



M.V. FENGHAI 66

Maintenance Report

Comprehensive maintenance operations conducted at NSD, Kolkata during the period of January 7-8, 2026. This report documents critical engine room repairs and system upgrades performed to ensure optimal vessel performance and safety compliance.

OVERVIEW

Port Operations Summary

Vessel

M.V. FENGHAI 66

Location

NSD, Kolkata

Duration

January 7-8, 2026

Operations

3 Major Tasks

During this 48-hour port call, our technical team executed three critical maintenance operations focusing on main engine efficiency, turbocharger performance, and exhaust system integrity. All work was completed on schedule with full compliance to maritime safety standards.

Key Maintenance Operations

01

Main Engine Air Cooler Chemical Cleaning

Comprehensive chemical cleaning procedure to restore optimal cooling efficiency and prevent performance degradation.

02

Turbo Charger Cartridge Replacement

Complete replacement of turbocharger cartridge using ship-supplied components to ensure peak engine performance.

03

Exhaust Bellows Insulation Repair

Replacement of two damaged exhaust bellows insulation units to maintain thermal efficiency and safety standards.

Main Engine Air Cooler Chemical Cleaning

Operation Overview

The main engine air cooler underwent comprehensive chemical cleaning to remove accumulated deposits, scale, and contaminants that reduce heat transfer efficiency. This preventive maintenance procedure is essential for maintaining optimal engine performance and fuel efficiency.

The cleaning process involved specialized chemical solutions designed to dissolve deposits without damaging cooler components, followed by thorough flushing and inspection procedures.

Key Benefits

- Restored heat transfer efficiency
- Improved engine performance
- Extended component lifespan
- Reduced fuel consumption
- Enhanced operational reliability





Air Cooler Cleaning Process



Pre-Inspection

System assessment and preparation, including isolation and draining procedures.



Chemical Application

Specialized cleaning solution circulated through cooler system to dissolve deposits.



Flushing

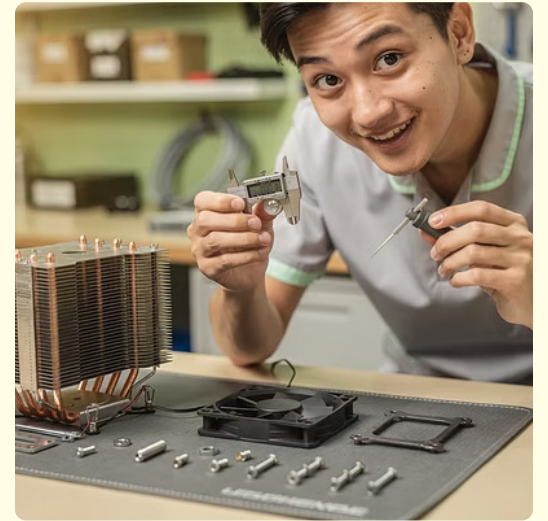
Thorough flushing with clean water to remove all chemical residues and loosened deposits.



Final Inspection

Comprehensive inspection and testing to verify cleaning effectiveness and system integrity.

Air Cooler Cleaning Documentation



Visual documentation of the complete air cooler cleaning process, from initial assessment through final inspection. These images demonstrate the effectiveness of the chemical cleaning procedure and the restored condition of critical cooling components.

Turbo Charger Cartridge Replacement

The turbocharger cartridge replacement represents a critical maintenance intervention to restore engine boost pressure and combustion efficiency. This operation utilized ship-supplied replacement cartridges, ensuring compatibility and immediate availability of spare parts.

Replacement Procedure

1. Engine shutdown and cooling period
2. Turbocharger isolation and disconnection
3. Old cartridge removal and inspection
4. New cartridge installation and alignment
5. System reassembly and testing
6. Performance verification

Technical Specifications

Components Replaced: Complete turbocharger cartridge assembly

Parts Source: Ship-supplied inventory

Installation Time: Approximately 8 hours

Testing Protocol: Full load performance verification



Turbocharger Replacement Stages

Disassembly Phase

Careful removal of existing turbocharger cartridge with documentation of wear patterns and component condition for maintenance records.

