

**GREEN
BIO
FUELS**

GREEN D+[®]

Sustainable Fuel

A paraffinic EN15940 fuel enhanced to produce the lowest emissions

Green Biofuels Carbon Emission (CO₂e) savings this year

35,456,390kg

Equivalent to **51,664** flights from London to New York

Making a Difference Here & Now

We lead the way in advanced low emission & greenhouse gas saving fuels in the UK since 2013.



Road Transport

Commercial Fleet Operators

Public Utility Vehicles

Coach Operators

Marine

Commercial Ferry Operators

Waste Transportation

Commercial Inland Waterway Vessels



Power Generator

Flexible Power Generator
for Grid Balancing

Off Road Mobile Machinery

Generator Hire

Heating & Air Conditioning Units

Standby Power in Commercial Buildings

Plant & Machinery



The Benefits of GREEN D+

- ✓ A 100% drop-in replacement for diesel and gasoil.
- ✓ GREEN D+ HVO is a **premium high quality drop in fuel** made from renewable, sustainable raw materials.
- ✓ Certified by the ISCC to **reduce carbon emissions by 90%**, compared to fossil diesel.
- ✓ Reduces **Particulates by 85%** and **NOx by 30%**.
- ✓ Extended 10-year storage lifespan.
- ✓ Cold filter plugging point of **-34 degrees**.
- ✓ Gives near identical energy output in both variable and fixed speed engines.
- ✓ Meets **EN15940 / ASTM D975** specifications.
- ✓ Cleaner air with year-round performance.

Environmental Benefits

UK Department for Transport used standard emissions assumptions for fuels scope 1 WTT:

	kg CO ₂ e/L
Diesel B7	3.122
GREEN D+	0.249
Displaces 2.73kg/CO₂e per Ltr.	

Scope 1 & Scope 3 for diesel, biodiesel & HVO [BEIS3]

1 diesel engine has the equivalent CO₂e emissions as 12 engines running on GREEN D+



Vs.



ISCC certification



Proof of Sustainability

Proof of Sustainability (PoS) for Biofuels and Bioliqids V4.5

For biofuels and bioliqids according to the Renewable Energy Directive (RED) and the Fuel Quality Directive (FQD), both amended through Directive (EU) 2015/1513

Unique Number of Sustainability Declaration: EU-ISCC-Cert-DE119-44206796-V54-2006

Place and date of dispatch: Koste Tankstorage Boflek 04/06/2020

Date of Issuance: 03/07/2020

Supplier
Name: Green Biofuels Limited
Address: Brook Street 42, WYK52BL, London, United Kingdom
Certification System: ISCC EU
Certificate Number: EU-ISCC-Cert-DE119-44206796

Recipient
Name: [Redacted]

1. General Information
Type of Product: HVO - hydrotreated vegetable oil
Type of Raw Material: Used cooking oil (UCO)
Additional information (voluntary): Used Cooking Oil (Mixed)
Country of Origin (of the raw material): United Kingdom 100%
Quantity: 619.389 m³ @ 15°C [] m³ [] metric tons
Energy content (MJ): 21.698.228 MJ

2. Sustainability criteria of the biomass according to Article 17 RED:
The raw material complies with the sustainability criteria according to Art. 17 (3), (4) and (5) RED? Yes No
The raw material meets the definition of waste or residue according to the RED, i.e. it was not intentionally produced and not intentionally modified, or contaminated, or discarded, to meet the definition of waste or residue? Yes No

3. Greenhouse Gas (GHG) Information
Total default value according to RED applied Yes No
E = Eac + Ei + Ep + Ebd + Eu - Esca - Ecca - Eocr - Ees gCO₂eq/MJ
+ + + 2.90 + 2.19 + - - - = 5.18
GHG emission savings¹:

Renewable Fuel Assurance Scheme

We issue quarterly certification of:

- Quantity and grade of fuel supplied
- Origin of the feedstock
- Carbon intensity
- Carbon saving (compared to fossil)

