THE RTFO AND FAME GUIDE

Explaining the changes to fuel requirements, and how to manage FAME content the right way on the road to net zero carbon 2050.

certas energy

CONTENTS

WHAT IS FAME?

FAME is a biodiesel mostly made from recycled cooking oils, plant-based material and other renewable material such as animal fats and plant oils. The manufacturing process converts oils and fats from these feedstocks into long chain molecules known as fatty acid methyl esters – often referred to as FAME.

FAME has commonly been blended into UK road fuel since 2004 but has more recently been introduced to sulphur-free gas oil/red diesel. The 'ME' of FAME – the methyl esters – are hygroscopic, which means they absorb and retain moisture at a higher rate than conventional mineral diesels.

WHY IS FAME IMPORTANT?

Both the EU and UK continue to drive the use of biodiesel across the fuel supply chain. In the UK, this is supported by the Renewable Transport Fuel Obligation (RTFO), which requires that a certain percentage of fuel is renewable to improve production sustainability and help to reduce emissions of greenhouse gases.

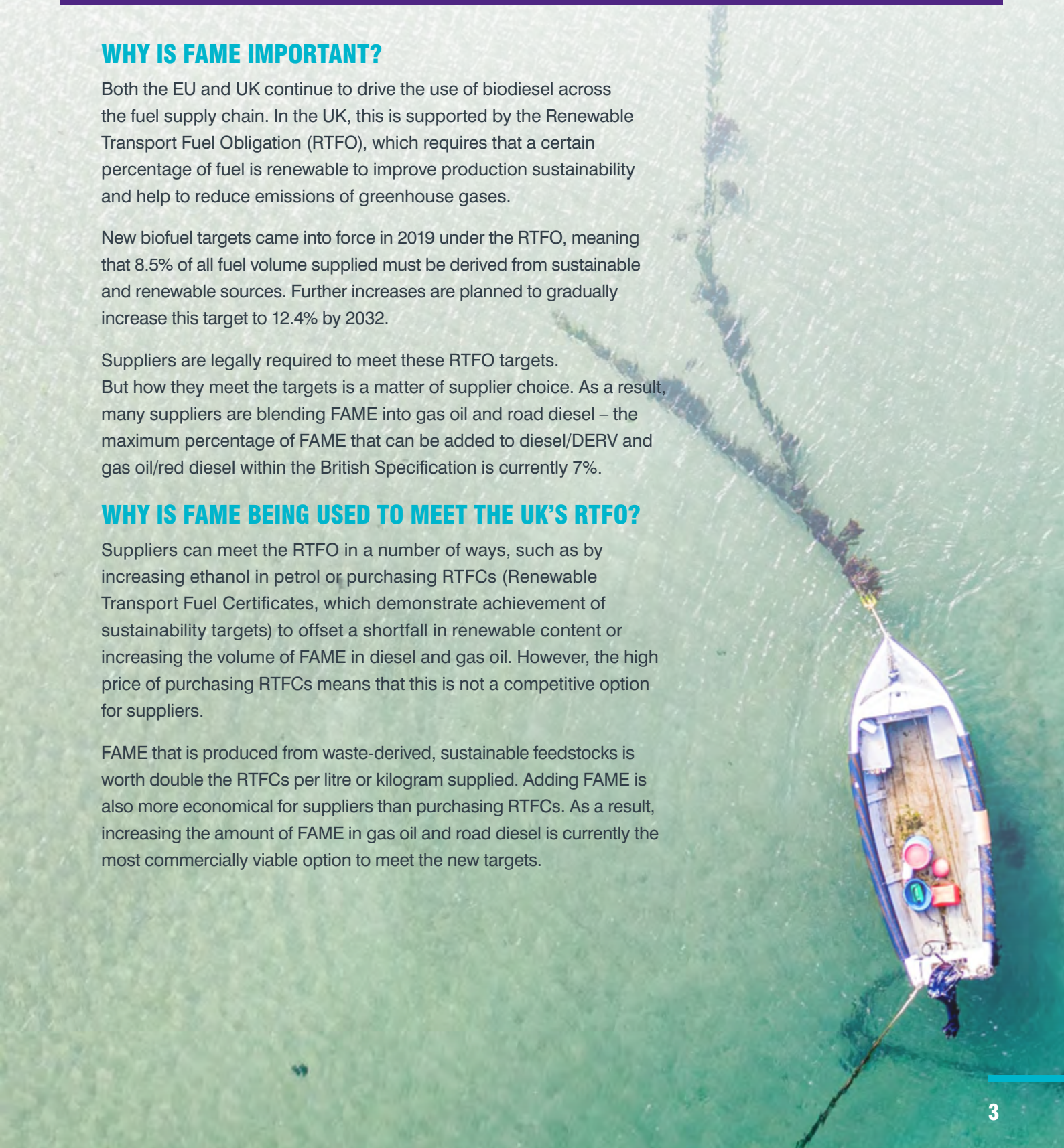
New biofuel targets came into force in 2019 under the RTFO, meaning that 8.5% of all fuel volume supplied must be derived from sustainable and renewable sources. Further increases are planned to gradually increase this target to 12.4% by 2032.