1

2

Inspection & Preparation

Thorough cleaning of housing and mounting surfaces, verification of new cartridge specifications, and preparation of installation tools.

Installation Phase

Precise installation of new cartridge with proper alignment, torque specifications, and sealing procedures to ensure optimal performance.

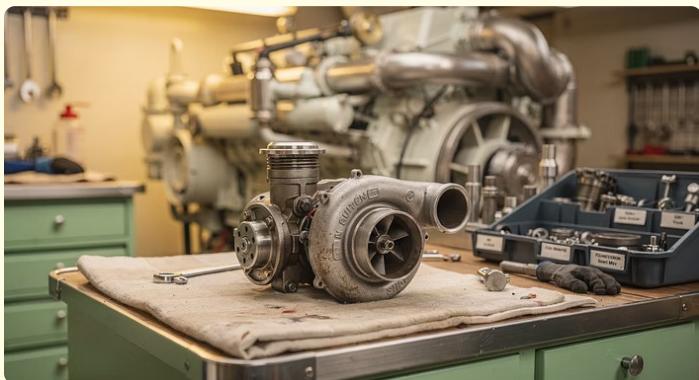
3

4

Testing & Commissioning

Comprehensive testing including boost pressure verification, vibration analysis, and full load performance validation.

Turbocharger Service Visual Record



Complete photographic documentation of the turbocharger cartridge replacement operation, capturing each critical stage from removal through final installation and testing.

Exhaust Bellows Insulation Repair

Two damaged exhaust bellows insulation units were identified and replaced during this maintenance period. Exhaust bellows insulation is critical for maintaining thermal efficiency, protecting surrounding components from extreme heat, and ensuring crew safety in the engine room.



Thermal Protection

Prevents heat radiation to surrounding equipment and maintains safe working temperatures in engine room spaces.



Safety Compliance

Ensures compliance with maritime safety regulations regarding exhaust system insulation and fire prevention.



Energy Efficiency

Maintains exhaust gas temperatures for optimal turbocharger performance and reduces heat loss to atmosphere.

Bellows Insulation Damage Assessment

Damage Identification

Routine inspection revealed deterioration of insulation material on two exhaust bellows units. The damage was characterized by:

- Thermal degradation of outer cladding
- Compression and settling of insulation material
- Exposure of underlying metal surfaces
- Potential heat radiation to adjacent components

Immediate replacement was prioritized to prevent further deterioration and maintain safe operating conditions.





Insulation Replacement Process



Removal of Damaged Insulation

Careful removal of deteriorated insulation material while protecting bellows integrity and documenting damage extent.



Surface Preparation

Thorough cleaning of bellows surfaces, removal of residual insulation material, and inspection for underlying damage.



New Insulation Installation

Application of new high-temperature insulation material with proper layering, compression, and securing techniques.



Protective Cladding

Installation of stainless steel cladding to protect insulation from mechanical damage and environmental exposure.

Exhaust System Repair Documentation



Comprehensive visual documentation of both exhaust bellows insulation replacements, demonstrating the complete repair process from damage assessment through final installation and quality verification.

Maintenance Operations Summary

3

Major Operations

Critical maintenance tasks completed during port call

48

Hours Duration

Total time allocated for all maintenance activities

2

Bellows Units

Exhaust bellows insulation components replaced

100%

Completion Rate

All scheduled maintenance operations finished on time

All maintenance operations were executed successfully within the scheduled port call timeframe, with no delays or complications. The vessel is now operating at optimal efficiency with enhanced reliability.



Quality Assurance & Testing

Verification Procedures

Each maintenance operation was followed by comprehensive testing and verification protocols to ensure proper installation and optimal performance:

- Air cooler pressure testing and flow verification
- Turbocharger boost pressure measurements
- Exhaust system thermal imaging inspection
- Vibration analysis on rotating equipment
- Leak testing on all reassembled connections

Performance Validation

Post-maintenance engine performance testing confirmed successful completion of all operations:

- Main engine load testing at various power levels
- Temperature monitoring across all systems
- Fuel consumption baseline measurements
- Exhaust gas analysis for combustion efficiency
- Documentation of all test results

Safety Protocols & Compliance

Work Permit System

All maintenance activities conducted under proper hot work and confined space permits with continuous safety monitoring and fire watch procedures in place.

