

BLUNOX INSIGHT · EMISSIONS & REGULATION

IMO Tier III Explained: What Every Shipowner Needs to Know in 2026

If your vessel operates in European waters, the Norwegian ECA or along the North American coast, IMO Tier III is not a future concern — it is the law today. Yet in our conversations with shipowners, operators and fleet managers across Europe, we still encounter significant uncertainty about exactly which vessels are affected, what compliance requires, and what the consequences of non-compliance are.

This article answers those questions plainly. By the end, you will know whether your vessel is affected, what your compliance options are, and why Selective Catalytic Reduction (SCR) technology has become the dominant solution for shipowners who need to get it right.

Key Takeaways — Quick Summary

- IMO Tier III limits NOx emissions to roughly 2.4 g/kWh — approximately 80% stricter than the previous Tier II standard
- The rules apply to vessels built from 1 January 2016 operating in designated Emission Control Areas (ECAs)
- The ECAs where Tier III applies in European waters include the North Sea, Baltic Sea and Norwegian ECA
- Non-compliance means port state control detention, fines and loss of access to ECA waters — a serious commercial risk
- SCR (Selective Catalytic Reduction) is the only technology currently proven to achieve Tier III compliance across all vessel types and engine sizes
- Norwegian vessel owners can receive up to 75% funding for SCR retrofit through the NOx Fund

1. What Is IMO Tier III — and Where Does It Come From?

IMO Tier III is the third and most stringent level of nitrogen oxide (NOx) emission limits set by the International Maritime Organization under MARPOL Annex VI, Regulation 13. MARPOL — the International Convention for the Prevention of Pollution from Ships — is the primary international treaty governing ship-source pollution, and Annex VI deals specifically with air emissions.

The three-tier structure was introduced progressively to give the shipping industry time to develop and adopt compliant technology:

Tier	Vessels Covered	NOx Limit (typical)	Reduction vs. previous	Where applies
IMO Tier I	Vessels built 2000–2010	~12.1 g/kWh (n=720 rpm)	Baseline limit	Worldwide
IMO Tier II	Vessels built 2011–2015	~9.7 g/kWh (n=720 rpm)	~17% stricter than Tier I	Worldwide
IMO Tier III	Vessels built from 2016*	~2.4 g/kWh (n=720 rpm)	~80% stricter than Tier II	ECAs only

* Applies to vessels with a keel-laying date on or after 1 January 2016, operating in a designated Tier III ECA. Exact NOx limits vary with engine rotational speed (n) — the figures above apply to medium-speed engines at 720 rpm. Refer to MARPOL Annex VI Regulation 13 for the full limit curves.

The step from Tier II to Tier III is not incremental — it is transformational. A roughly 80% reduction in NOx output cannot be achieved through engine tuning, fuel switching or combustion optimization alone. It requires dedicated aftertreatment technology, and in practice, that means SCR.

2. Which Vessels Are Affected?

The two key questions are: when was the vessel built, and where does it operate?

Vessel age: the keel-laying date rule

IMO Tier III applies to vessels whose keel was laid on or after 1 January 2016. In practice, this means:

- All new builds ordered and delivered from 2016 onwards must be Tier III compliant if they will operate in an ECA
- Vessels built before 2016 are not subject to Tier III requirements — they remain under Tier II (or Tier I if built before 2000)
- However, vessels undergoing a 'major conversion' after 2016 may be subject to Tier III requirements depending on the nature of the conversion

Where the vessel operates: ECA zones

Tier III limits only apply when a vessel is operating within a designated Emission Control Area. Outside ECAs, vessels built from 2016 are only required to meet Tier II limits. This geographic boundary is critical for fleet planning.

The keel-laying date and the operating area together determine your Tier III obligations. If your vessel was built from 2016 and operates in the North Sea, Baltic, or Norwegian ECA, compliance is mandatory.

3. Where Does Tier III Apply? A Guide to ECA Zones in 2026

The following table summarizes the Tier III NOx ECAs that are relevant for European and international shipowners:

ECA Zone	Coverage	Implication for shipowners
North Sea & Baltic Sea	All European waters west of the Danish Straits and the entire Baltic	All vessels in ECA — Tier III required if built 2016+
Norwegian ECA	Norwegian territorial waters and EEZ	NOx tax applies; NOx Fund available for retrofit funding
North American ECA	200 nautical miles off US and Canadian coasts	Tier III required for vessels built 2016+ in US/Canada trade
US Caribbean ECA	Waters around Puerto Rico and US Virgin Islands	Same as North American ECA
Future ECAs	Mediterranean Sea (proposed), Chinese coastal waters (national rules)	Monitor developments — regulatory tightening expected

For most European fishing vessel operators, offshore contractors, ferry operators and coastal traders, the North Sea and Baltic Sea ECA is the primary compliance driver. For Norwegian operators — particularly in the fishing and offshore sectors — the Norwegian ECA and the NOx tax regime add a further layer of financial incentive to invest in NOx reduction technology.

