

COMPLETED PROJECTS



Project Title: BRIDGE WING REPAIRS

Project Location; LOME

Date Completed: 30TH APRIL,2026

Customer Name: CONTAINER CARGO VESSEL





**Project Title: REFEER PROVISION STORE COMPRESSORS
REPLACEMENT**

Project Location; SAN PEDRO/ DOUALA

Date Completed: 17TH NOVEMBER,2025

Customer Name: CONTAINER CARGO VESSEL





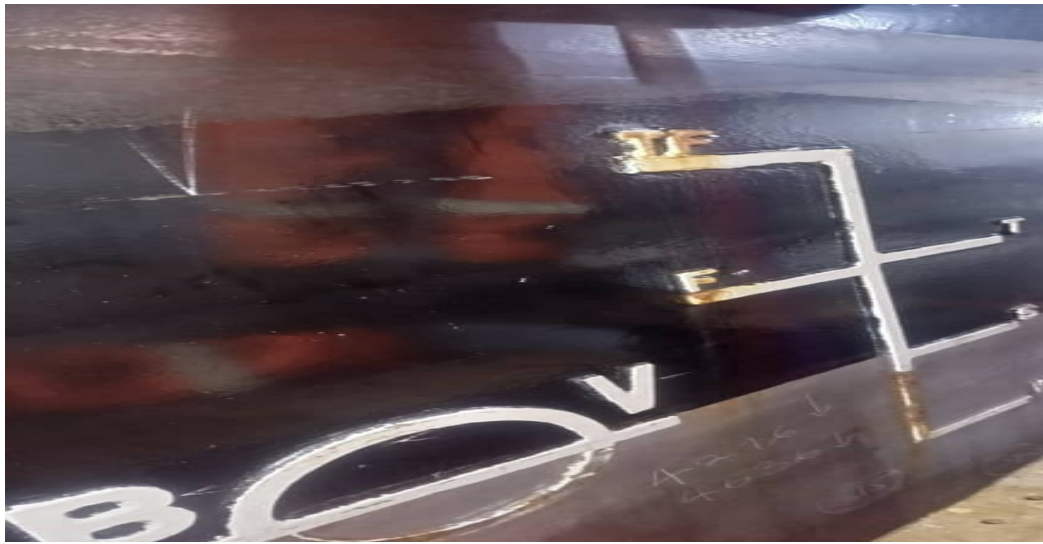
Project Title: LOAD LINE MARKING

Project Location; TINCAN

Date Completed: 13TH FEBRUARY, 2026

Customer Name: CONTAINER CARGO VESSEL





**Project Title: DECK CRANE HYRAULIC PUPMP MOTOR
REPLACEMEN**

Project Location; ABIDJAN

Date Completed: 24TH SEPTEMBER,2025

Customer Name: CONTAINER CARGO VESSEL





**Project Title: MAIN ENGINE EXHAUST SYSTEM LEAKAGE
REPAIRS**

Project Location; DOUALA/KRIBI

Date Completed: 17TH SEPTEMBER,2025

Customer Name: CONTAINER CARGO VESSEL





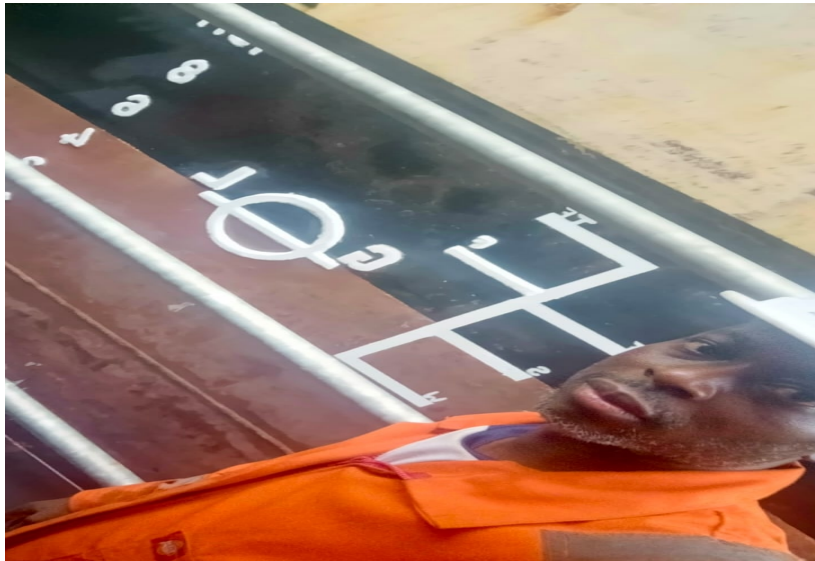


Project Title: DECK CRANE MAIN PUPMP MOTOR REPLACEMENT

Project Location; LOME

Date Completed: 24TH OCTOBER,2025

Customer Name: CONTAINER CARGO VESSEL





Project Title: BUNKER TANK REPAIR
Project Location; SAN PEDRO /ABIDJAN
Date Completed: 10TH JUNE,2025
Customer Name: CONTAINER CARGO VESSEL



