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Level 4: Performance Outcomes

80%

Reduction in Particulate Matter (PM)

Verified data from 1500 KVA Cummins platforms (44.8 → 8.9 mg/Nm³).

8–15% Improvement in Fuel Efficiency

Achieved on CPCB2 platforms at 40–60% load, providing a 2 month payback period under the DaaS model.

42.9% CO₂ Reduction

Validated at optimal dosing levels and confirmed by increased O₂ levels in stack emissions.

Stack Emission Data (NABL-Certified on 1500 KVA Cummins)

Parameter	Without HHO	With HHO	Total Improvement
PM (mg/Nm ³)	44.8	8.9	– 80.1% Decrease
SO ₂ (mg/Nm ³)	81.4	7.8	– 75.2% Decrease
NO ₂ (mg/Nm ³)	154.3	62.8	– 59.3% Decrease
CO ₂ (%)	5.6	3.2	– 42.9% Decrease
Fuel per kWh	Baseline	-8.5%	+ 8.5% Total Saved

Level 2: The Internal CHFA Mechanism

(Cutaway View)

C Layer C: The Combustion Catalyst
 Hydrogen's 7x faster flame speed and low ignition energy (0.02 mJ) trigger a more complete burn of the primary diesel fuel.

B Layer B: Load-Adaptive Metering
 Electronic mass flow metering blends HHO into the air intake based on real-time engine load (Zone B optimization).

A Layer A: On-Demand Water Electrolysis
 IGBT-controlled alkaline electrolysis splits distilled water into HHO gas; no storage is required, eliminating explosion risks.

Accelerated Flame Propagation

Precisely metered hydrogen shortens ignition delay, ensuring diesel that previously escaped as soot is fully combusted.

Level 1: The Validation Foundation

Indian Patent No. 582824 Granted
 A 20 year protection granted on the electrolytic cell design, turbulence-inducing system, and gas delivery architecture.

ARAI Peer-Reviewed & Published
 Methodology and data validated in the ARAI Journal of Mobility Technology Vol. 6 (2026) across five engine platforms.

Level 3: The Reaction Chamber (The Physics)

Accelerated Flame Propagation
 The "perfect burn" results in a ignition delay, ensuring diesel that soot is fully combusted.

Internal Engine Decarbonization
 The "perfect burn" results in cleaning effect, removing legacy carbon deposits from the engine internals.

KOEL Co-Testing Partnership
 Endorsement through field testing by Kirtoskar Oil Engines Limited, India's largest diesel generator manufacturer.

New OPCB Regulatory Category
 India's Central Pollution Control Board is building a new regulatory classification specifically for combustion efficiency enhancement driven by CHFA.

SGT - GreenDrive

Retrofit Hydrogen Fuel Assist Platform for Every Engine on Wheels
 Decarbonising Diesel Infrastructure, Without Changing the Engine or Fuel.

Where It Works



Logistics: Long-haul trucks



Buses: Fleet buses

4 to 18% Fuel & tCO₂e Reduction



Construction: Excavators



Mining: Haul trucks

Upto 95% reduction of PM, >50% CO & HC reduction. Reduced NO_x and visible smoke

Integrated Hydrogen Fuel Assist Technology - Retrofit Installation
 No Hydrogen Storage | Low Pressure | Multi Level Safety Interlocks



HHO Gas to Air Intake of the Engine



SGT GreenDrive Mini



SGT GreenDrive Neo

Why It's Different



Improves combustion inside the engine



Works with OEM DPF / SCR systems



Reduces fuel use and CO₂ at source

Up to 95% PM Reduction

Reduces particulate matter emissions from the source.

Performance & Differentiation:

SGT GreenDrive vs. Post-Treatment Retrofits

Feature	Post-Treatment Retrofits	SGT GreenDrive
Fuel Impact	Increases use (2-5%)	Reduces use (3-15%)
Maintenance	Complex (Urea/DPF cleaning)	Simple (Water only)
Engine Life	No benefit (Backpressure)	Extended (Decarbonisation)