Renewable Fuels Assurance Scheme | **Renewable Fuel Declaration** | **Zemo Partnership**

Fleet Operator & Supplier Information

Customer name	Customer address
Renewable Fuel Supplier	Renewable fuel supplier identifier
Category of renewable fuel supplier	Declaration period
Declaration number	Date declaration issued

Renewable Fuel Description

Renewable Fuel	GHG emission intensity of renewable fuel supply chain
Renewable fuel blend supplied	GHG emissions savings
Volume of renewable fuel sold	
Production process	
Country of production	
Distribution to refueling station	

Greenhouse Gas Emission Performance

GHG Emission Savings Compared to Fossil Fuel

A+	>101
A	91-100
B	81-90
C	71-80
D	61-70
E	51-60
F	41-50
G	31-40
H	21-30
I	11-20
J	0-10
K	0-10

Feedstock Sustainability

Renewable fuel feedstocks
Country(s) of origin
Traceability from feedstock origin
Supply Chain Voluntary Sustainability Scheme Certification(s)

Further information
GHG emissions relate to Scope 3 emissions in corporate GHG emission reporting (Greenhouse Gas Protocol). GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

Zemo renewable supplier approval date: [] RFAS website: www.zemo.org.uk

DIESEL vs HVO vs GREEN D+

How do we compare?

