

OCTAMAR™ INNOVATION ENDORSEMENT FROM CLASS NK INDUSTRY FIRST

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There is no silver bullet to meet future emissions targets in the marine industry. Innospec believes that through a combination of innovative technology and strategies, the shipping industry will be more than capable of standing up to the challenge ahead.

Innospec Fuel Specialties and Class NK are proud to announce that **Octamar™ Fuel Technology** has received Class NK's prestigious 'Innovation Endorsement' for reducing fuel consumption and improving emissions in vessels using Octamar™ performance packages. Class NK has independently verified Innospec's product performance claims regarding SFOC and PM reduction.

Octamar™ Ultra HF and Octamar™ Complete combine a powerful combustion catalyst with a fuel stabiliser/dispersant, creating a threefold effect:

Better fuel atomisation and injector spray pattern, ignition improvement and combustion catalysis. This way our products improve Fuel Economy (SFOC) and reduce unburnt fuel and deposits in the exhaust system. The result is a significant reduction of all emissions in respect of soot, PAH, post combustion fouling, black smoke and black carbon.

- An average fuel economy improvement of 2.7 % was achieved across eight vessel field trials
- A 60 % reduction in Particulate Matter (PM), a key driver in post-combustion deposits, black smoke, carbon and other harmful substances was detected
- SFOC reductions of between 2.3 to 3.9 % were recorded in four on-board tests while using combinations of combustion catalysts with detergents/stabilisers

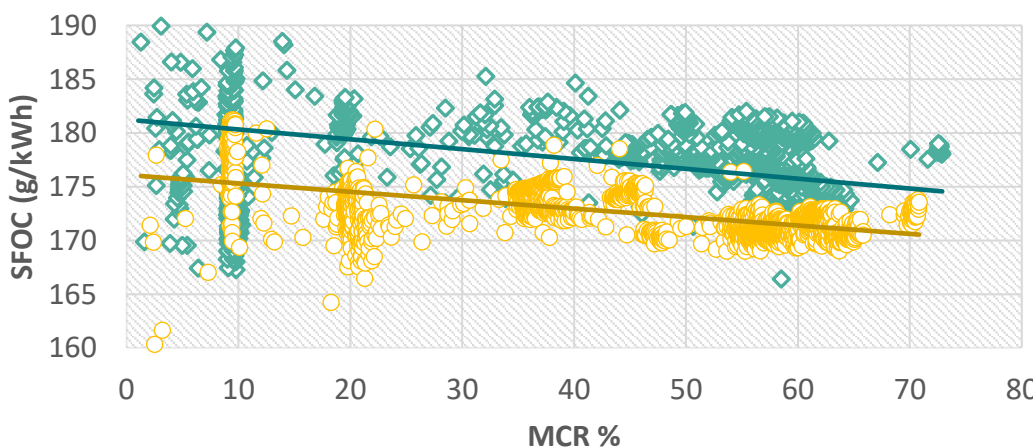


Improved Fuel Economy SFOC
(Reduction of between 2.3 % - 3.9 %)

Reduced Emissions
(60 % by mass of Particulate Matter)

Meaningful Performance with Octamar™ Ultra HF

Results from extensive field trials speak for themselves. Octamar™ products will help vessel owners and operators to enhance their fleet performance, by reducing fuel consumption by up to 3.9 % and sludge up to 70 % providing a launching platform for current CII regulations -with no upfront investment needed.



Engine: 9S90ME-C8
Vessel: 13,000 TEU Container
Fuel: VLSFO
Treatment: Octamar™ Ultra HF
Result: 2.7 % SFOC improvement*

*Instantaneous, short term benefit only i.e. excluding long term benefits such as sludge reduction, reduced injector deposits, turbocharger efficiency etc.

CII – Carbon Intensity Indicator

The table on the right illustrates the impact of Octamar™ Fuel Technology on the Carbon Intensity Indicator rating of a typical vessel.

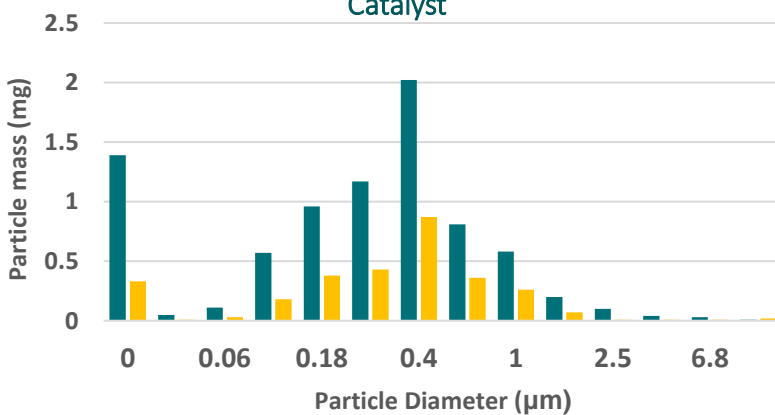
The same vessel using Octamar™ technology achieves a B rating in 2023, and remains compliant until 2026 (after which date the guidelines will change). However without treatment, by 2024 the vessel will receive a D rating and by 2026 must take corrective action.

Without treatment the vessel will become non-compliant in 2027 (should regulations remain the same or tighten).

	No fuel technology	With Octamar™
SFOC	200 g/kWhr	194g/kWhr ^{1.}
Fuel lost as sludge	100 MT	50 MT ^{2.}
Fuel bunkered (MT/Year)	5050	4848 ^{3.}
Energy produced (kWhr/Year)	24.7 x 10 ⁶	24.7 x 10 ⁶ ^{4.}
CII Rating 2023	C (4.70)	B (4.53)
CII Rating 2024	D	B
CII Rating 2025	D	C
CII Rating 2026	D	C

1. Between 2.3 – 3.9 % fuel savings as verified by Class NK
2. 30 – 70 % reduction in fuel lost as sludge (depending on fuel type)
3. Fuel bunker needed for the same voyage reduced
4. Same energy output obtained from less fuel bunkered

Emissions with Octamar™ Combustion & Soot Catalyst



Octamar™ technology is a complimentary technology to meet regulations contributing to reduce overall greenhouse gas emissions according to EU Emissions Trading System (EU ETS).

— Fuel + Octamar™
 — Untreated fuel

Our products can help vessels – old and new – reduce emissions of Particulate Matter (PM) by 60 % - with additional benefits such as PAH reduction, black carbon reduction and passive cleaning of turbochargers and other exhaust gas systems such as SCRs.

Octamar™ Fleet Performance

Innospec’s latest generation of Ignition and Combustion Improvers

- ✓ Reduces CO₂e (tested at MIPC, Hamburg)
- ✓ Reduces emissions – up to 60 % reduction in soot particulates
- ✓ Stabilises fuel and cleans fuel injectors for optimised spray patterns and engine performance
- ✓ Actively boosts fuel performance and fuel ignition/combustion
- ✓ Highly concentrated soot catalyst – prevents engine and exhaust gas system fouling, passively cleans fouled systems
- ✓ Prevents VLSFO ageing and sludging
- ✓ Reduces HSFO/VLSFO sludge by up to 70 % and keeps storage tanks clean – less sludge = more fuel to burn

Please contact your local sales representative for more information.

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