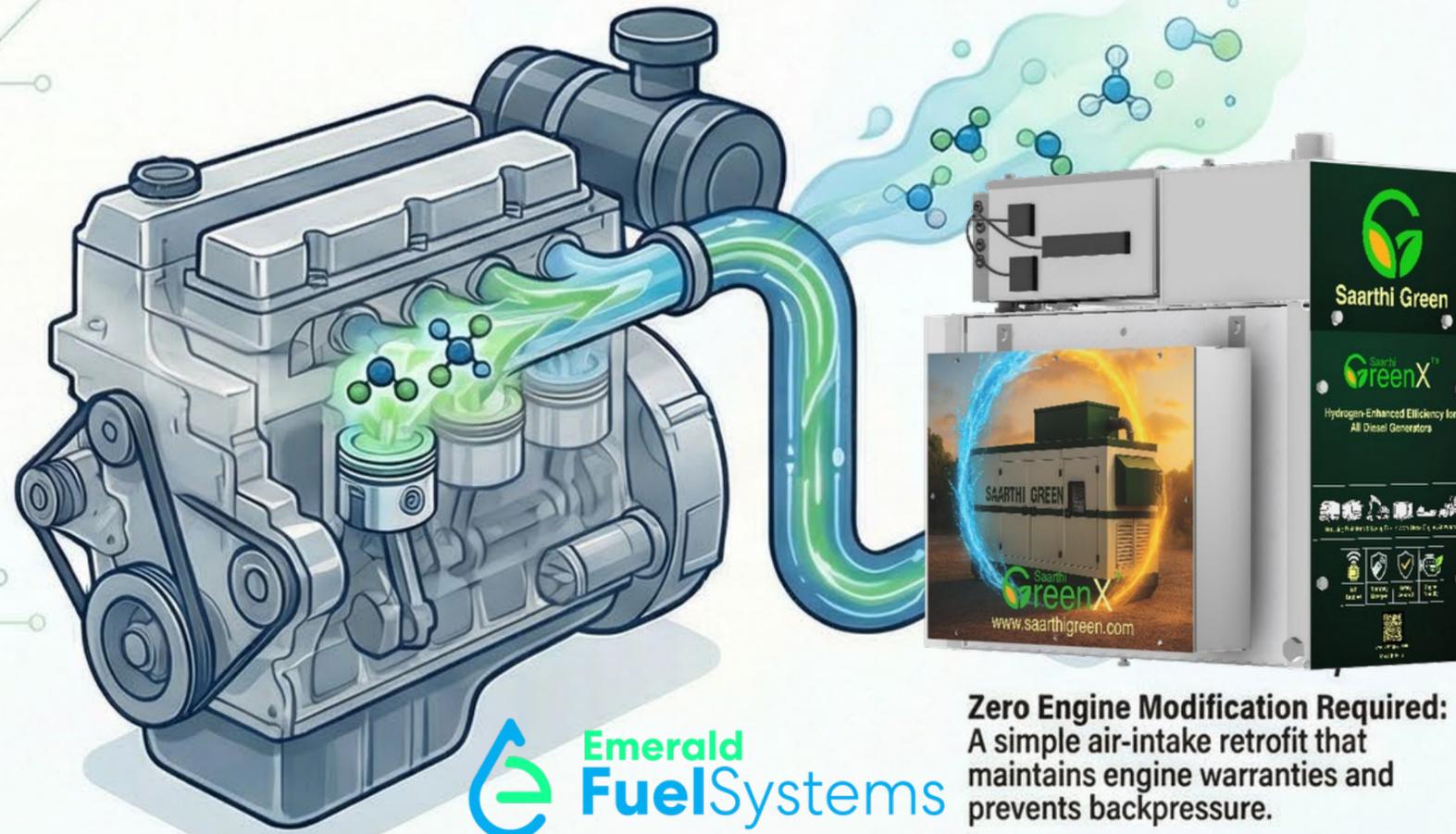


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SGT GreenX: The Future of Clean, Efficient Diesel Power

SGT GreenX is a patent-applied hydrogen fuel assist technology that injects on-demand HHO gas into diesel generators (25–4,000 kVA). Unlike restrictive exhaust filters, it improves combustion efficiency at the source to cut fuel costs and emissions simultaneously.



Zero Engine Modification Required:
A simple air-intake retrofit that maintains engine warranties and prevents backpressure.



3–15% Reduction in Fuel Consumption
Direct fuel savings achieved through optimized combustion and increased thermal efficiency.




Up to 95% Less Particulate Matter
Drastically reduces PM 2.5, CO, and HC emissions to meet environmental standards.



Proven Performance & Savings: SGT GreenX vs. Traditional Retrofits

Feature	Traditional Retrofits (DPF/SCR)	SGT GreenX
 Fuel Impact	 Increases use (2–5%)	 Reduces use (3–15%)
 Maintenance	 Chemical refills/cleaning	 Simple water & electrolyte 
 Root Cause	 Treats exhaust damage	 Fixes incomplete combustion

Strategic Industrial Applications



Critical Infrastructure & Telecom
Powers remote telecom towers, data centers, hospitals, and commercial buildings.