Project Title: SEA WATER PIPES REPAIRS
Project Location; SAN PEDRO /ABIDJAN
Date Completed: 10TH JUNE,2025
Customer Name: CONTAINER CARGO VESSEL





Project Title: SEA WATER PIPES REPAIRS
Project Location; SAN PEDRO /ABIDJAN
Date Completed: 9TH MARCH,2025
Customer Name: CONTAINER CARGO VESSEL





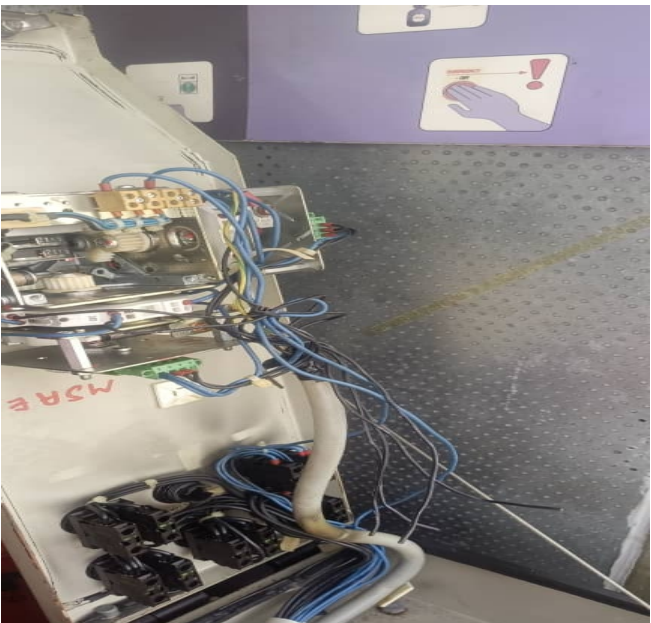


Project Title: DECK CRANE1,2,&4 REPAIRS
Project Location; MOZANBIQUE
Date Completed: 23TH August,2024
Customer Name: CONTAINER CARGO VESSEL



Project Title: DECK CRANE 2 REPAIRS
Project Location; LOME
Date Completed: 30TH APRIL,2026
Customer Name: CONTAINER CARGO VESSEL





