



SulNOx

Taking you further, faster and cleaner

The Greentech company providing
next generation, natural solutions, for immediate
progression towards carbon neutrality



SulNOx Group Plc
Corporate Brochure 2021

Who is SulNOx Group Plc?

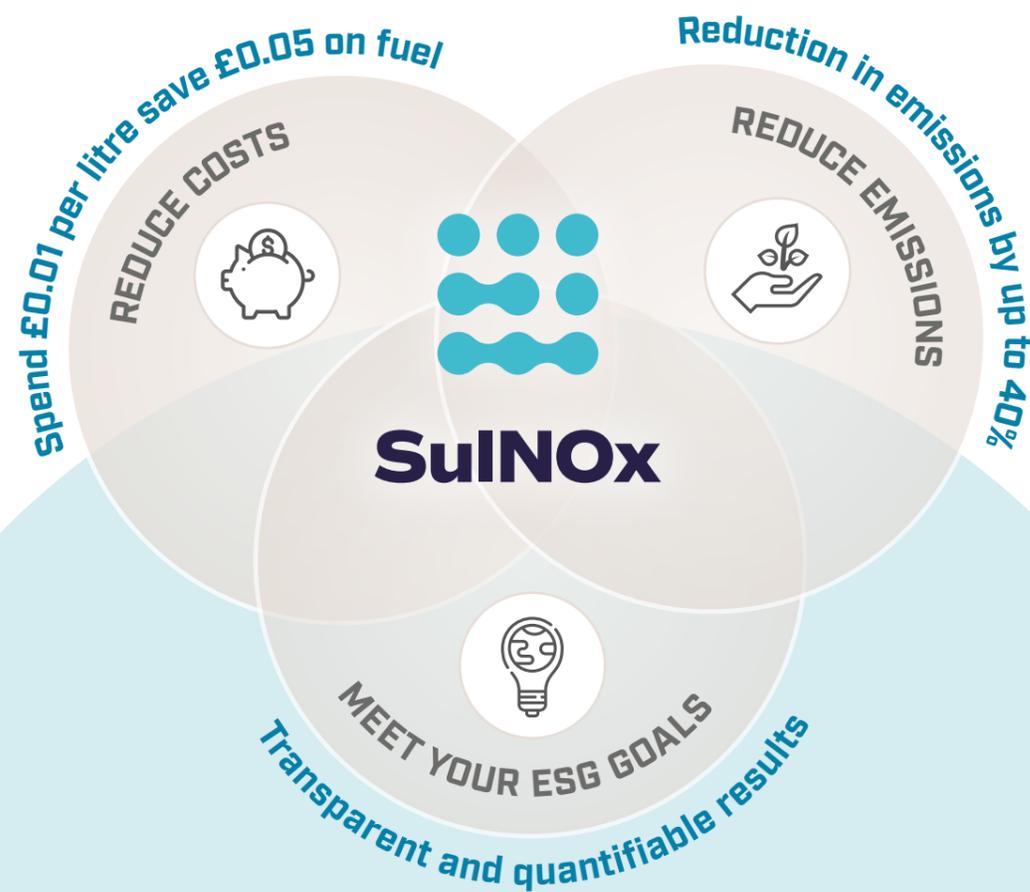
SulNOx is a Greentech company which specialises in providing responsible solutions towards decarbonisation of liquid hydrocarbon fuels. Our patented fuel additives reduce the production of harmful, environmentally damaging emissions whilst also offering significant cost savings.

SulNOx is a UK Public Limited Company, formed in 2012, trading on the Apex segment of the AQSE (Aquis Stock Exchange) growth market.

What sets us apart?

SulNOx fuel additives are unique and are made only from sustainable, biodegradable ingredients, to emulsify water and increase oxygen availability to the fuel - making it burn cleanly and more efficiently

"Our mission is to provide immediate and tangible progression towards carbon neutrality for hydrocarbon fuel users – saving them money whilst saving the planet."