Manufacturing & Heavy Industry
Optimized for backup and captive power in manufacturing plants and ports.



Construction & Mining
Reliable on-site power solutions for harsh, high-demand environments.



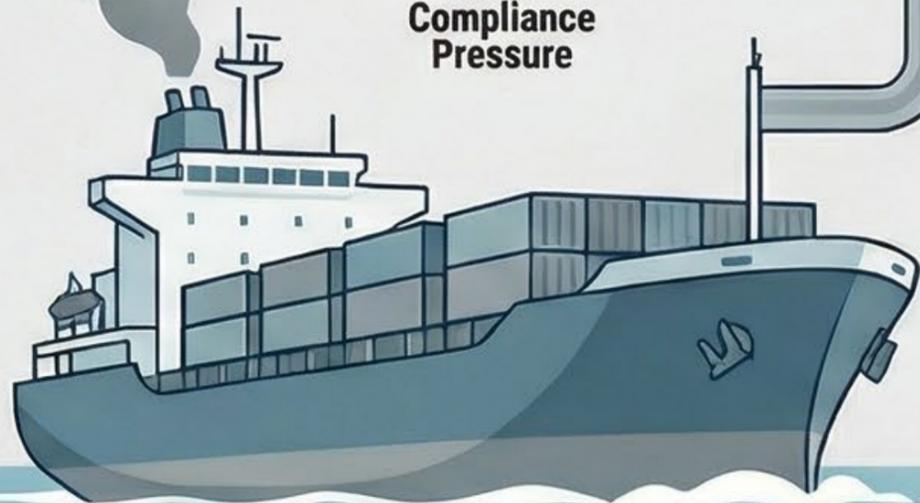
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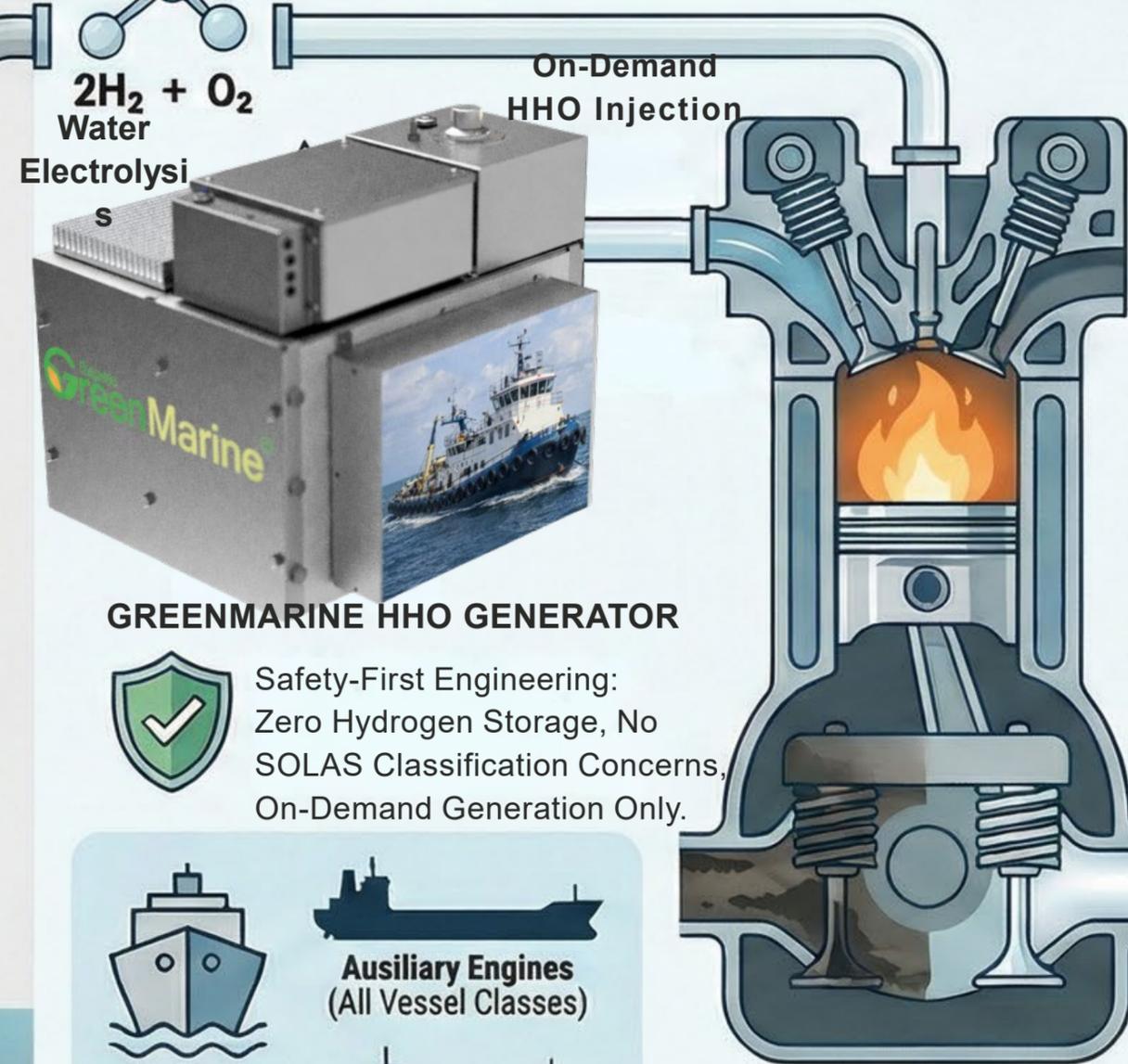
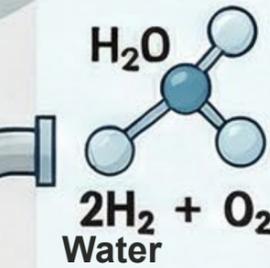
SGT GreenMarine: Optimizing Maritime Performance with Hydrogen Fuel Assist Technology