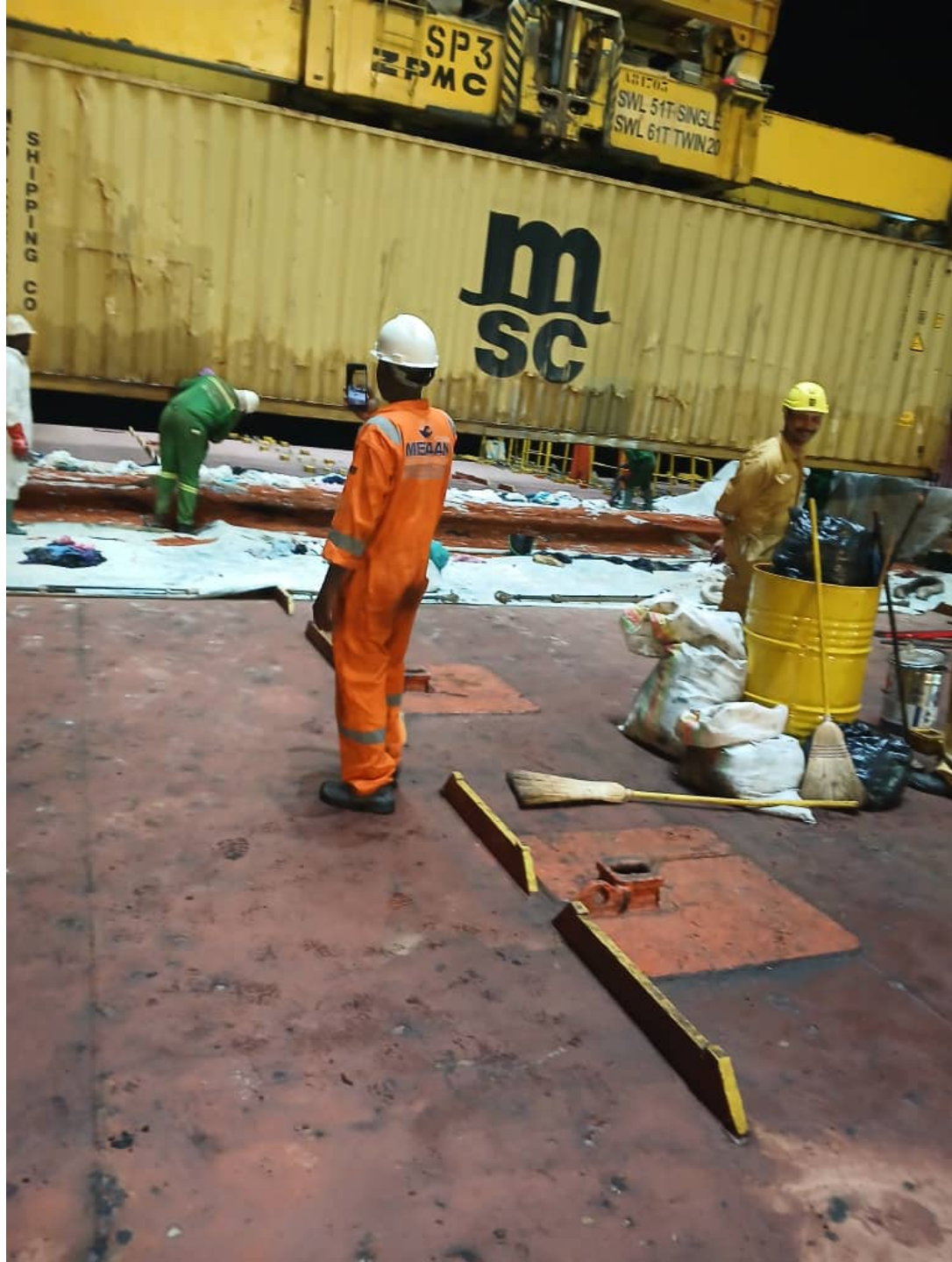
Project Title: FO TANK NO. 3 LEAKAGE REMEDIATION & CARGO HOLD RECOVERY

