



The future of **decarbonisation** and **fuel efficiency**



PremaPLUS
THE POWER OF THE FUTURE

A revolutionary
solution
to decarbonisation and
improved fuel efficiency



What **PremiaPlus** does

Increases in fuel costs and ever-tightening environmental regulations have placed pressures on all businesses heavily reliant on fossil fuel. There is a huge demand for innovative solutions to both improve fuel efficiency and reduce GHG emissions, in particularly Carbon Dioxide.

Additional concerns arising from new and proposed fuels include:

- **Fuel lubricity:** the introduction of ultra-low sulphur diesel (ULSD) has greatly reduced fuel lubricity, leading to additional wear and corrosion.
- **Fuel stability:** ULSD and bio-diesel blends have decreased fuel stability in storage.
- **Maintenance:** increased pressure on operators to minimise service intervals for engine components in order to reduce operational costs.

A simple solution...

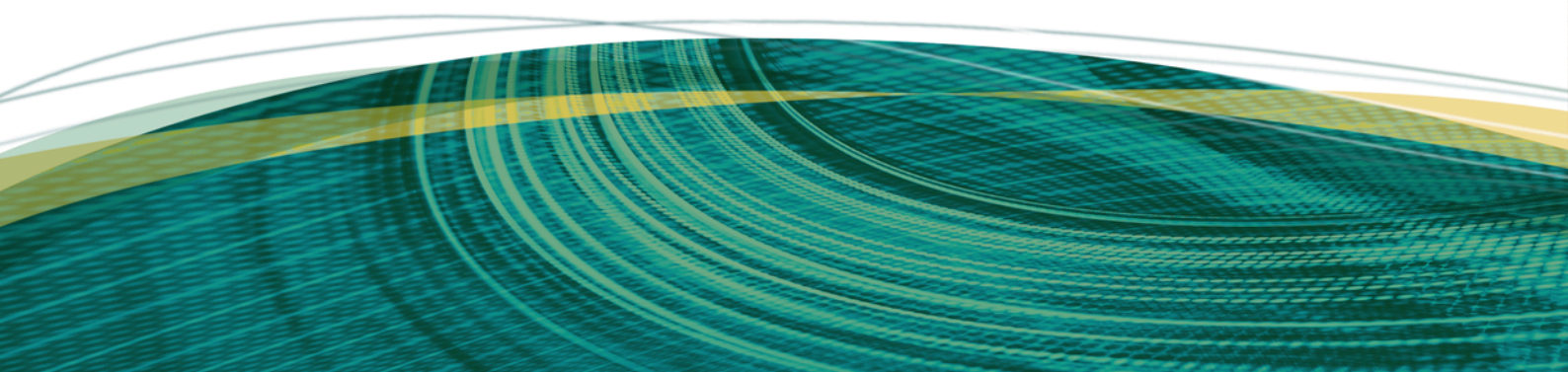
PremiaPlus comprises proven technology to reduce your fuel cost, decrease your carbon footprint, and improve the reliability of your engines and machinery.




the technology

How **Prema Plus** works

- Prema Plus is composed of a mixture of complex chemical molecules of unique surfactants and combustion improvers which, when blended into a base fuel, lower that base fuel's overall surface tension at liquid air, liquid liquid, and liquid solid (pipe wall) interfaces.
- This promotes lubricity, detergency and combustion efficiency; allows for improved atomization of the fuel in the induction and combustion chambers; reduces ignition delay, resulting in a more complete and efficient burn, thereby improving fuel economy and reducing harmful emissions, smoke and pollution.
- The combustion improver component reduces the ignition delay period, with resultant higher combustion efficiency, maximized fuel economy and easier engine start.
- The surfactants work by lowering the surface tension of diesel fuel so that passage through the injector forms a greater number of finer sized droplets when it is sprayed into the engine. The larger total surface area of these finer droplets enables better mixing of fuel and air in the combustion chambers. Fuel molecules and oxygen molecules have an improved chance of meeting and reacting, resulting in more complete combustion.





