What Is Levidian LOOP10?

The UAE has penned a deal with Levidian Nanotechnologies to deploy its LOOP10 technology at a site in Abu Dhabi. The decarbonisation system captures waste gas at the point of emission and converts it into usable commodities, thus significantly enhancing the eco-friendly credentials of the site in question and the country as a whole.

The project is set to encompass 500 such LOOP10 systems and will be rolled out across a number of landfill and gas flaring sites in the UAE. Having signed a 10-year deal with Levidian and Zero Carbon Ventures, the project will result in the removal of more than 100,000 tonnes of carbon dioxide-equivalent across the course of its duration.

Ground-breaking technology

The LOOP systems gain their name from the approximate volume of CO2-equivalent they are capable of removing from the atmosphere. For example, the LOOP10 systems being deployed in the UAE are capable of removing 10 tonnes of CO2e per annum, but that figure is doubled when the device is used on waste gas.

The system works via an innovative low-temperature and low-pressure process which allows operators to separate methane into its constituent parts, carbon and hydrogen. It is capable of reducing the carbon footprint of standard shipping containers and larger infrastructure set-ups, either through individual installations or as part of a larger collection of units.

Turning waste into value

After the cracking process, the two constituent parts are then repurposed for further use. The hydrogen can be used in its pure form as a fuel source, or else combined with other elements to create a hydrogen-rich blend. These can then be used in fuel cells or heat and power technologies as highly desirable green hydrogen.

On the other hand, the carbon is transformed into high-quality graphene. Unlike many other carbon capture utilisation and storage (CCUS) projects, which seek to redeploy carbon as a fuel source, the graphene is instead used in industrial applications such as paints, building materials, batteries and plastics.

Planning for the future

First founded in the UK in 2012, Levidian Technologies envision a future where buildings are constructed from decarbonised graphene and powered by decarbonised hydrogen. With that in mind, they are currently working on scaling up their LOOP technology to create LOOP1000+, which would be capable of removing over a thousand tonnes of CO2e from a single device installation.

For the moment, though, the UAE are early beneficiaries of Levidian's pioneering vision – as attested to by Zero Carbon Ventures CEO Martin Reynolds. "There's no doubt that Levidian's game-changing LOOP devices will do just that, producing both green hydrogen and high-quality graphene, right here in the UAE," he explained. "Both products in turn will have a positive impact on many industrial processes."