Important: The Mediterranean ECA

The International Maritime Organization has been advancing a proposal to designate the Mediterranean Sea as a NOx ECA. While no formal adoption date has been confirmed as of April 2026, the direction of travel is clear. Shipowners operating in Mediterranean trades should factor potential Tier III requirements into their newbuilding and fleet planning strategies.

4. What Happens If You Are Non-Compliant?

Non-compliance with MARPOL Annex VI Tier III limits is treated as a serious offence under international maritime law. The enforcement chain operates through port state control (PSC) inspections, and the consequences are commercially significant:

- Port detention: a vessel found to be non-compliant during a PSC inspection can be detained in port until deficiencies are corrected — with all the commercial disruption that implies
- Financial penalties: flag states and port states impose fines that vary by jurisdiction but can reach hundreds of thousands of euros for serious violations
- Loss of ECA access: in the most serious cases, vessels may be prohibited from operating in ECA zones — effectively excluding them from key European and North American trading routes
- Reputational damage: with ESG reporting requirements growing across the shipping industry, documented compliance failures are increasingly visible to charterers, investors and financial institutions

- Insurance implications: P&I clubs and hull underwriters are beginning to scrutinize emissions compliance records as part of risk assessment

The risk is not hypothetical. Port state control authorities in Norway, the Netherlands, Germany and the UK have all stepped up inspections of NOx compliance documentation in recent years, and the number of detentions related to environmental non-compliance is rising across European ports.

5. The Technology Options: How Do You Achieve Tier III?

There is no single path to IMO Tier III compliance, and the right solution depends on your vessel type, engine configuration, trading pattern and investment timeline. However, the technology landscape is relatively clear:

Technology	NOx Reduction	Complexity	Consumable	Applicability	Effectiveness
SCR (Selective Catalytic Reduction)	Up to 97%	Highest	Urea (AdBlue)	All engine types	★★★★★
EGR (Exhaust Gas Recirculation)	Up to 75–80%	Moderate	None	Medium/high-speed only	★★★
LNG fuel switch	70–90% (vs. diesel)	High	LNG infrastructure	New builds primarily	★★★
Water injection (HAM/EGCS)	Up to 60%	Moderate	Freshwater	Limited	★★

Note: Effectiveness ratings reflect typical real-world performance for marine applications across a range of vessel types and engine loads.

In practice, Selective Catalytic Reduction (SCR) has emerged as the dominant compliance technology for Tier III across the global fleet. It is the only approach that:

- Achieves the full Tier III NOx reduction target (and beyond) across the complete engine load range
- Is applicable to retrofit installations on existing vessels — not just new builds
- Is compatible with all major marine diesel engine types and sizes
- Operates independently of fuel type, meaning it works with MGO, HFO and biofuels
- Has a demonstrated, certified track record across thousands of installations worldwide

6. How SCR Technology Works — A Plain-Language Explanation

Selective Catalytic Reduction sounds complex, but the underlying principle is straightforward. Here is what happens inside a BLUNOX SCR system:

1	A precisely measured quantity of urea solution (the same AdBlue used in road vehicles) is injected into the hot exhaust gas stream downstream of the engine.
2	The heat of the exhaust gas converts the urea to ammonia (NH ₃), which mixes uniformly with the exhaust flow.
3	The ammonia-rich exhaust passes through the SCR catalyst.
4	Inside the catalyst, a chemical reaction converts the toxic nitrogen oxides (NO _x) into harmless nitrogen (N ₂) and water vapour (H ₂ O) — the same nitrogen that makes up 79% of the air we breathe.
5	The cleaned exhaust exits the system with up to 97% of its NO _x removed, fully compliant with IMO Tier III limits.

The BLUNOX Digital Airless Multipoint SCR system advances this process through a patented airless injection technology. Traditional SCR systems require a compressed air supply to atomise the urea — adding a separate air system, increasing energy consumption, and introducing a new potential failure point. BLUNOX TwinJet Nozzles achieve precise, uniform urea injection without compressed air, eliminating this complexity entirely.

The result is a system that is more compact, more energy-efficient, easier to install on existing vessels, and more reliable in the variable load conditions typical of commercial marine operations.