The benefits of using SulNOx include:

Cost Savings

- ✓ Reduced fuel consumption (8% average in 1.2 million mile road test)
- ✓ Reduction in maintenance costs (1-2% average)
- ✓ Reduction in downtime for fleet vehicles
- ✓ Reduction in fuel storage costs

Positive Environmental Impacts

- ✓ Reduced fossil fuel consumption
- ✓ Significant reduction in emissions, NOx, SOx, CO & CO₂ output
- ✓ Decarbonisation - less smoke, soot and harmful particulate matter (PMs)
- ✓ Improvement in overall air quality (PM10 reduced > 50% and PM2.5 > 60%)

Improved Engine Performance & Health

- ✓ Detergents and surfactants increase fuel lubricity by 31%, reducing engine wear
- ✓ Reduced fouling of ignition, diesel filters and fuelling components
- ✓ Lowered exhaust temperature and quieter engine
- ✓ Reduced contamination of engine oil
- ✓ Increased preservation of engine and turbo life
- ✓ Significantly reduces Exhaust Gas Recirculation (EGR) system load

No Warranty or Compatibility Issues*

- ✓ Diesel-Certificate-EN-590
- ✓ Petrol-Certificate-EN-228 (E5, E10)
- ✓ Biofuels-Certificate-EN-16709 (B20, B30)

"Combined benefits allow consumers to realise an overall reduction in operating costs by up to 10%"





"Using SulNOx drives immediate progress towards achieving carbon neutrality"

The problem with the current thinking

Traditional fuel additives are fossil fuel based, often formulated from waste refinery products such as naphthalene or xylene. They work in the same way as adding lighter fluid to a fire to make the combustion of fuel burn harder and brighter. It is simply adding fossil fuels to the problem of fossil fuels. This is neither a solution for decarbonisation nor reduces the harmful impact that fossil fuel combustion is having on the environment; it simply masks the real problem of poorly combusted fuel by adding cetane points which are not a green credential.

Forming water-in-diesel emulsions (WiDEs) had been heralded as one possible solution. However, WiDEs often proved unstable and would separate, leading to objections from vehicle and engine manufacturers, and voiding warranties if used in their vehicles. As a result, WiDEs never became an acceptable solution.

New "All-in-One" solution to age-old fuel problems

The range of SulNOx's green products includes the revolutionary SulNOxEco™ Fuel Conditioners which improve the combustion profile of light fuels including gasoline, regular diesel, Marine Diesel Oil (MDO), Marine Gas Oil (MGO), Biofuels including Hydrotreated Vegetable Oils (HVO) and Kerosene.

SulNOx products are unique fuel additives. The genesis of our products is different, they are not derived from distillates of fossil fuels. **SulNOx make sustainable, biodegradable products**, created to make fuels cleaner and more efficient through the process of emulsifying residual water already present in fuels. SulNOx's first product, Berol® 6446*, is a powerful emulsifier. Additional water can be added to fuels to form a remarkably stable new emulsified fuel, which is a vast improvement on the WiDEs of yesteryear.

Water as an ally, not an enemy

All fuels, but especially Biofuels, are hygroscopic in nature (they attract & absorb water). The presence of water can have damaging effects on the engine, filters and other critical parts, as well as issues from storage (e.g. diesel bug).

To solve this pervasive problem, SulNOx invented the **SulNOxEco™ Fuel Conditioners**, which take the water already present and perfectly disperse it throughout the fuel. These microscopic water droplets then vaporise in the combustion chamber, exploding large fuel globules into smaller droplets, increasing the surface area of fuel available to mix with oxygen. The SulNOx formulation also releases additional oxygen to improve combustion efficiency, thereby reducing emissions and fuel consumption.

Additionally, the detergent properties of SulNOx removes deposit build-ups, clean the filters, fuel lines, EGR systems and other engine parts whilst adding >30% lubricity into the fuel, reducing wear. Significant reductions in SOx, NOx, CO, CO₂ and particulate matter are realised, along with improved fuel economy and reduced maintenance costs (8-10% in Euro 6 class trucks).

