

What you need to know about:

SUSTAINABLE TRANSPORT AND CLEAN AIR



#FraikinFocus

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Front cover: London Linen took delivery of the first Euro VI truck to be supplied by Fraikin, back in early 2014.

INTRODUCTION

“We are determined to go green, but we still must stay in the black.”

This is how the head of one large UK commercial vehicle operation memorably summed up the daunting challenge faced by his company and countless others: how to make the operation as environmentally-friendly as possible without suffering ruinous operating cost rises in the process.

There are no easy solutions to the problem and certainly not one size that fits all, or even most. Yet there has never been such widespread agreement, in principle at least, that road transport has to become more sustainable than it is at present.

The simple aim of this guide is to point you towards a small selection of the myriad of options available to you and the factors you should be sure to take into account before making crucial decisions about your future fleet investment, regardless of how you fund your fleet.

First, we outline the current and planned legislation that seems most likely to affect your vehicle operations. Then we focus on what experts in this field are saying on some of the latest commercial vehicle engineering developments.

We hope this information proves of value to you. Should you wish to discuss any of these issues in more detail, please don't hesitate to contact your Fraikin Account Manager, or telephone our team on 0800 052 4455.

KEY LEGISLATION: EURO 6, EURO VI AND BEYOND

Two dates are linked most often and most intimately with European Union Regulation 595/2009 – better known as Euro 6, or Euro VI if you want to be strictly accurate.

The first of these dates, 1st January 2013, was when Euro VI limits came into force throughout Europe for newly type-approved vehicles. The second, 1st January 2014, applied to newly-registered vehicles. So, with both these deadlines now well and truly behind us, a fair assumption would seem to be that the pressure is off for engineers at the manufacturers of trucks, buses and their diesel engines, not to mention operators who have been buying Euro VI and Euro 6 vehicles. But you couldn't be more wrong.

It was clear from the start that Euro VI standards would be the first to employ “world harmonised” test cycles. However,

much less clear initially was how many regions of the globe outside Europe would choose to adopt Euro VI emissions standards in preference to those of Japan or the US Environmental Protection Agency (EPA).

South Korea adopted Euro VI, albeit with some modifications, from 1st January 2015. Turkey was not far behind. Australia also has come down in favour of Euro-style regulations, coming into force in 2019.

On-board diagnostics

Meanwhile, as always planned by EU law-makers, the second and third phase of Euro VI regulations focusing on increasingly stringent on-board diagnostic monitoring, have come into force in Europe.

The final phase of Euro VI, applicable to newly type-approved vehicles from 31st

December 2015 and all new vehicles from 31st December 2016, tightens oxides of nitrogen (NOx) and particulate matter (PM) controls still further, not least by introducing an “in-use performance ratio” (IUPR) requirement for on-board diagnostic (OBD) equipment for the first time. This in effect will mean that the OBD equipment will have to work harder (sampling emissions more frequently), and be more precise.

The upshot of all this is that any operator running trucks or buses powered by Euro VI diesel engines already has vehicles with extraordinarily clean exhaust emissions.

Euro VI is used to distinguish between emission limits for trucks, buses and coaches above 3.5 tonnes gvw, and Euro 6 for lighter commercial vehicles below this threshold.

EU Emission Standards for HD Diesel Engines	Introduction date	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	PM (g/kWh)
Euro I	1992	4.5	1.1	8.0	0.36
Euro II	1996	4.0	1.1	7.0	0.25
Euro III	2000	2.1	0.66	5.0	0.10
Euro IV	2005	1.5	0.46	3.5	0.02
Euro V	2008	1.5	0.46	2.0	0.02
Euro VI	2013	1.5	0.13	0.4	0.01

Fraikin supplies Macfarlane Packaging with an extensive Euro VI fleet.



CLEAN AIR ZONES (CAZ)

Clean air zones (CAZ) first began to appear in the UK five years ago following publication of government plans to take action, belatedly, to comply with European law on air quality, especially nitrogen oxide (NOx) and particulate matter.

In February 2018 campaigners won their third High Court battle with the government on this, with the judge decreeing that more action was needed in 45 local authority areas in England. Since then, many and various CAZ plans have begun to spring up all over the UK (see BVRLA link on the back page for a guide). A high-power parliamentary inquiry into the impact of CAZ on the road transport and logistics sector was started in February 2020 by the All-Party Parliamentary Group for Road Freight and Logistics (APPG), chaired by former transport minister and MP for Hemel Hempstead Sir Mike Penning.

The inquiry was strongly welcomed by, among others, the Road Haulage Association (RHA). It represents around 7,000 haulage and distribution companies which collectively run around 250,000 trucks (about half the entire UK fleet). Many

of the serious concerns held by truck and van operators about the impact of CAZ on their business were spelled out by the RHA in its March response to the APPG inquiry.

Clean air zones, at least those being introduced in England, are described by the RHA as ‘a significant mis-step on the path to a sustainable environment’. The biggest mistake made by government policy makers, according to the RHA, is failure to phase in CAZ compliance in line with the introduction of Euro VI vehicles. The government is accused of failing to understand vehicle lifecycles and the “stranded asset” effect resulting from England’s CAZ introduction.

