

With diesel prices heading skywards,

global tensions on the increase, and last year's fuel shortages in south-east England still fresh in everybody's memory, many fleet managers must ache for a source of power that is independent of these vagaries.

If it is environmentally friendly and generated from a sustainable source of materials over which they have some control, then so much the better. If it allows their trucks to cover respectable distances without being encumbered by heavy battery packs, then that is better still.

Legendary Scottish malt whisky distillery Glenfiddich may have found the answer. Owned by independent family-owned distillery William Grant & Sons (WG&S), it is running trucks on biogas made from byproducts of the distilling process: spent grain, known as draff, and pot ale, the residue from fermented mash liquid. The waste is loaded into an anaerobic digester, bacteria without oxygen break it down, and biogas is the consequence. Proprietary compression and dispensing facilities have been installed, and the entire exercise has been cost-neutral, says the company.

Any solids left over are used to fertilise fields of barley grown by the farmers who supply the Dufftown, Moray, business. The technology underpinning this closed-loop system has been developed by WG&S in-house.

Last year saw Glenfiddich take delivery of a trio of IVECO Stralis NP (Natural Power) 454bhp 6x2 tractor units. Their 12.9-litre engines can run on compressed natural gas - IVECO has invested heavily in developing vehicles that will do so - and happily consume the distillery's biogas (pictured, pp16-17). They offer a range of up to 300 miles between refills.



OFF-GRID

Methane needn't only be sourced from underneath the North Sea. In fact renewable, sustainable sources of the energetic gas can be found in food and animal waste - and are being tapped by an increasing number of transport operators, reports Steve Banner

Says WG&S distilleries director, Stuart Watts: "The biogas we use reduces CO₂ output by over 95%, and other harmful particulates and greenhouse gas emissions by up to 99% when compared with diesel. Each truck displaces up to 250 tonnes of CO₂ annually."

If your business model means you do not generate sufficient waste to feed an anaerobic digester yourself, then sourcing it from your customers could be the next best thing. That is the route being pursued by Lisburn, County

Antrim, ambient, chilled and frozen logistics company McCulla (Ireland).

Its anaerobic digester (pictured above) is fed by food waste sourced from retailer Lidl, among others. The resulting biogas fuels 11 McCulla trucks, says business development manager, Alan Thompson, and should be powering 60 by the end of 2023.

Cutting the company's carbon footprint isn't the only benefit of biogas. "It's cheaper than buying diesel because we're making it ourselves," he comments.

IVECO tractors are again playing a prominent role in the initiative, this time S-Way NP CNG 4x2 454hp tractor units. McCulla plans to phase out the use of diesel in its 105-strong truck fleet over the next five years, in favour of biogas. Gas from the digester has been used to power other elements of the business since 2017, including its cold stores.

Gas trucks run more quietly than their diesel stablemates, says McCulla, which



GAS

means early morning and evening deliveries to supermarkets cause less disturbance.

INVESTMENT COST

Anaerobic digesters vary enormously in price depending on their capacity and level of sophistication, points out biogas specialist Birch Solutions. A basic system could require an investment of £750,000 to £1m, while a major plant connected to the gas grid could cost up to £15m. As McCulla's Thompson points out, however, if you are producing your own fuel, you are not buying from a third party; and the ability to sell any surplus can be a useful source of revenue.

There is also the thought that drawing gas from a gas main in order to run your fleet is not always an option. While the UK gas grid is comprehensive in urban areas, rural

TELLING IT STRAIGHT

Despite all the PR hype and hullabaloo, the blunt and brutal reality is that no manufacturer has as yet come up with a zero-emission light commercial vehicle or truck that satisfies all the requirements of transport fleets and can be put to work in the real world. So says Jorge Asensio Lopez (pictured), IVECO's UK medium and heavy country product manager and alternative propulsions lead.

"None of us have got there yet," he admits. "In developing carbon-free, zero-emission vans and trucks, we have to remember that those who use them every day are practical people," he continues. "They employ them to do a job, and to make money.

"As well as being emission free, those vans and trucks must have the range, the load capacity, the reliability and the dependability to do that job," Asensio Lopez continues. "They must be easy to live with, to use, to refuel and to look after.

"Most importantly, they must be cost-efficient," he says. "Here I'm talking about their cost of acquisition, their running and maintenance costs, and their whole-life cost. No one has a 100% emission-free heavy van or truck that can deliver all those priorities today."

Asensio Lopez expressed his pungent views on the disappointing state of the zero-emission commercial vehicle market at IVECO's State of the Nation press conference, held at the manufacturer's UK headquarters in Basildon, Essex.

He concedes that lighter vehicles are well on their way towards reaching many

of these goals. In this context it is worth noting that IVECO will launch an electric version of the latest Daily 3.5-to-7.2-tonner at the IAA Transportation commercial vehicle show in Hanover, Germany in September.