7. New Build vs. Retrofit: What Are Your Options?

New builds

For vessels currently under specification or construction, integrating a Tier III SCR system at the design stage is straightforward. BLUNOX works directly with shipyards, owners and designers to ensure the SCR system is integrated efficiently into the engine room layout, exhaust arrangement and control architecture. The compact footprint of the BLUNOX system gives designers maximum flexibility.

Retrofit on existing vessels

For vessels already in operation, retrofit is the primary compliance pathway. The key question is whether the system can be installed during a scheduled drydock period — and whether the installation space exists. The BLUNOX system has been specifically engineered with retrofit in mind:

- The ultra-compact catalyst is designed to fit within the existing silencer space on most engine configurations
- No compressed air supply, no exhaust gas mixers and no long urea injection pipes means a significantly smaller installation footprint than competing systems
- BLUNOX has completed retrofit installations on vessels ranging from 42-metre fishing vessels to jack-up drilling rigs — in as little as five days of on-vessel installation time

The starting point for any retrofit project is a feasibility assessment. BLUNOX can provide a preliminary assessment based on engine specifications and exhaust

arrangement drawings, confirming within five working days whether a system can be installed and what the key parameters are.

Real-world retrofit example: Mærsk Innovator

In 2013, BLUNOX completed the world's first offshore SCR retrofit — on the Mærsk Innovator jack-up rig, while the rig was in normal operation in the North Sea. Four SCR systems were installed on 4 × MAN-B&W Holeby 9L27/38 engines without a complete power shutdown. The Norwegian authorities measured the achieved NOx reduction at 97%. The project received support from the Norwegian NOx Fund and was completed fully within NORSOK standards.

This installation set a benchmark for what is possible in offshore SCR retrofit — and the same technology and engineering approach is available for vessels of all types.

8. The Norwegian NOx Fund — A Significant Funding Opportunity

For shipowners and operators with vessels registered in Norway or operating under Norwegian jurisdiction, the NOx Fund (Næringslivets NOx-fond) provides a compelling financial argument for SCR investment that goes beyond regulatory compliance.

Norway operates a NOx tax on emissions from vessels, offshore installations and other sources above a threshold level. Companies that invest in certified NOx-reducing technology can redirect a significant portion of their NOx tax liability into the NOx Fund, which then provides grants to fund qualifying projects.

- Eligible projects can receive up to 75% of the total documented investment as a grant
- BLUNOX SCR systems are certified by the NOx Fund as a qualifying long-term measure
- The fund covers design, equipment supply, installation and commissioning costs
- BLUNOX has supported multiple customers through the NOx Fund application process

At a grant level of 75%, the financial calculation for Norwegian fishing vessel and offshore operators changes substantially. A system that might otherwise represent a significant capital expenditure becomes a highly attractive investment with a short payback period through reduced NOx tax liability.

9. What Should Shipowners Do Now?

If you are uncertain about your vessel's compliance status or your options, the following steps are a practical starting point:

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| Step 1 | Confirm your vessel's keel-laying date and whether it operates in any designated NOx ECA. If both apply, Tier III compliance is a legal requirement. |
| Step 2 | Review your current engine documentation and NOx Technical File to understand the baseline NOx output of your installed engines and any existing emission reduction measures. |

Step 3	If you operate in Norway, review your NOx tax liability and assess whether a NOx Fund-supported SCR investment could reduce your total cost of compliance.
Step 4	Request a feasibility assessment from BLUNOX. Provide your engine make, model and rated power, along with your vessel's available exhaust arrangement space. We will confirm whether a BLUNOX SCR system can be installed and what the key parameters are.
Step 5	Plan your installation window. Retrofit installations are most efficiently completed during scheduled drydocking. If your next drydock is within 12–18 months, now is the time to begin the engineering and procurement process.

Conclusion

IMO Tier III is not complex once you understand its scope. If your vessel was built from 2016 and operates in the North Sea, Baltic Sea, Norwegian ECA or North American ECA, compliance is a legal requirement — not a choice. The technology to achieve it exists, has been proven across hundreds of installations, and is available for both new builds and existing vessels.

The question for most shipowners is not whether to comply, but how — and when. With drydock schedules, NOx Fund application windows and the lead time for engineering and manufacturing all factoring into the timeline, earlier engagement typically produces better outcomes.

BLUNOX has been delivering SCR systems since 2003. If you have questions about your vessel's compliance options, we would be glad to help.

Find Out If Your Vessel Needs Tier III Compliance

Send us your engine specs and we will provide a preliminary feasibility assessment
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