As much as £1.2 billion has been wiped off the value of Euro V trucks in the UK as a direct result of the government’s action, the RHA reckons. Yet the situation is markedly different in Scotland and Wales. The RHA welcomes ‘constructive dialogue’ with Scottish authorities on the design of Low Emission Zones and says that the Welsh Government is ‘well-placed to adopt best practice from Scotland and avoid the mistakes made in England’.

UK truck parc share by Euro emissions standard				
	Euro VI	Euro V	Euro IV	pre-Euro IV
end 2016	26.6%	31.8%	16.6%	25.0%
end 2018	43.7%	26.3%	12.4%	17.6%
end 2020	54.2%	24.9%	8.1%	12.8%
end 2022	64.8%	20.3%	5.3%	9.6%
end 2024	75.4%	14.0%	3.7%	6.9%

Source: RHA

Profile of UK HGV fleet		
	No. of vehicles	Percentage
Euro I + II	31,519	6.3
Euro III	36,522	7.3
Euro IV	53,032	10.6
Euro V	120,072	24.0
Euro VI	259,155	51.8

Source: RHA estimate based on Department for Transport (DfT) statistics (April 2019)

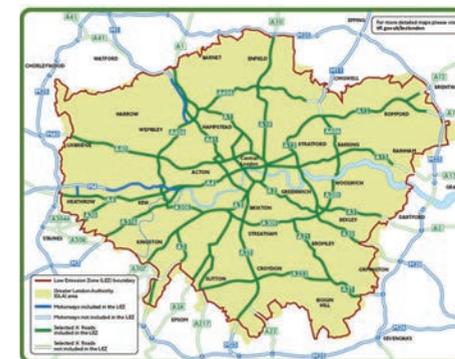
LONDON LOW EMISSION ZONE (LEZ) AND ULTRA LOW EMISSION ZONE (ULEZ)

The LEZ covers most of Greater London and is in operation 24/7/365, while the city’s ULEZ covers central London with the same operating hours, apart from Christmas Day.

Trucks, vans or other “specialist vehicles” over 3.5 tonnes gross vehicle weight (gvw), as well as buses/minibuses and coaches over 5 tonnes gvw, are subject to a daily charge when entering the LEZ unless they meet the particulate matter (PM) emissions standard specified by Transport for London (TfL). At present this is Euro IV, but from October 2020 the standard was set to move to Euro VI. In response to the Covid-19 crisis, however, London mayor Sadiq Khan confirmed this would be postponed “to give the industry and fleet operators more time to adopt cleaner, safer vehicles”.

Christina Calderato, TfL’s head of transport strategy and planning: “The tighter standards for the LEZ and Direct Vision Standard are both absolutely vital to our plans to make London a cleaner, greener and safer place to live.

“We’re committed to bringing these changes in as soon as practically possible while supporting the freight industry and recognising that the pandemic has placed intense new demands on people and organisations across the capital. We propose to begin enforcement of the new rules at the end of February 2021, and will keep this under review.”



In a separate development, after a coronavirus suspension central London’s long-established Congestion Charge has increased sharply from £11.50 to £15, with significantly extended operating hours implemented everyday between 7am and 10pm. TfL says these changes will be in place for “at least a year” and after review could both be made permanent.

Natalie Chapman is the FTA’s head of urban policy: “Logistics businesses have been working tirelessly to deliver food, medical supplies and other essential items across the capital during the Covid-19 pandemic. To reward this hard work with such abrupt and significant changes is extremely disappointing to the FTA and its members.”

For information on the above visit www.tfl.gov.uk.

OPTIONS FOR CHANGE

With news in 2020 understandably being dominated by the coronavirus pandemic, people could be forgiven for tending to overlook what is still almost universally recognised as the most pressing environmental challenge facing humanity: climate change. That said, responsible transport and logistics companies, and their customers, certainly have not forgotten. They recognise that road transport in the UK is responsible for about 24% of greenhouse gas emissions and that HGVs in turn are responsible for about 20% of all road transport emissions.

Renewable alternatives

Small wonder then that interest in renewable transport fuels, alternatives to conventional diesel, are greater than ever. But which of these fuels should be selected by any operator who is as determined to go green as they are to keep the operation's finances in the black?

Many of the factors that need to be taken into account before making this decision are summarised in a recently published renewable fuels guide from The Low Carbon Vehicle Partnership (LowCVP), a public/private body established in 2003. The four fuels on which this guide mainly focuses are biodiesel; hydro-treated vegetable oil (HVO); biomethane; and biopropane.

As LowCVP points out: "Corporate social responsibility is more important than ever, while businesses' reputations have never been under greater scrutiny by their customers. Adopting a low-carbon fuel will demonstrate your commitment to mitigating climate change, whilst reducing the carbon footprint of your vehicle fleet."

And as shrewd operators have already discovered, far from adding to operating costs, used wisely renewable fuels can in fact reduce them.



To prove its range, IVECO ran this laden Stralis NP from John O'Groats to Land's End in March 2017 on a single fill of LNG..



