CALOR

Driving change for a greener future

A guide to reducing carbon emissions, cutting costs and improving operational efficiencies for the forklift truck market

A greener future?

Climate change – it is one of the modern age's greatest challenges.

Policies such as the Renewable Energy Directive – establishing an overall policy for the production and promotion of energy from renewable sources in the EU – and acts such as the Paris Agreement – setting out an international action plan to avoid dangerous climate change by limiting global warming to well below 2°C – have set the scene for how the world should be moving towards a greener future.

However, recent reports such as the Carbon Disclosure Project believe that while most large companies have plans in place to reduce carbon emissions, these do not go far enough.

In short, action needs to be taken across an organisation's entire value chain. Not only are businesses focusing on how to improve the environmental impact of their own operations, but there is increasing pressure on all those involved in the supply chain to demonstrate how they are taking steps to reduce carbon emissions too.

Many are looking at the example set by major British retailer Marks & Spencer. The brand believes it is the only major retailer in the world to be carbon neutral. Following on from the launch of its Plan A proposal in 2007 to meet these objectives, in 2017 Marks & Spencer launched its bold, new science-based target to further the efficiency of its own operations, as well as cut 13.3m tonnes of CO_2e from its wider value chain. The implications are clear. Put simply, everyone has a role to play towards creating a greener, more sustainable future.

This presents an exciting opportunity for supply chain professionals. Whether you're managing a fleet of heavy goods vehicles that deliver products to a major retailer's distribution centre, or you're responsible for running the logistics operations at a manufacturing facility, the fact remains that it now makes smart, commercial sense to operate in the most environmentally-friendly way possible.

Fuelling FLTs

As we've established, companies operating in the handling, storage and distribution industries must strive to improve their environmental performance.

For managers responsible for a fleet of forklift trucks (FLTs) that might be considering which fuel to use, there are three options available:

1. LPG | **2. Diesel** | **3. Electric**

While it is clear that operators need to find a fuel that will help reduce their environmental impact, the selected fuel also needs to prove that it can contribute towards other key business objectives.

When selecting a fuel for a fleet of FLTs, what are the key questions to ask?

Taking all of these questions into consideration, which of the three fuels comes out on top? LPG, diesel or electric?

LPG vs. diesel

Usage

Due to their low emissions, a key benefit to FLTs fuelled by LPG is that they can be used almost anywhere. Whether it's a food manufacturing site or another sensitive production environment, LPG can be confidently used both indoors and outdoors, offering a flexible solution for operators.

Soot marks from diesel can spoil packaging too, making diesel-fuelled FLTs unsuitable for facilities manufacturing food and other ingested goods, due to the strict health and safety regulations in place.

The operational efficiencies of LPG are well documented too. From figures supplied to Calor by leading FLT OEMs, it is estimated that cost savings of up to 24 per cent are possible when switching from diesel to LPG[1].

Cost savings of up to **24%** are possible when switching from diesel to LPG

Air quality and contamination

Particulate matter from diesel can contribute to respiratory diseases, such as asthma. This means diesel-fuelled FLTs are not ideal for indoor warehouses or other indoor facilities.

In contrast, LPG emits considerably less particulate matter than diesel – 98 per cent less, in fact. These emissions are lead- and soot-free, and – when fitted with a three-way catalyst – contain very low levels of carbon monoxide and NO_x emissions.

In a comparison with diesel technology, using independent testing carried out at the famous Millbrook Proving Ground, forklifts fuelled by LPG were found to produce 97 per cent less particulate matter and 23 per cent less CO_2 when lifting a one-tonne load. In addition, when fitted with a three-way catalyst, hydrocarbons and carbon monoxide emissions were reduced to virtually zero.

LPG emits considerably less particulate matter than diesel - **98%** less in fact

Furthermore, there is no risk of spillage with LPG, as it simply vaporises. In contrast, with any diesel spillages there is the potential of clean-up costs and fines, which can be significant.