Personal Protective Equipment

Full PPE compliance maintained throughout operations including heat-resistant clothing, respiratory protection, and specialized tools for high-temperature work.

Environmental Protection

Proper handling and disposal of chemical cleaning agents, used insulation materials, and waste oils in accordance with port environmental regulations.

Documentation Standards

Complete maintenance records, photographic documentation, and test results compiled for vessel logbooks and classification society requirements.

Operational Benefits Achieved



Enhanced Engine Performance

Restored main engine efficiency through improved air cooling and turbocharger performance, resulting in optimal combustion and power output across all operating ranges.



Improved Fuel Efficiency

Cleaner air cooler and new turbocharger cartridge contribute to better fuel atomization and combustion efficiency, reducing overall fuel consumption and operating costs.



Increased Safety Standards

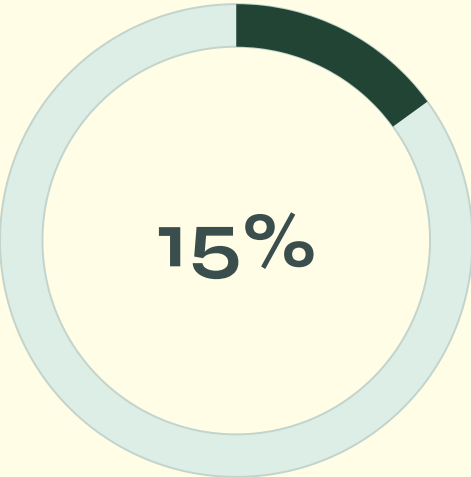
New exhaust bellows insulation eliminates heat radiation hazards, protecting crew and equipment while ensuring compliance with maritime safety regulations.



Extended Component Life

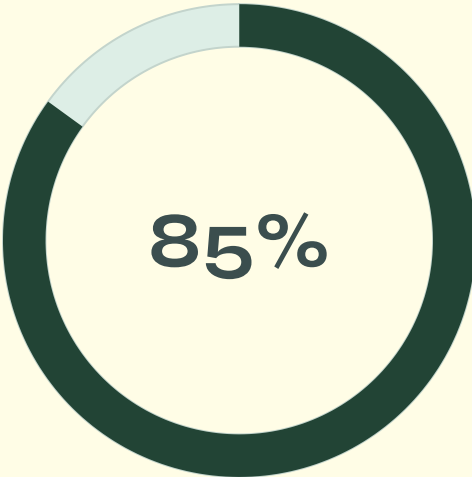
Preventive maintenance and timely component replacement prevent cascading failures and extend the operational lifespan of critical engine systems.

Maintenance Cost-Benefit Analysis



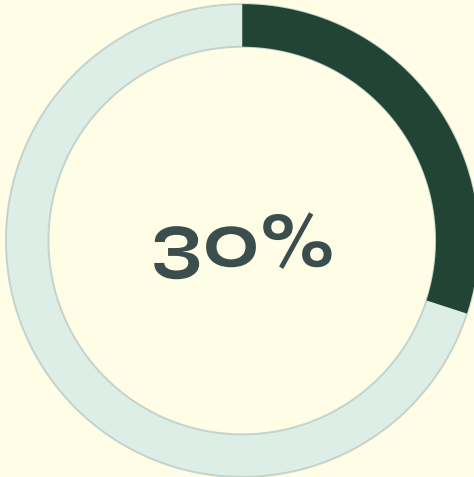
Fuel Savings

Projected annual fuel consumption reduction from improved engine efficiency



Reliability Increase

Enhanced operational reliability through preventive maintenance interventions



Downtime Reduction

Decreased risk of unplanned maintenance and emergency repairs

The investment in these maintenance operations delivers significant returns through improved efficiency, reduced fuel costs, and enhanced reliability. Preventive maintenance during scheduled port calls is substantially more cost-effective than emergency repairs at sea.

