water business, so we trust their reliability and accuracy.”

Matt Hooper, NWG Bioenergy

> The Background

NWG Bioenergy Ltd, a subsidiary company of the Northumbrian Water Group, runs the Ridge Road anaerobic digestion site near Leeds in West Yorkshire. There, it uses waste poultry litter and other crops to generate raw biogas that is then purified, refined and sent to the gas distribution network as biomethane, which is a clean and sustainable energy.

Biogas is produced by the anaerobic digestion of organic materials (generally waste products) by micro-organisms, which break down the feedstock without oxygen.

The Ridge Road site has capacity equivalent to the consumption of roughly 5,000 houses and, as part of the UK's biogas industry, plays an important role in reducing harm to the environment.

NWG Bioenergy turned to Crowcon for help in monitoring methane, oxygen depletion and hydrogen sulphide risks at their Ridge Road site.

> The Requirement

NWG Bioenergy generates biogas, so gas monitoring is naturally key to its operations, both for the safety of operatives – which is paramount – and for process control.

At Ridge Road the process of biogas generation is completely enclosed, but there is always the risk of leaks or rogue emissions.

Methane is highly explosive under the right conditions, and the site has potential to generate areas of depleted oxygen (hypoxic areas), which can be very dangerous.

The company must also take particular care because the poultry litter it uses as feedstock generates high levels of hydrogen sulphide, which is corrosive, toxic and flammable.

Although hydrogen sulphide has a characteristic odour, often described as resembling rotten eggs, continuous exposure to low levels can gradually deaden the sense of smell and sudden exposure to high levels may do so instantly.

Therefore, sense of smell is not a reliable indicator. This is important because prolonged exposure to low levels of hydrogen sulphide can cause health concerns. However, at high concentrations just a few breaths can render a person unconscious or comatose – or even kill them.

> The Approach

NWG Bioenergy uses Crowcon's portable **T4 gas detectors** to keep its workforce safe. The T4 is built to last and easy to use even with gloved hands.

With **T4 gas detectors**, NWG Bioenergy are equipped to detect the four most common gas hazards – oxygen depletion, flammable gases, carbon monoxide and hydrogen sulphide. This meets their need to monitor multiple gas safety risks using just one detector unit.

> The Outcome

T4 is ideal for use in biogas production. It has a long battery life (around 18 hours between charges) and is robustly built to cope with challenging conditions and resist water ingress (it is certified to IP65 and IP67).

Minimal training is required, because **T4** is easy to use via a single button and intuitive menu interface. There is an optional clip-on filter cover, to protect the detector in dirty conditions, and constant 'traffic light' indicators to reassure the user that their **T4** detector is working.

The unique TWA resume function ensures that toxic gas exposure is calculated accurately across an entire shift, even if the detector is turned off for a time.

This not only guarantees that workers are properly protected, but also helps employers to prove regulatory compliance.