Noise levels

FLTs fuelled by LPG are quieter than diesel models, creating less noise pollution for the surrounding environment. Not only does this produce a more pleasant working environment for operators and other employees, it also helps improve health and safety for staff.

In fact, tests have demonstrated that LPG forklifts are up to 10db quieter than diesel forklifts – a real benefit if you operate in a built-up area where noise pollution levels must be kept to a minimum.

LPG forklifts are up to **10db** quieter than diesel forklifts

[1]Figures calculated using typical cost & performance parameters for 1.5 and 2.5 tonne trucks, running on 8 and 16-hour shifts.

LPG vs. electric

Cost

A clear benefit of LPG over electric is cost. LPG fuelled FLTs are less expensive to buy and more cost-effective to maintain, when taking into account the cost of replacement batteries for electric models.

With electric FLTs requiring batteries to be charged, those converting to LPG will witness a dramatic reduction in electric consumption, and – with LPG fuelled FLTs costing less to operate – a real difference to the bottom line.

Refuelling

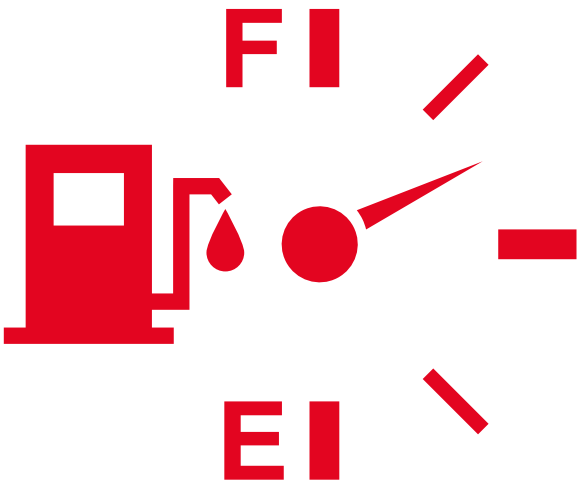
Refuelling an FLT with LPG takes mere minutes, as opposed to the longer battery recharges or changeovers required with electric power. Naturally, electric FLTs are also out of operation while they're being re-charged, which – in business terms – can cost money because of downtime.

Performance

FLTs fuelled by LPG can operate both indoors and outdoors, and perform well on uneven surfaces and steep gradients. Furthermore, LPG fuelled FLTs do not suffer from reduced performance at low temperatures, ensuring fleet managers have a fuel they can depend on.

How Calor gas outperforms other fuels

Key benefits	Calor LPG	Diesel	Electricity
Maintain power 24/7	✓	✓	✗
Suitable for operating indoors & outdoors	✓	✗	✓
Performs well on uneven surfaces and inclines	✓	✓	✗
Minimal maintenance	✓	✗	✓
Fast refuelling	✓	✓	✗
Clean burning fuel / increasing engine life	✓	✗	✓



Did you know?

It is worth checking that your bulk LPG tank is fitted with automatic top-up technology. This alerts your supplier when a tank is beginning to run low on fuel, ensuring a delivery can then be arranged for a time and day convenient to you. This ensures there is no interruption to your business due to a lack of fuel.

BioLPG: the fuel of tomorrow

To help the UK meet its lower carbon commitments, a new, renewable fuel has been developed: BioLPG, which is available exclusively from Calor.

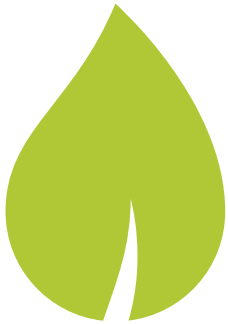
Building upon the already established benefits of LPG for the FLT industry, BioLPG is chemically identical to conventional LPG but created from renewable, ethically sourced feedstocks, such as organic plant materials, vegetable oil and animal fats. This means it is a 'drop-in' fuel and – as a result – there is no need for you to alter any equipment, appliances or supply infrastructure if you're currently using LPG for your FLT fleet.