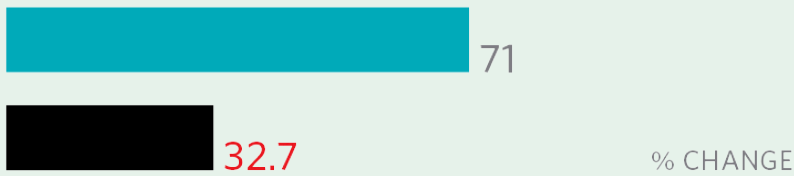
DIESEL



HVO



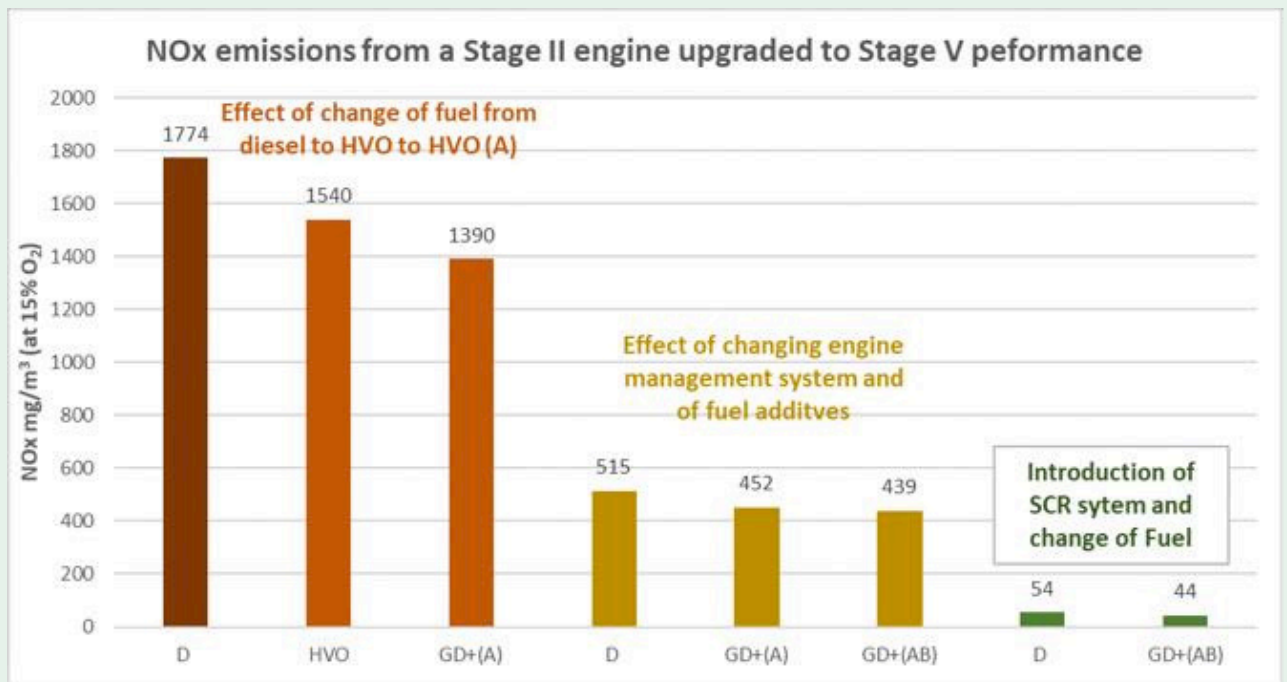
GREEN D+



% CHANGE



Millbrook independent test trial data



Fuel Standard

GREEN D+ meets fuel standards:

- European standard EN15940
- US standard ASTM D-975
- Japanese standard JIS K-2204

Approved for use in the vast majority of diesel engines

Appendix: Specification of Green D+ (with comparisons to Diesel and other Paraffinic fuels)

Specification and Properties of Diesel and Alternatives	units	Test method	Paraffinic fuels Standard		GREEN D+ specification		Diesel Standards						
			EN 15940:2016		EN 15940:2016		EN590:2013		ASTM D975:15B		JIS No. 2		
			min	max	min	max	min	max	min	max	min	max	
Cetane number		EN 15195	70.0		70.0		51.0		40.0		45		
Density at 15°C	kg/m ³	EN 12185	765.0	800.0	765.0	800.0	820.0	845.0					
Sulphur content	mg/kg	EN 20846		5.0		5.0		10.0		15.0		10	
Flash Point	°C	EN 2719	>55		>55		>55		>52		50		
Carbon residue (on 10% distillation residue)	% (m/m)	EN 10370		0.3		0.3		0.3		0.4			
Ash Content	% (m/m)	EN 6245		0.01		0.01		0.01		0.01			
Water Content	mg/kg	EN 12937		200.0		200.0		200.0		200.0			
Total Contamination	mg/kg	EN 12662		24.0		24.0		24.0					
Copper Strip corrosion (3h at 50°C)		EN 2160		Class 1		Class 1		Class 1		Class 3			
Oxidation Stability	g/m ³	EN 12205		25.0		25.0		25.0					
Lubricity, corrected wear scar diameter at 60°C	µm	EN 12156-1		460.0		460.0		460.0		520.0			
Viscosity at 40°C	mm ² /s	EN 3104	2.00	4.50	2.00	4.50	2.00	4.50	1.90	4.10	2.5		
Distillation 95% (v/v) initial boiling point	°C			360		360		360					
Distillation 95% (v/v) recovered at 250°C	°C			180		180		360					
Distillation % (v/v) recovered at 250°C	% (v/v)	EN 3405		65		65		65					
Distillation % (v/v) recovered at 350°C	% (v/v)		85		85		85						
Distillation 95% (v/v) recovered at 350°C	°C			360		320		360					
Cloud point (Summer / Winter) and CFPP	°C	EN23015/EN116			-15/-32	CFPP reported	Down to -34						
Appearance		visual			Clear & Bright								
Total aromatics	% (m/m)	EN 12916		1.1		1.1				35.0			
Conductivity	pS/m	EN 6297			100								
Acidity (TAN)	mgKOH/g	ASTM D3242				0.01							
Sediment, particulate matter	g/kg	EN12662		10		1							
Net Heat of Combustion	MJ/kg	ASTM D4809			44		42.72						
GHG CO ₂ e values	g CO ₂ e/MJ		88.04		8.75		88.04						
	kg CO ₂ e/kg		3.7544		0.3256		3.7544						
	kg CO ₂ e/L		3.1562		0.2540		3.1562						