The Nikola TRE currently uses an electric battery but is designed to use hydrogen fuel-cell technology in the future.

Renault Trucks launched its electric Z.E. range in 2019.



What about gas, electric or hydrogen?

Some truck-makers, IVECO, Scania and Volvo in particular, are convinced that natural gas represents the best alternative to diesel for the short-to-medium term, with each manufacturer offering vehicles using either compressed natural gas (CNG) or liquefied natural gas (LNG).

Gasrec, operator of the UK's largest network of natural gas refuelling stations, says it expects the natural gas-powered HGV vehicle parc above 41 tonnes in the UK to reach 39,000 by 2027. This many vehicles switching to natural gas would save 858,000 tonnes of CO₂ per year, based on a vehicle averaging 160,000 km per year.

Commenting on the projected growth of gas, James Westcott, Chief Commercial Officer of Gasrec, said: "The current refuelling infrastructure will continue to grow in line with sales, but it's also sufficient for most fleets' needs today."

Other manufacturers, including Daimler (Mercedes-Benz), MAN and Renault, think that all-electric (battery-powered) trucks and vans will soon be making inroads into the truck market. Indeed, Renault Trucks

predicts that electric vehicles will represent 10% of its sales volume by 2025.

But they aren't alone; IVECO and its North American partner Nikola unveiled its first battery electric vehicle (BEV) – the Nikola TRE – at the end of 2019. Using a 720 kWh modular battery system the Nikola TRE reportedly has a 400 km range and performance to match its diesel equivalent. Though initially using Nikola's fuel cell design to power an electric battery, the architecture is in place to convert to hydrogen fuel-cell technology in the future.

Volvo and Daimler, meanwhile, have joined forces to 'develop, produce and commercialise fuel cell systems for heavy-duty vehicles and other case uses'. The common goal of the joint venture is to have vehicles capable of operating demanding long-haul routes in series production by the second half of the decade.

"Combining the Volvo Group and Daimler's experience in this area to accelerate the rate of development is good both for our customers and for society as a whole," said Martin Lundstedt, Volvo Group President and CEO.

INDEPENDENT ADVICE

So where can an operator turn for independent, well-qualified advice on the merits and otherwise of various alternative fuels?

Fraikin is well-placed to provide expert advice on how different technologies will suit different applications – after all, we delivered our first electric vehicle into service with a customer on multi-drop work in the heart of London a decade ago. We’ve also been trialling innovative solutions such as Kinetic Energy Recovery Systems (KERS) technology in our rental fleet since late 2016.

Another good source of information is the Centre for Sustainable Road Freight (SRF), which was established in 2012 as

a collaboration between two universities (Cambridge and Edinburgh’s Heriot-Watt) together with organisations from the operational and manufacturing sides of the road transport business, all paying an annual subscription fee to be SRF members.

What do they get in return for that fee?

“When the SRF objectives were spelled out, I could see that this was something that Wincanton could hang its hat on,” says Dave Rowlands, Technical Services Director at Wincanton, one of the UK’s biggest logistics firms.

“I particularly like that the research is industry-steered. It isn’t research for the

sake of research. We saw great benefits in the two universities coming together: the traffic and logistics expertise of Heriot-Watt melding with the engineering expertise of Cambridge. The multi-disciplined approach is a great thing for us as vehicle operators.

“We don’t run trucks for the sake of it. It’s the whole goods movement that is important, not just how the vehicle performs. Sustainability is important to us and to our customers.”

Proof of the pudding is a recent SRF study of five aftermarket dual-fuel (diesel and gas) truck conversions, which revealed one big fly in the ointment for such gas vehicles: methane slip. This is the phrase used

to describe the incomplete combustion of methane in the engine as the vehicle switches from one fuel to the other.

The result has seen second thoughts among many big fleet operators over the true environmental credentials of dual-fuel conversions, given the global warming potential of methane is some 25 times higher than that of CO₂.

Mercedes-Benz claim its electric Urban eTruck has a range of up to 200 km – enough for a typical daily delivery route.



Where can I find more information?

Transport for London's LoCity scheme, aimed at encouraging uptake of low-emission commercial vehicles

www.locity.org.uk

Freight in the City

www.freightinthecity.com

Low Carbon Vehicle Partnership

www.lowcvp.org.uk

Freight Transport Association's Logistics Carbon Reduction Scheme

www.fta.co.uk

Centre for Sustainable Road Freight (CSRF)

www.csrf.ac.uk

Transport for London

www.tfl.gov.uk

British Vehicle Rental and Leasing Association

www.bvrla.co.uk

Road Haulage Association

www.rha.uk.net

Government guidance on planned CAZs

www.gov.uk/guidance/driving-in-a-clean-air-zone

British Vehicle Rental and Leasing Association – UK CAZ map

www.bvrla.co.uk/resource/CAZmap.html

Disclaimer: Produced in August 2018 (and updated in July 2020), this guide aims to highlight some key trends and technologies around reducing commercial vehicle emissions. However, it is intended for information purposes only and we do not make any warranty or representation on the completeness, correctness, accurateness, adequacy, usefulness or reliability of such information. Fraikin will not accept any liability based on any information provided in this document.



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