PROBLEM: IMO REGULATIONS & RISING FUEL COSTS

Maritime industry under intense pressure



SOLUTION: ON-DEMAND HHO TECHNOLOGY



GREENMARINE HHO GENERATOR

 Safety-First Engineering:
Zero Hydrogen Storage, No SOLAS Classification Concerns, On-Demand Generation Only.



Universal Retrofit Capability



Auxiliary Engines (All Vessel Classes)



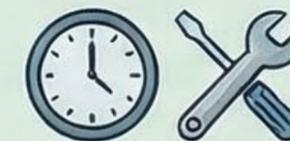
Propulsion Engines (Smaller Working Craft)

Continuous Internal Decarbonization:
Burns off carbon deposits, extends engine life, reduces maintenance.

IMPACT: OPERATIONAL & ENVIRONMENTAL BENEFITS



2-15%
FUEL & CO₂ REDUCTION:
Measurable savings, improves CII ratings, ensures IMO compliance.



Reduced Maintenance Downtime
due to extended engine life



UP TO
95%
LES
PM & SMOKE:
Drastically reduces particulate matter, CO and HC, for cleaner exhaust.

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HYDROEDGE



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Industrial Decarbonisation
Technologies

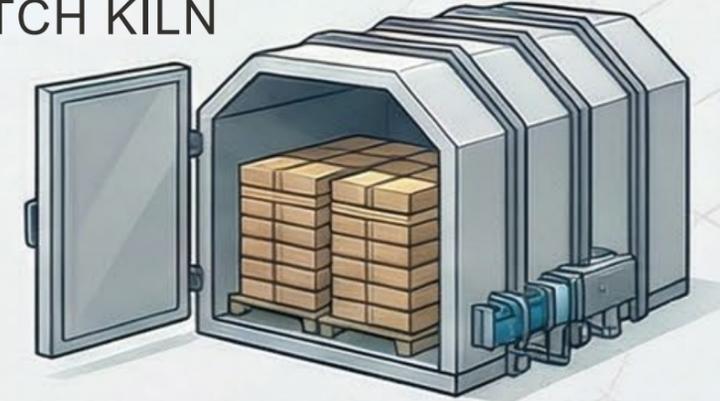
THE SGT GREENX 3000LPH SOLUTION

- On-Demand HHO Generation:**
 Generates up to 3000 LPH of hydrogen-oxygen gas through water electrolysis with zero storage risk.
- Seamless Retrofit Integration:**
 Installs onto existing batch, continuous, or rotary kilns with no modifications and minimal disruption.
- Research-Proven Performance:**
 Technology currently entering Proof of Concept (POC), supported by global research across ceramic and cement industries.