OEM Approvals

GREEN D+ HVO is approved by Original Engine Manufacturers & meets international fuel standards EN15940 & ASTM D975



Mercedes-Benz



STEYR



DS AUTOMOBILES

IVECO



RENAULT



JOHN DEERE



AGCO

Fuel Delivery

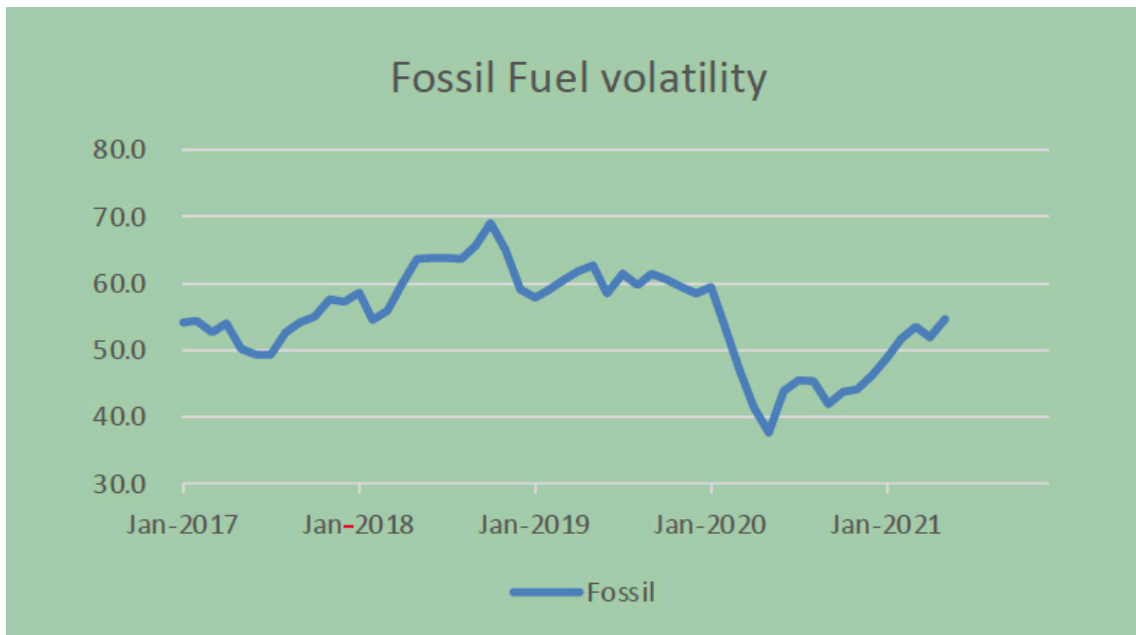
GBF stores up to 25m litres of fuel in the UK at any time

- We operate bulk storage depots around the UK, optimizing delivery times, minimizing mileage, and ensuring business continuity.
- We use FORS accredited delivery contractors, to give complete geographic coverage.
- Our delivery vehicles are directly fueled with GREEN D+ or mass balanced to minimize CO₂e emissions in our supply chain.
- All journeys recorded for audit purposes.
- Electronic Proof of Delivery to GBF and our client.



Advantages of working with us

- ☑ here and now solution
- ☑ no capex costs
- ☑ proven track record low
- ☑ risk transition to alternative
- ☑ vehicle technology
- ☑ positive immediate CSR impact
- ☑ local air quality improvement
- ☑ fix pricing structures to allow you to manage cost
- ☑ significant cost saving on a total cost of ownership
- ☑ own haulage reduced embodied carbon in your good



Case Study



Sky Sports becomes first broadcaster in the world to run a live production with generators using GREEN D+ fuel

Background

Sky Sports is a group of British subscription television sports channels operated by the satellite pay-TV company Sky, a division of Comcast. Sky Sports are committed to powering their business with renewable energy, improving efficiency and driving down carbon emissions.