Suppliers are legally required to meet these RTFO targets.
But how they meet the targets is a matter of supplier choice. As a result, many suppliers are blending FAME into gas oil and road diesel – the maximum percentage of FAME that can be added to diesel/DERV and gas oil/red diesel within the British Specification is currently 7%.

WHY IS FAME BEING USED TO MEET THE UK'S RTFO?

Suppliers can meet the RTFO in a number of ways, such as by increasing ethanol in petrol or purchasing RTFCs (Renewable Transport Fuel Certificates, which demonstrate achievement of sustainability targets) to offset a shortfall in renewable content or increasing the volume of FAME in diesel and gas oil. However, the high price of purchasing RTFCs means that this is not a competitive option for suppliers.

FAME that is produced from waste-derived, sustainable feedstocks is worth double the RTFCs per litre or kilogram supplied. Adding FAME is also more economical for suppliers than purchasing RTFCs. As a result, increasing the amount of FAME in gas oil and road diesel is currently the most commercially viable option to meet the new targets.



HOW DOES FAME CONTENT AFFECT A LIQUID FUEL'S PROPERTIES?

As a biodiesel, FAME has a number of unique properties that are important to be aware of. Certas Energy's guide to FAME cuts through the confusion by explaining what to look out for when working with fuel containing FAME, along with suggestions on how to overcome any concerns entirely.

SIX EFFECTS OF FAME TO BE AWARE OF

Most modern engines are compatible with fuel containing the proportion of FAME set out within British Standards. However, FAME's water absorbent, detergent and solvent properties can cause operational challenges for older machinery or vehicles, as well as in bulk storage tanks.

1 MATERIAL INCOMPATIBILITY

FAME's solvent properties can corrode fuel system and tank components. Many common rubbers, plastics and surface coatings will degrade upon contact with FAME-containing fuels.

2 FILTER AND LINE BLOCKAGES

Blockages caused as a result of increased risk of water contamination, waxing, diesel bug and fuel separation could lead to fuel starvation in engines.

3 HIGHER WATER UPTAKE

Can result in poor fuel performance, higher fuel consumption and greater risk of diesel bug infestation.

4 FUEL SEPARATION

Fuel-water emulsion in tanks can lead to irregular fuel performance, early waxing of the bio component of the fuel and blocked lines.

5 POOR COLD WEATHER PERFORMANCE

This can lead to more frequent waxing and precipitation problems.

6 SHORTER SHELF LIFE

The stability of FAME-containing fuels may degrade over time by oxidation and hydrolysis, leading to discolouration, gum formation and deposits in storage and damage to machinery in operation.

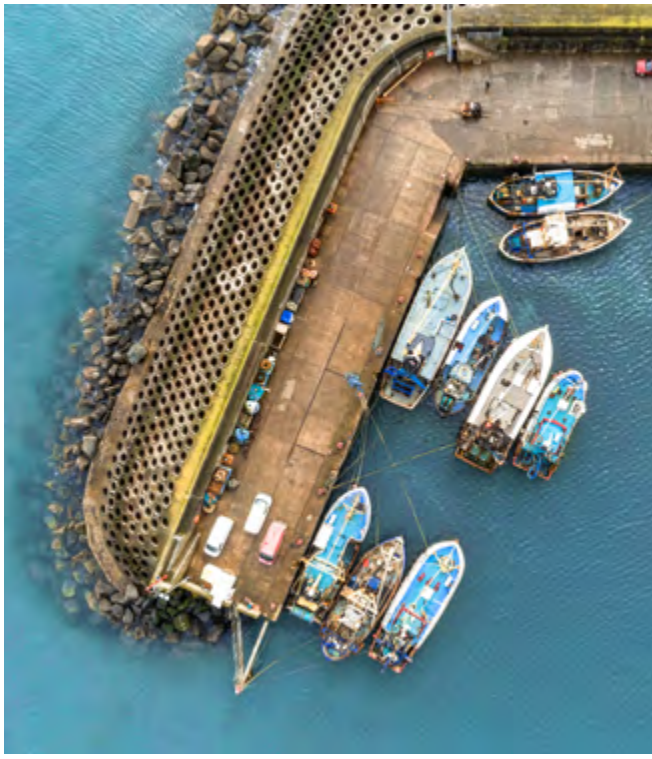
HOW CAN I PREVENT ISSUES CAUSED BY FAME?