Recommendations & Future Planning

Ongoing Monitoring

- Weekly air cooler pressure drop measurements
- Daily turbocharger performance logging
- Monthly exhaust system thermal inspections
- Quarterly vibration analysis trending
- Continuous fuel consumption monitoring

Spare Parts Inventory

- Maintain adequate air cooler cleaning chemicals
- Stock critical turbocharger components
- Ensure availability of insulation materials

Next Scheduled Maintenance

Based on manufacturer recommendations and operational hours, the following maintenance activities are scheduled:

- Air cooler cleaning: 6 months
- Turbocharger inspection: 12 months
- Exhaust system inspection: 3 months
- Main engine overhaul planning: 18 months

Continued adherence to preventive maintenance schedules will ensure optimal vessel performance and minimize operational disruptions.



Maintenance Operations Complete

All Tasks Completed

Three major maintenance operations successfully executed within scheduled timeframe

Quality Verified

Comprehensive testing confirms optimal performance across all repaired systems

Vessel Ready

M.V. FENGHAI 66 cleared for departure with enhanced reliability and efficiency

The maintenance operations conducted at NSD, Kolkata have successfully restored M.V. FENGHAI 66 to optimal operating condition. All work was completed safely, on schedule, and in full compliance with maritime regulations. The vessel is now equipped for reliable, efficient operations with enhanced performance across all critical engine systems.



TMB SHIPPING PVT LTD

m.v. FENGHAI 66

PORT : NSD, KOLKATA

PERIOD : 07.01.26 TO 08.01.26

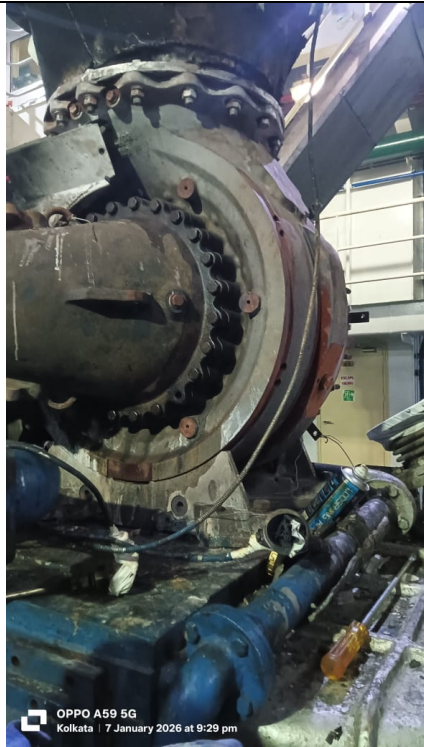
1. Main Engine Air Cooler chemical Cleaning:
2. Turbo Charger replacing with ship supplied cartridge :
3. Damaged Exhaust Bellows Insulation x 02 Nos



Head Office : B-6, Garden Reach Road, Kolkata - 700024, India
visit us at : www.tmbindia.com / contact us at : tmbshipping@gmail.com
call us at : +91 98310 18661 (MD) / +91 98311 93933 (ED)



TMB SHIPPING PVT LTD



Head Office : B-6, Garden Reach Road, Kolkata - 700024, India
visit us at : www.tmbindia.com / contact us at : tmbshipping@gmail.com
call us at : +91 98310 18661 (MD) / +91 98311 93933 (ED)



TMB SHIPPING PVT LTD



OPPO A59 5G
Kolkata | 7 January 2026 at 9:28 pm



OPPO A59 5G
Kolkata | 7 January 2026 at 9:36 pm



OPPO A59 5G
Kolkata | 7 January 2026 at 9:40 pm



OPPO A59 5G
Kolkata | 7 January 2026 at 9:40 pm

Head Office : B-6, Garden Reach Road, Kolkata - 700024, India
visit us at : www.tmbindia.com / contact us at : tmbshipping@gmail.com
call us at : +91 98310 18661 (MD) / +91 98311 93933 (ED)