Challenge

Sky Sport's outside broadcast operations are powered by mobile diesel generators. They are often placed in built up areas, with crew in close proximity. Sky Sports need the cleanest fuel possible which can run without any modifications to equipment, maintenance or changes to operating procedures. Sky Sports need a fuel to help them reduce their carbon emissions, all part of Sky Zero their 10-year plan to be net zero carbon by 2030. Find out more about Sky Zero: <https://www.skyzero.sky/sport>

Solution

On Tuesday 2nd February 2021 Sky Sports broadcasted the live Scottish Premiership match between Kilmarnock and Celtic becoming the first broadcaster in the world to produce live sport using GREEN D+ fuel. Throughout 2021 Sky Sports plan to switch all their Outside Broadcasts over to GREEN D+ HVO.

Sky Sports' benefits by replacing regular diesel with GREEN D+ HVO

- Improving local air quality through:
 - NOx reduction of approximately 30%
 - Particulates reduction by 70%
- Reducing Greenhouse Gases
 - Reducing CO₂e by approx. 90%

Case Study



Cole Groundwork Contracts LTD achieve 15-20% gain in fuel economy on stage v plant using GREEN D+

Background

Cole Groundwork LTD are the UK's leading road construction specialists. As a subcontractor to the civil engineering company Bouygues, a joint venture partner working on HS2, they are at Brighton University working on the new student accommodation on Lewes Road.

Challenge

Cole Groundworks are always looking to improve processes, and to improve Environmental issues is just one of these processes. Suggestions to reduce carbon output and improve the local air quality really interested Bouygues UK as both Cole Groundworks and Bouygues UK see this as an issue that is a growing concern in built up areas.

Solution

Cole Groundwork LTD are known for always finding a solution to every problem and see themselves as problem solvers first and foremost. After extensive research, Cole selected GREEN D+ as their fuel of choice as this addressed the challenges set by Brighton University without any additional capital expenditure required. The result is so great that other contractors on site are looking to follow Cole Groundworks' example. Cole Groundworks have monitored fuel economy and emissions during the works and are reporting the following:

- Benefits of using GREEN D+
- 15-20% gain in fuel economy stage v plant
- NOx reduction by approximately 30%
- Particulates reduction by 70%
- Greenhouse emissions reduced by approx. 90%

"We are delighted to be the first Irish company to be using this advanced HVO fuel in all our sites across the UK, we plan to introduce this to all our sites now in Ireland also. We are passionate about being the 'best' in our field; and know that GREEN D+ is allowing us to help our customers hit their sustainability goals, and more importantly all our staff have noticed improved efficiency with Plant, better air quality on site, and no heavy diesel plumes from cold plant. This is what we believe is a true revolution for air quality in our area of expertise, and an innovation that will help the entire Construction Industry."

Conor Cole, Managing Director, Cole Groundwork Contracts

Commenting on the use of GREEN D+, **Clayton Parsons, Site Manager, Bouygues UK**, said: *"Bouygues UK is conscious of our environmental impact as a result of our core activities in construction and are constantly adapting in an effort to reduce this impact. We are proud to partner with Cole Groundworks to advance initiatives which will reduce our carbon footprint. We welcome the use of GREEN D+ fuels on our project here in Brighton and congratulate our supply chain partners for their efforts in this regard and encourage any others which are willing to take part too."*

"It is great news when the supply chain leads the charge to reduce carbon in construction, driven by a passion for innovation, and a drive to efficiency. Coles have a GBF smart tank on site, that allows them to monitor fuel efficiency, energy used by plant, and report their CO2e reductions. We can deliver fuel in the confidence that it is needed and there are no wasted delivery miles."

Magnus Hammick, CEO, Green Biofuels

A Transition Product Solving Today's Challenges



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[Green Biofuels Limited](https://www.linkedin.com/company/GreenBiofuelsLimited)

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