BEFORE FUEL ARRIVES

In the first instance, purchasing fuel from a reputable oil supplier ensures that gas oil and DERV containing FAME meet British quality standards and are on specification.

Once the bio-blended diesel is in the tank, it is important to perform checks more frequently due to the heightened contamination and corrosion risks. Following the below steps during a tank check can help to reduce the potential for any FAME-related fuel contamination or component degradation:

1. Check your tank carefully for signs of degradation in structure, material or coating.
2. If there is any water, dirt, mould or growth present in the tank, it must be removed as soon as possible.
3. Any changes to the distinctive diesel smell could indicate fuel contamination that must be remedied immediately.
4. Inspect pipework, seals, pumps and other components frequently for signs of actual or potential leakage. If a leakage is found, it is vital to replace components immediately to prevent further damage.
5. Be sure to examine filters regularly and have fuel filters replaced after two or three deliveries.
6. Consider how long the fuel has sat in the tank. To minimise the potential for water intake, Certas Energy recommends limiting the storage time of FAME-blended fuels to a maximum of six months.



CHECKLIST FOR FAME EFFICIENCY

- **Safeguard tanks from all possible water ingress, such as rain and humidity.** FAME's hygroscopic nature is the biggest contributing factor to fuel contamination.
- **Drain water from tanks regularly.** If the tank does not feature a drain point for water, it will need to be modified to include one.
- **Keep the tank as full as possible.** This minimises fuel's exposure to moisture from the air.

IMPROVING EFFICIENCY WITH ADDITIVES

For those that have already experienced the impact of the FAME increase in diesel and gas oil, there are a number of readily-available solutions on the market.

Certas Energy offers a wide range of high-quality additives that can prevent or remedy issues caused by increased FAME content in DERV and gas oil/red diesel:

ANTI-BUG

Tackles current and immediate microbiological infestation. Anti-Bug is used to inhibit microbiological activity in clean tanks and can be added directly into a vehicle or machine fuel tank.

- **Broad spectrum additive**
- **Has an immediate effect**
- **Eliminates plugging of filters or engines**
- **Protects against tank and pipe corrosion**

GAS OIL CONDITIONER

Provides an all-in-one treatment for gas oil to improve day to day running of diesel engines and will stabilise fuel during storage. The additive can counter any negative effects resulting from the reduction in sulphur content and the increase in biodiesel (FAME) content and will give improved fuel economy.

- **Increases fuel shelf life**
- **Inhibits fuel tank sludge formation**
- **Prevents microbiological growth**
- **Maintains a clean fuel delivery system**

FAME-FREE FUEL: WHAT IS THE ALTERNATIVE?

FAME-free fuels solve the issues caused by fatty acid methyl esters before they even begin. Today, many FAME-free fuels are drop-in alternatives that can be used as a replacement for diesel, requiring no engine or machinery modifications.

SHELL GTL

A drop-in, FAME-free alternative to conventional diesel for both on-road and off-road applications.

What are the benefits?

- Shelf life of up to five years
- Cold-filter plugging point of -20°C
- Zero bio content
- Reduces emissions of harmful nitrogen oxides (NOx) and particulate matter (PM)
- Ideal for back-up power generators and final fill for winter
- Avoid filter clogging through build-up of wax crystals
- Improved cold start performance

Shell GTL Fuel

FUELLING THE JOURNEY TO NET ZERO AND BEYOND

Fuel with high FAME content is becoming more common due to the important mission we all face: to reduce emissions and reach the UK government's target of Net Zero Carbon 2050.

Certas Energy is here to help businesses get ready to meet that goal, while keeping the safety principles of Vision Zero firmly in mind. We offer a reliable, nationwide supply of high-quality cleaner-burning fuels as alternatives to red diesel and DERV – and we provide expert advice our customers can rely on. We know business needs support in finding the right alternative fuel solutions and integrating them efficiently, without disrupting operations or affecting commercials.

Find out how Certas Energy can help to fuel a successful future for your business – the right way.

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