FLTs already fuelled by LPG can, therefore, immediately begin taking advantage of BioLPG and start realising instant savings, with no need for a separate supply chain. If you are switching from diesel or electric, the benefits will be greater still.

Carbon emissions are dramatically reduced with BioLPG, offering an ideal solution for fleet managers looking to improve their sustainability credentials in line with the UK's legislative and environmental ambitions.

With the exact reduction in CO_2 emissions from BioLPG dependent on the proportion of feedstock used, Calor BioLPG offers minimum carbon savings of at least 20 per cent and potentially up to 32 per cent. This is based on a blend of 40 per cent BioLPG and 60 per cent conventional propane. The potential carbon savings are even greater with a higher BioLPG blend if used in HGVs.

Furthermore, feedstocks used in the production of Calor BioLPG by NESTE are verified with International Sustainability and Carbon Certification.



Carbon savings of up to **32%**

Verified with International Sustainability and Carbon Certification

Did you know?

For FLTs fuelled by diesel, the European emissions standards for non-road mobile machinery continue to introduce increasingly more stringent 'tiers' to cut emissions and help the UK move towards a more sustainable future.

Example scenarios

To demonstrate how switching to LPG and BioLPG can dramatically cut a fleet's carbon levels, the following scenarios consider three different fleet sizes fuelled by diesel and the savings they could potentially make. These figures really speak for themselves, and show the difference converting to an alternative fuel can make.

1. Small FLT operator

Carbon saving
LPG: 24%
BioLPG: 43%

For a fleet of this size, FLTs using diesel will produce more than 37 tonnes of CO_2 emissions every year. In contrast, should this fleet switch to LPG, then fleets can cut their carbon output by almost nine tonnes, to 28.6 tonnes.

The improvements should this fleet switch to BioLPG are even more pronounced, cutting CO_2 emissions to just over 21 tonnes, resulting in a carbon reduction of more than 16 tonnes.

2. Medium FLT operator

Carbon saving
LPG: 24%
BioLPG: 45%

A medium-sized fleet using diesel will produce almost 110 tonnes of CO_2 emissions a year. Should this fleet choose to convert to LPG, then this falls to just over 83 tonnes – a reduction of almost 26 tonnes.

However, if this fleet moves to BioLPG, then it could lower its CO_2 output to less than 62 tonnes. This is almost 50 tonnes less than if the fleet was using diesel.

3. Large FLT operator

Carbon saving
LPG: 24%
BioLPG: 38%

A diesel-fuelled fleet consisting of 20 FLTs, running for 14 hours a day, six days a week, would produce more than 524 tonnes of CO_2 a year. The good news is that by changing to LPG, the fleet could cut over 124 tonnes of CO_2 emissions from this figure, to 400 tonnes overall.

Go one step further with BioLPG, and this falls to just under 300 tonnes. That's a reduction of more than 200 tonnes of CO_2 emissions, making a big difference to the fleet's environmental credentials.

The road to a greener future

Implementing sustainable business strategies across the value chain has never been so urgent, and FLT fleet managers can play a vital role in helping the UK move towards a greener future, in line with the country's legislative and environmental ambitions.

For decision makers seeking a switch to a fuel that will have the greatest impact on reducing a businesses' carbon emissions, LPG's status as a fuel of the future seems secure.

BioLPG can even be used to fuel heavy goods vehicles as well, so for managers responsible for fleets including long-haul vehicles too, then BioLPG represents an even greater opportunity.

It makes good commercial sense to invest in a fuel that is future-proofed to offer the environmental credentials that big brands are now demanding from across the value chain.

LPG – and the future opportunities that BioLPG can help realise – will play a key role in helping the UK meet its lower carbon commitments, while delivering a range of other business benefits too.

For more information about LPG and BioLPG, please email **contactcalor@calor.co.uk** or visit **www.calor.co.uk/flt**

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