Improves Economy and Performance

When added to the relevant base fuel Prema Plus:

- Increases fuel economy by up to **12.5%**
- Reduces CO₂ emissions by up to **26.8%**
- Enhances combustion
- Improves lubricity
- Maintains cleanliness of the engine and its components
- Inhibits corrosion
- Reduces engine maintenance
- Prohibits the growth of microbial contaminants (diesel bug)

Easy to Administer

- Easy to use dosing systems are available
- Improves oxidation and storage stability of fuels
- Significant reduction of foaming of the fuel

Prema Plus offers significantly reduced CO₂ and other GHG emissions, improved fuel economy, lubrication, detergency, water co-solvency, fuel stability, and stabilisation of biodiesel.

our markets

Prema Plus and Maritime

Prema Plus can significantly reduce fuel consumption and CO₂ emissions when blended into all marine grade fuels.

Prema Plus will provide shipowners with an immediate leap-forward towards meeting ever-tightening decarbonisation rules and regulations within the global maritime industry (whether mandatory or voluntary), including:

- the 2023 IMO GHG Strategy
- the EU Emissions Trading Scheme impacting ships trading in the EU from 1 January 2024 (with a phase-in period of three years to 2026 and strict penalties for non-compliance)
- the IMO legislation on CII and EEXI which came into force on 1 January 2023.



Prema Plus and Mobile Power Generators

Prema Plus has performed excellently in various field tests to assess fuel reduction in diesel fuel power generators.

- Independent testing undertaken by operators on behalf of Prema Plus yielded a 12.5% reduction in fuel consumption, and, separately, a 26.8% reduction in CO₂ emissions, resulting in a combined aggregate potential reduction of 39.3% in total emissions (based on variable loads for a continuous run period on diesel generators).



Prema Plus and Offshore Oil and Gas Rigs

Offshore oil and gas rigs powered and operated by multiple onboard diesel generators are the perfect fit for Premia Plus, with the potential to significantly lower their carbon footprint.

- As with Shipping, the Offshore sector is under considerable governmental, regulator and investor/shareholder/customer pressure to meet offshore production emission targets. As an example, the North Sea Transition Authority requires all North Sea operators to reduce their carbon emissions by 10% by 2025, 25% by 2027 and 50% by 2030. The means by which they are going to achieve this are, at best, limited.

Prema Plus can increase fuel economy by up to 12.5%, and reduce emissions by up to 26.8%.