"The larger and heavier you get, though, the further and further away we are from achieving these objectives," he says.

He believes it will be at least a decade before emission-free models emerge that can be truly viewed as viable alternatives to the diesels that are on sale now.

Even if a suitable truck were to be made available today, operators would face another challenge, he contends: the presence (or lack thereof) of the necessary infrastructure to support it, especially when it comes to refuelling. "The reality is that practical, reliable and versatile 100%-emission-free transport - the equivalent of the almost worry-free transport we enjoy today with diesel - is still some way away," he argues.

He agrees that some operators are willing to be early adopters of zero-emission technology nevertheless, and concedes that trucks are coming on to the market that can meet at least some of their needs. "However, the operators concerned need to have set routes, limited range and payload requirements, and very deep pockets," he observes.

All of this suggests that the widespread adoption of electric trucks developed by IVECO - including models powered by fuel cells developed in



conjunction with Nikola - is likely to be quite some distance away. In the meantime, Asensio Lopez is arguing strongly in favour of the adoption of trucks fuelled with biomethane as a halfway house.

This of course smacks strongly of special pleading; IVECO has invested heavily in the necessary technology and needs to see a return on its outgoings - and biomethane cannot be classed as zero-emission. Yet Asensio Lopez points out their operational compatibility with current duties. "Biomethane can reduce tailpipe emissions by as much as 95%, and in operational terms there is no difference between running a truck on biomethane and running a diesel," he contends. "They are easy to refuel, and the refuelling network is expanding fast."

Nor do biomethane trucks impose a serious payload penalty, he says. "Yes, they are more expensive to acquire, but for most businesses that do, a two- to three-year payback is very much the norm," he claims. "Against the upfront capital cost of today's initial emission-free offerings, there is no comparison.

"Sure, biomethane is an interim solution," Asensio Lopez says. "However it offers a practical, workable, low-emission alternative to diesel now, today and tomorrow."



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operators may find that their nearest outlet is several miles away. Nor is there any shortage of food waste; Britain produces around 19m tonnes of it annually, says Birch.

POO TO POWER

Yet another approach to producing biogas is posited by Cornish business Bennamann. It has developed technology which collects so-called fugitive methane from slurry pits on cattle farms using a gas-capture canopy. The resulting biogas is now being used to power vehicles in service with Cornwall Council through Cormac, the council's wholly-owned fleet provider.

"Twelve of the vehicles are used by workers who repair potholes in roads," says Tim Fox, Bennamann's head of corporate communications and public affairs. Bennamann carried out the initial development work at Chenoweth Farm, just outside Truro. Cornwall Council owns 104 tenant farms. Fifty-eight of them are dairy farms, and Bennamann has been busy installing its technology in six of them, with herd sizes ranging from 70 to 300.

"We've got one near Saltash that is up and running; two more are being completed, and the other three are in the pipeline," Fox says. "They should all

be in production sometime next year." Each farm's lagoon will be capable of storing a week or more's worth of gas.

"The idea is to steadily convert the bulk of the 58 and for the gas to eventually power the entire Cormac fleet at 3.5 tonnes and above," he adds. "Cormac provides around 1,000 vehicles to the council. If a farm's slurry lagoon is in a poor state then we'll look at replacing it," says Fox.

The compressed gas is collected by a tanker trailer and delivered to Cormac to be dispensed. "It delivers a fuel saving of around 20% compared with diesel, and we've been developing the capability to liquefy it," Fox says.

Bio liquefied natural gas could appeal to hauliers who wish to travel far beyond Cornwall, given the extra range it can deliver. "Liquefying the biomethane would also make it easier for us to transport from the farms," he observes.

MORE WHERE THAT CAME FROM

The feedstock the process employs is not in short supply. UK farms produce around 90m to 100m tonnes of slurry a year, according to the Royal Agricultural Society of England, and the environmental consequences include the potential to pollute water courses as well as generate greenhouse gas

emissions. Methane has 86 times more global warming potential than CO₂, says Bennamann.

Bennamann is starting to be noticed on the global stage. Last year saw CNH Industrial take a minority stake in the business, a year which also saw CNHI spin off IVECO, although CNHI's biggest shareholder Exor remained IVECO's largest shareholder at the time of writing.

Bennamann's technology is not restricted to dairy farms. Poultry and pig farms can make use of it too, says Fox. "It means farms, including small farms, can become energy producers," he enthuses. "It's a local energy revolution."

It is an approach that many transport companies may favour over one which involves purchasing biomethane, arranging for it to be injected into the gas grid, then drawing the equivalent amount from their local gas main; assuming there is one. Under those circumstances they may find they are actually running their vehicles on North Sea gas - a fossil gas - rather than biogas, because that is what makes up the vast majority of what comes out of the gas pipe.

If you source from Bennamann, however, then you can be sure that what goes into your trucks is pure biogas, says Fox. "You can see the cows on top of the hill," he smiles. [IE](#)