**Increased surface area of fuel + increased oxygen
= cleaner, more efficient combustion**

* Berol® 6446 is used exclusively with HFO industries

Product Range

SulNOx currently has three successful products in the global marketplace: Berol® 6446 HFO Fuel Emulsifier and two fuel conditioner products, SulNOxEco™ Diesel and SulNOxEco™ Petrol Fuel Conditioners.

Berol® 6446 HFO Fuel Emulsifier

When encountering water, our products emulsify it into the fuel thereby improving the combustion profile whilst reducing emissions through the secondary explosion mechanism.

Using Berol® 6446 Fuel Emulsifier in all grades of HFO (Heavy Fuel Oils) to emulsify water (up to 18%) will therefore significantly reduce toxic emissions, while save your business money on fuel costs, and the wear and maintenance of your engines, burners, boilers and heat exchangers.

Bunkering – SulNOx offers remarkable, long-term (>1 year), stable emulsions for all grades of HFO. This is possible by combining Berol® 6446 HFO Fuel Emulsifier with our ultrasonic process equipment.

SulNOx Eco™ Fuel Conditioners

Enhancing all diesel, petrol and biofuels.

- **Improves the burn profile** and more complete combustion of diesel thereby significantly improving fuel economy.
- **Adds lubricity (31%)** as verified by Bureau Veritas and still remains EN590/EN16709 compliant; crucial for improving engine health.
- **Reduces corrosion and removes engine residue.** Significant extension to the life of engine oils leading to a substantial reduction in engine wear and maintenance costs.
- **Diesel - dosing of 1:2000 mix ratio.** Competitive pricing and low volume usage make SulNOx economical. Spend £0.01 per litre and save £0.05 on fuel.
- **Petrol - dosing of 1:1000 mix ratio.** Spend £0.02 per litre and save £0.05 on fuel. Also tackles the current concerns with E10 fuel and stops separation of ethanol.

"The only fuel additive not to invalidate manufacturer warranties"



Example Fuel Savings

Haulage

Savings in excess of 8% evidenced by a fleet of Euro VI trucks driving over 1.2 million miles, consuming 1 million litres of diesel per annum at cost of circa £1.3 million.

Treated with SulNOx = c. £100k saving per annum c. £4k per truck, per annum with > 30 tonnes of GHG reduction



Shipping

Validation testing resulted in savings up to 15% with shipping volumetric displacement tests. Using our modest 8% savings mark, a vessel that burns 1 mt of fuel per hour and an annual consumption of 2,920 mt per annum at a 20 port average price of \$500.00 mt we get an annual cost of \$1,460,000.

Treated with SulNOx = \$101,374 saving per vessel, per annum

For a fleet of 50 vessels of similar size = \$5,100,000 saving per annum



Industries

If you or your company consumes diesel or other liquid hydrocarbon fuels, consider incorporating SulNOx as part of your decarbonisation responsibilities. Industries currently benefiting from using SulNOx include transport (haulage, buses, coaches, taxis, van fleets etc.), shipping, oil companies, fuel storage and distribution, waste/reclamation, mining, generators, agriculture and construction. For industry specific brochures, please contact us at info@sulnoxgroupplc.com.

Warranty and Compatibility

Manufactured by Nouryon BV, SulNOxEco™ Fuel Conditioner is verified by Bureau Veritas to be compatible with all diesel and gasoline type fuels including EN590, EN16709 Biofuels (B20, B30), EN228 gasoline (E5 and E10) and is certified to comply with, and not alter, the specification of any of these fuel types. SulNOxEco™ Fuel Conditioner is the only fuel additive that will not void your engine warranty as it remains fully compliant to recommended engine manufacturer standards.

Nouryon



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SulNOx is a member of the UK & Ireland Fuel Distributors Association

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