SHIP ENERGY EFFICIENCY MANAGEMENT



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Introduction

Fuel is the largest controllable cost in ship operation, and it is also the measure regulators now use to judge the industry. The IMO's Energy Efficiency Existing Ship Index and Carbon Intensity Indicator turned fuel consumption from an operational concern into a compliance obligation with a rating attached. This Ship Energy Efficiency Management Training Course gives ship officers, technical superintendents, and fleet managers a complete working method for that task. Participants learn the SEEMP framework, energy baseline and measurement, operational efficiency measures, technical retrofits, data collection and reporting, and fleet performance management.

Ship Energy Efficiency Management Course Objectives

- Apply the IMO Ship Energy Efficiency Management Plan (SEEMP) framework.
- Apply EEXI and CII requirements to vessel compliance planning.
- Establish energy baselines and consumption measurement methods.
- Apply voyage optimisation: routing, speed, and weather routing.
- Apply trim, ballast, and hull condition efficiency measures.
- Apply engine and machinery efficiency: tuning, load, and monitoring.
- Evaluate technical measures: hull coatings, propellers, and energy-saving devices.
- Apply the IMO Data Collection System for fuel oil consumption reporting.
- Apply alternative fuels and shore power basics to decarbonisation planning.
- Measure performance with EEDI, CII rating, and fuel consumption per tonne-mile.

Course Methodology

- Facilitated sessions built on real voyage data, noon reports, and SEEMP documents.
- Case workshops on CII rating drops, speed claims, and retrofit decisions.
- Energy baseline, consumption, and voyage optimisation calculation exercises.

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- SEEMP development and fuel data verification labs.
- Group exercise on a fleet energy efficiency improvement plan.

Who Should Take This Course

- Ship masters, chief engineers, and deck officers.
- Technical superintendents and fleet managers.
- Marine operations and performance analysts.
- Naval architects and marine engineers.
- Environmental and compliance officers in shipping.
- Chartering and commercial operations staff.

Ship Energy Efficiency Management Course Outlines

Day 1: Regulatory Framework and SEEMP

- IMO MARPOL Annex VI framework and its requirements.
- EEDI, EEXI, and CII definitions and application.
- SEEMP Part I, II, and III structure and purpose.
- Compliance timeline, verification, and statement of compliance.
- Regional and port-level requirements.
- Roles of flag state, class society, and verifier.
- Energy management governance on board and ashore.

Day 2: Measurement, Baselines, and Data

- Fuel oil consumption measurement methods and flow meters.
- Noon report data quality and validation.

- Voyage, distance, and cargo data requirements.
- Energy baseline establishment and normalisation.
- IMO Data Collection System reporting requirements.
- Data verification and common reporting errors.
- Performance dashboards and fleet benchmarking.

Day 3: Operational Efficiency Measures

- Voyage optimisation: routing, scheduling, and just-in-time arrival.
- Speed optimisation and its commercial trade-offs.
- Weather routing and sea state effects.
- Trim, draught, and ballast optimisation.
- Hull and propeller fouling management.
- Engine load, tuning, and auxiliary consumption.
- Cargo and stowage effects on efficiency.

Day 4: Technical Measures and Retrofits

- Hull coatings, antifouling, and cleaning regimes.
- Propeller optimisation and energy-saving devices.
- Waste heat recovery and shaft generators.
- Shore power and cold ironing basics.
- Alternative fuels: LNG, methanol, ammonia, and biofuels.
- Retrofit cost-benefit and payback assessment.
- Fleet-wide implementation planning.

Day 5: Performance, Verification, and Improvement

- KPIs: fuel per tonne-mile, CII rating, and EEOI.
- Corrective action planning for poor CII ratings.
- Charter party and performance claim implications.
- Internal audit of energy management.
- Training, awareness, and crew engagement.
- Reporting to owners, charterers, and regulators.
- Building a fleet energy efficiency and decarbonisation roadmap.

Conclusion

By successfully completing the Ship Energy Efficiency Management Training Course, participants will have acquired a thorough working knowledge of the IMO SEEMP framework, EEXI and CII compliance, energy measurement and baselines, operational and technical efficiency measures, fuel data collection and reporting, and fleet performance management. They will leave able to cut fuel consumption with measured evidence, plan compliance and retrofits with a defensible business case, and report vessel and fleet performance credibly to regulators and owners. Gentex Training Center delivers this programme with marine technical and energy management practitioners working on live fleets.

FAQs for the Ship Energy Efficiency Management course

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Q1 What is the "Ship Energy Efficiency Management" course about?

It is a five-day programme on reducing fuel consumption and meeting ship energy efficiency regulation. It covers the IMO SEEMP framework, EEXI and CII compliance, energy measurement and baselines, operational and technical efficiency measures, fuel data reporting, and fleet performance management.

Q2 What are the key benefits of the "Ship Energy Efficiency Management" course?

Participants cut fuel cost with measured evidence rather than assumption, keep vessels compliant with EEXI and CII requirements before ratings drop, and plan retrofits with a payback case owners will accept. They also produce fuel data that survives verification and supports charter party performance claims.

Q3 What skills will I gain from the "Ship Energy Efficiency Management" course?

You will gain SEEMP development and regulatory compliance management, energy measurement and baseline establishment, operational and technical efficiency measure application, and fuel data reporting and fleet performance management.

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Q4 What tools, methods, or standards are covered in the "Ship Energy Efficiency Management" course?

The course works with the IMO MARPOL Annex VI framework, EEDI, EEXI and CII requirements, SEEMP Part I, II and III structure, compliance verification and statement of compliance, flag state, class and verifier roles, fuel oil consumption measurement with flow meters, noon report data validation, voyage, distance and cargo data requirements, energy baseline establishment and normalisation, the IMO Data Collection System reporting requirements, data verification and reporting error control, performance dashboards and fleet benchmarking, voyage optimisation with routing, scheduling and just-in-time arrival, speed optimisation and commercial trade-offs, weather routing and sea state assessment, trim, draught and ballast optimisation, hull and propeller fouling management, engine load and tuning practices, auxiliary consumption control, hull coatings and antifouling regimes, propeller optimisation and energy-saving devices, waste heat recovery and shaft generators, shore power and cold ironing, alternative fuels covering LNG, methanol, ammonia and biofuels, retrofit cost-benefit and payback assessment, and KPIs covering fuel per tonne-mile, CII rating and EEOI.

Q5 How is the "Ship Energy Efficiency Management" course applied in real-world practice?

Teams apply it when building a SEEMP for a vessel, preparing a CII corrective action plan after a rating drop, validating noon report data before DCS submission, assessing a hull coating retrofit against payback, deciding a speed and routing policy on a fixed route, and reviewing fleet fuel performance at a technical management meeting.