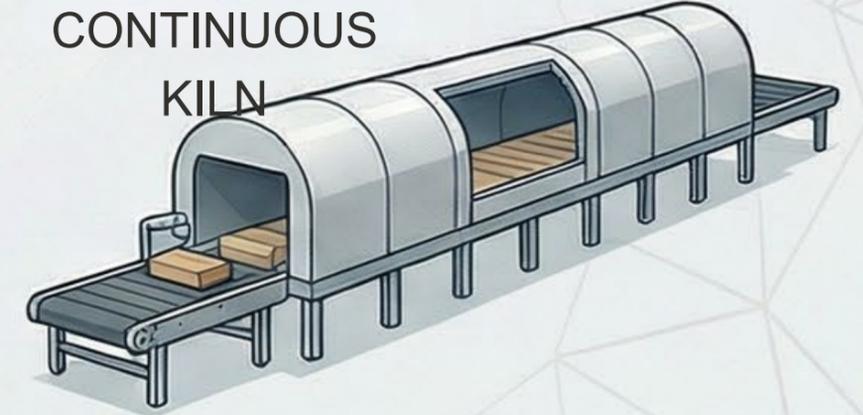


Kilns

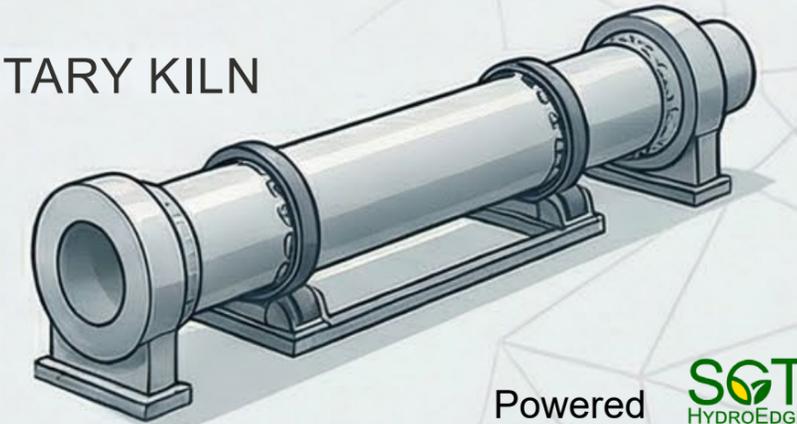
BATCH KILN



CONTINUOUS KILN



ROTARY KILN



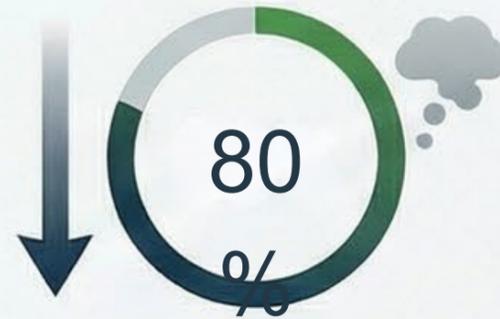
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SGT HYDROEDGE

IMPACT & SUSTAINABILITY



CO2 Reduction

Significant carbon footprint reduction achieved through more complete combustion of primary fuels.



Drop in PM & NOx Emissions

Advanced combustion chemistry dramatically reduces harmful nitrogen oxides and particulate matter (up to 70%).



2% -12%
Increase in Fuel Efficiency

Expected improvement based on global industrial research.

EXPECTED PERFORMANCE BENCHMARKS



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IoT & DIGITAL TWIN READY

Integrated sensors feed real-time performance and ESC-grade emission data into the GreenVision AI platform.

THE INEFFICIENCY CHALLENGE



Global Efficiency Gap

Most industrial boilers operate below peak efficiency, wasting fuel and generating harmful pollutants.



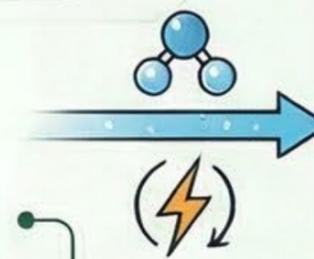
Rising Regulatory & ESG Risks

Tightening norms for CO₂, PM, and NO_x make operational inefficiency a significant competitive risk.

THE HYDROEDGE IMPACT



Retrofit Ready with Minimal Downtime
Modular units integrate seamlessly into existing systems without requiring boiler or fuel modifications.



On-Demand HHO Injection
Patent-applied technology generates hydrogen-oxygen gas safely via water electrolysis with zero on-site storage.



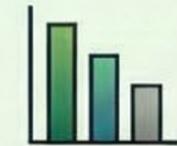
GreenVision AI Digital Twin
IoT sensors provide real-time monitoring of boiler efficiency and automated ESG-grade emission reporting.



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FUEL EFFICIENCY IMPROVEMENT
2-12%
reduction across all fuel types



CARBON MONOXIDE & PM (CO) REDUCTION UP TO
90%
decrease for cleaner exhaust



STEAM OUTPUT INCREASE UP TO
25%
increase without additional primary Fuel