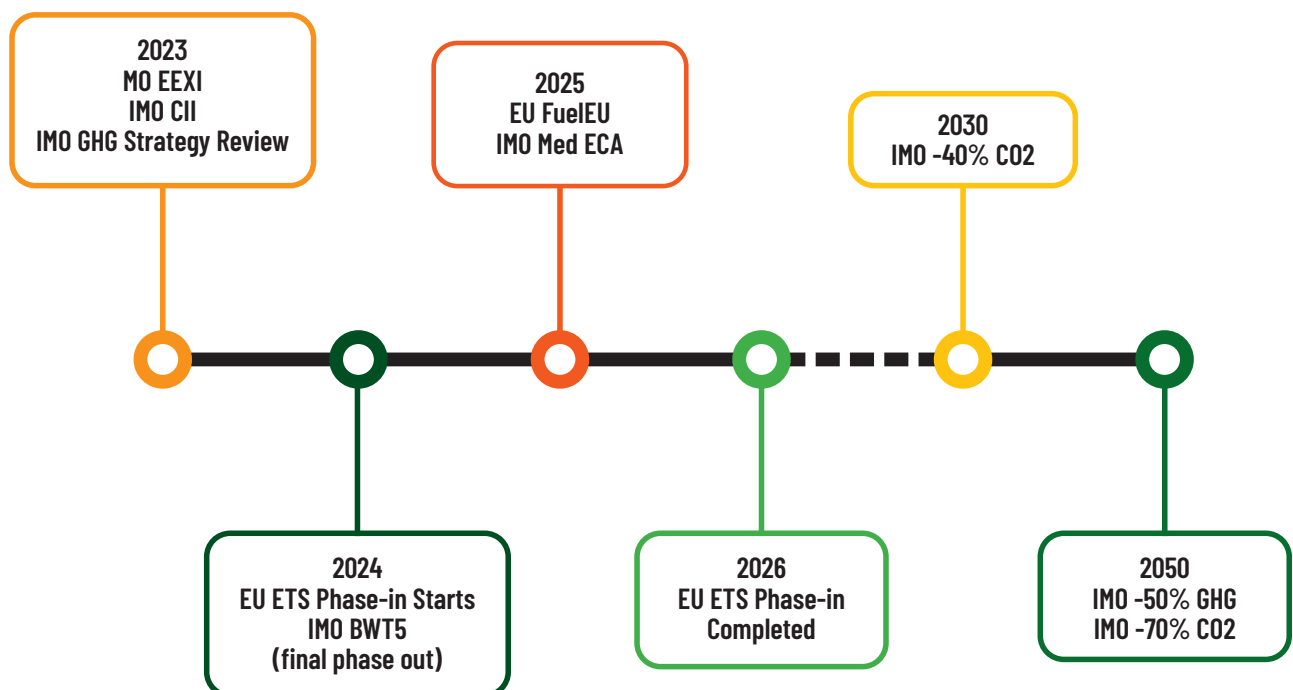
stay compliant

Shipping and Offshore - IMO Greenhouse Gas strategy and how we can help.

2023 marks the start of major decarbonization legislation. Prema Plus is the simplest, most cost-effective way for owners and operators to significantly cut CO₂ emissions. Whilst fuel savings of up to 12.5% effectively cover the initial cost of Prema Plus, it can also reduce CO₂ emissions by up to an additional 26.8%. Combining both under the IMO methodology for computing total emission reductions results in aggregate reduced emissions of up to 39.3%.

Such a huge saving in CO₂ emissions can bring a non-conforming vessel into the A,B or C category of IMO CII ratings without the need to introduce engine power limitation.

Prema Plus can also be the solution for SEEMP as an operational measure to meet a vessel's required CII rating (following IMO approval).



Proposed & Existing Measures

EEDI (Energy Efficiency Design Index)

- A stricter EEDI for newbuild vessels will be introduced.

SEEMP (Ship Energy Efficiency Management Plan)

- The SEEMP applies to new and existing ships and provides an operational measure to improve efficiency.

EEXI (Energy Existing Ship Design Index)

- Existing ships will be required to meet a new EEXI.

CII (Carbon Intensity Indicator)

- A CII rating from A to E will be given to each ship. A ship rated D for 3 consecutive years or E will have to submit a corrective action plan, to show how the required index (C or above) would be achieved.

Carbon Intensity Indicator (CII)

- Entry into force: 1st January 2023.
- An operational measure which can be achieved through speed reductions.
- CII is emissions per tonne mile over the course of a year.
- A to E ratings to be awarded.
- Vessels rated D or E must submit corrective action plans.
- Ratings to be awarded annually based on the previous year's performance.
- First ratings awarded in early 2024.

* *Gibsons Shipbrokers – Emissions Regulations Update 2022.*

Case study 1

A 350 KVA Generator was independently tested with a major power generator rental company, using Prema Plus to accurately record its fuel efficiency improvements.

TESTING 350KVA (SCANIA) DC13) L/KWHR

Duration of test 48 hours

Location: Jebel Ali, Dubai

TEST 1 - WITHOUT ADDITIVE

Start KWh	1,542,309	
End KWh	1,551,500	
Total KWh	9,191	
Fuel Start (L)	4,000	
Fuel End (L)	1,634	
Consumption (L)	2,366	0.257

TEST 2 - WITH ADDITIVE

Start KWh	1,551,500	
End KWh	1,560,892	
Total KWh	9,392	
Fuel Start (L)	4,000	
Fuel End (L)	1,884	
Consumption (L)	2,116	0.225

SAVING -12.49%



Case study 2

Summary of the field trial of Prema Plus on static power generation at Hambleton, Lancashire. Date of test 26/4/23.

The purpose of the test study was to monitor the reductions in emissions (Carbon Dioxide and Carbon Monoxide) when Prema Plus additive was blended with diesel in a generator.

The field trial was performed at facilities for disabled persons/families. Power generation is provided by an IPG 220kva generator.

Initially, the generator was tested for emissions operating with just diesel. The readings were as follows:

Carbon Dioxide (CO₂)	2.91%
Carbon Monoxide (CO)	375ppm

Prema Plus additive was then added to the generator fuel tank at the appropriate level – 1 part additive to 600 parts diesel.

To condition the engine with the additive the generator was operated for a period of six hours before the emission test was repeated. The test results were as follows;

Carbon Dioxide (CO₂) 2.13% a reduction of 26.8%

Carbon Monoxide (CO) 104ppm a reduction of 73%

The test results were verified by Robert Long M.Sc., F.Inst.R.

WE OFFER A FREE TRIAL
of Prema Plus so you can
independently test and record its
efficiency improvements on your
own machinery and generators



For further information and testing results,
plus a FREE Demonstration, please contact

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