TMB SHIPPING PVT LTD



OPPO A59 5G
Kolkata | 8 January 2026 at 10:34 am

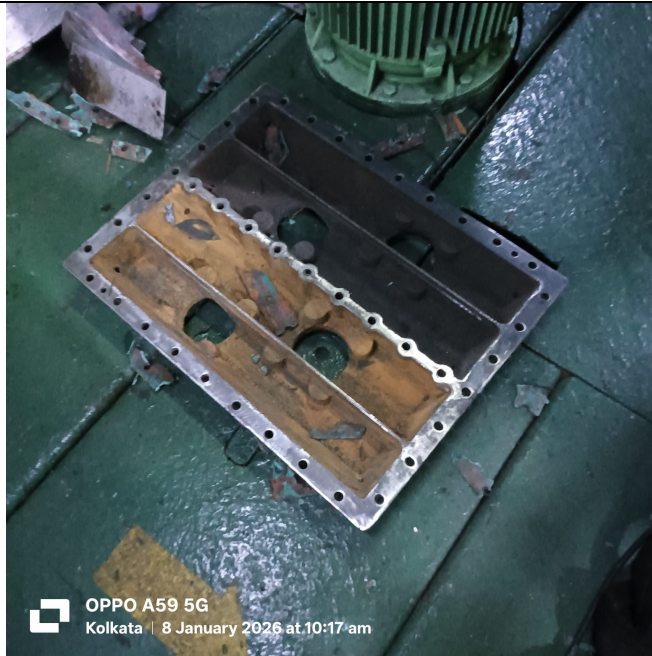


OPPO A59 5G
Kolkata | 8 January 2026 at 10:18 am

Head Office : B-6, Garden Reach Road, Kolkata - 700024, India
visit us at : www.tmbindia.com / contact us at : tmbshipping@gmail.com
call us at : +91 98310 18661 (MD) / +91 98311 93933 (ED)



TMB SHIPPING PVT LTD



Head Office : B-6, Garden Reach Road, Kolkata - 700024, India
visit us at : www.tmbindia.com / contact us at : tmbshipping@gmail.com
call us at : +91 98310 18661 (MD) / +91 98311 93933 (ED)

WORK DONE CERTIFICATE

Vessel :	m.v. Feng Hai 66	Port :	NSD Kolkata
Commenced :	07/01/2026	Completed :	08/01/ 2026
Work Order No. :		A/C :	Deck / Engine
WDC No. :		Job No. :	2601/ 1138

Following under-noted jobs carried out to the satisfaction of Ship-Staff .

1. Main Engine Air Cooler chemical Cleaning:

As per instruction, All inlet and outlet pipe lines removed. Air Cooler opened from place. Air Cooler end covers opened and dismantled. Air cooler lifted and Submersed in chemical Tank using workshop supplied Air cooler cleaning chemical. Chemical circulated in the Air cooler for 06 hours. Then Cooler taken out and High pressure Jet washed thoroughly again and again with fresh water. Air cooler assembled and renewed all Joints. Air cooler boxed back in place. All associated pipe lines fitted back.

2. Turbo Charger replacing with ship supplied cartridge :

The Old Turbocharger suction filter opened, suction housing removed, Turbocharger inner core Turbine and compressor opened and removed from place. Old Nozzle guide removed. Cleaned housing and inspected. New Nozzle guide fitted. New Turbocharge inner core removed from box and checked. New Turbocharger inner core turbine with compressor taken in place and fitted in the housing. New turbocharger assembled back. Engine started and trial taken by shipstaff and found satisfactory.

3. Bellows Insulation x 02 Nos

Old Exhaust lagging removed from Both the Bellows, Found cracks on the bellows. Cold repair carried out using workshop supplied refractory materials. Then hot lagging carried out using Ceramic Blanket/ Fibre cloth & GI sheet. Staging made for Upper bellow to repair.

4. Supplied Item :

- a. Cotton Rags x 50 Kgs

Checked by ship-staff, found satisfactory.

Work carried out Normal and overtime basis working round the clock.


M/V FENG HAI 66
CHIEF ENGINEER

Head Office : B-6, Garden Reach Road, Kolkata - 700024 India Ph : + 91 33 2469 6937.

Web : www.tmbindia.com

Email : tmbshipping@gmail.com

Our Services at : Kolkata ★ Haldia ★ BujBuj ★ Saugor ★ Diamond Harbour