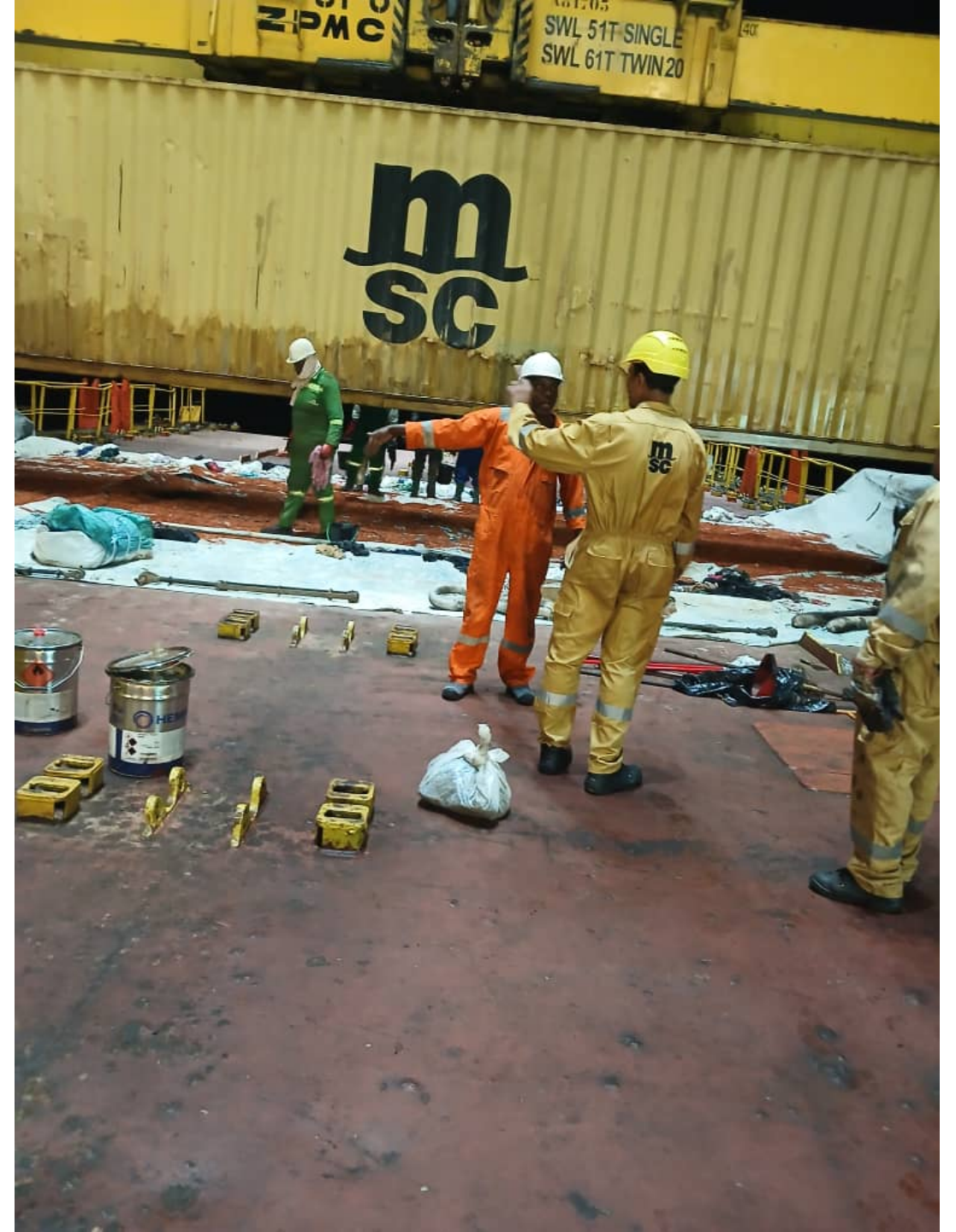
Project Location; Kribi Port, Cameroun

Date Completed: 28TH JUNE,2026

Customer Name: CONTAINER CARGO VESSEL







**Project Title: Emergency Repair of Starboard Anchor Bitter End Damage and
Associated Hawse Pipe Structure
Project Location; Pointe Noire Port, Republic Of Congo
Date Completed: 13TH JUNE,2026
Customer Name: CONTAINER CARGO VESSEL**







Project Title: Crane No:2 Restoration
Project Location; Lome Anchorage
Date Completed: 1ST MAY,2026
Customer Name: CONTAINER CARGO VESSEL







Project Title: Inspection and Gauging of 7 Nos. Crankshafts

Project Location; Tin can Island Port, Lagos Nigeria

Date Completed: 28TH APRIL,2026

Customer Name: CONTAINER CARGO VESSEL







MEDAAN SERVICE REPORT ON MSC DIAMON 11 REFEER PROVISION STORE REPAIR.



JOB COMPLETION CERTIFICATE MSC ORAN III – IMO 9008603



Attention: Mr. Rahul Vaish
Senior Technical Superintendent Fleet 26, MSC DIAMOND II MSC
SHIPMANAGEMENT LIMITED
8 Spyrou Kyprianou Avenue, Limassol, CY -3070, Cyprus

EQUIPMENT: REFERR PROVISION STORE REPAIRS
NO. OF MEDAAN PERSONNEL ONBOARD work: 4

WORK SCOPE : REFERR PROVISION STORE REPAIRS
Report By: MEDAAN ENGINEERING SERVICES LIMITED TEAM
Job Status : Partially Completed



PRE - JOB EVALUATION

Limitations:

- Compressor 2 not cutting out or start on Auto only starts on Manual mode. (PLC and HMI problem).
- Compressor no2 has very low oil level below the minimum required gauge required lubricant replacement.
- Defrost cycle can only be done manually (PLC and HMI problem)
- Cracked on the discharge pipe on compressor no1 causing refrigerant leakage.
- TXV 507 on both meat room and vegetable room evaporator and its not in accordance with freon specification of R407C.
- Faulty Solenoid on the Vegetable room evaporator.
- Faulty valve on the meat room evaporator.
- Compressor no1 was meet decommissioned and dismantled.

MATERIALS AND CONSUMABLES

- Compressor (10HP 440VAC) 1 assembly unit
- 1.5inches coper pipe 1 Length
- 1.5inches coper elbows 3pcs
- 1inch elbow 3pcs
- Dryer 1pc
- Solenoid 1pc
- TXV R407C 2pcs
- Heater 2pcs
- Flocks brazing rod 1pack
- Coper welding rod 1pack
- Pressure Guage 2pcs
- Orifice 2pcs
- Charging Valves 4pcs

MATERIALS AND CONSUMABLES

- Refrigerant R407C 3 Canister
- Nitrogen gas 1 bottle
- BSE 32 compressor Oil 2 cans
- Flare nuts 8pcs
- Vacuum machine
- Oxygen and acetylene 1bottle each
- Burning Touch 1set
- Chain blocks 2pcs

NEW COMPRESSOR 1 TRANSFER PROCESS FROM THE DECK TO THE REFER PROVISSION ROOM



Row



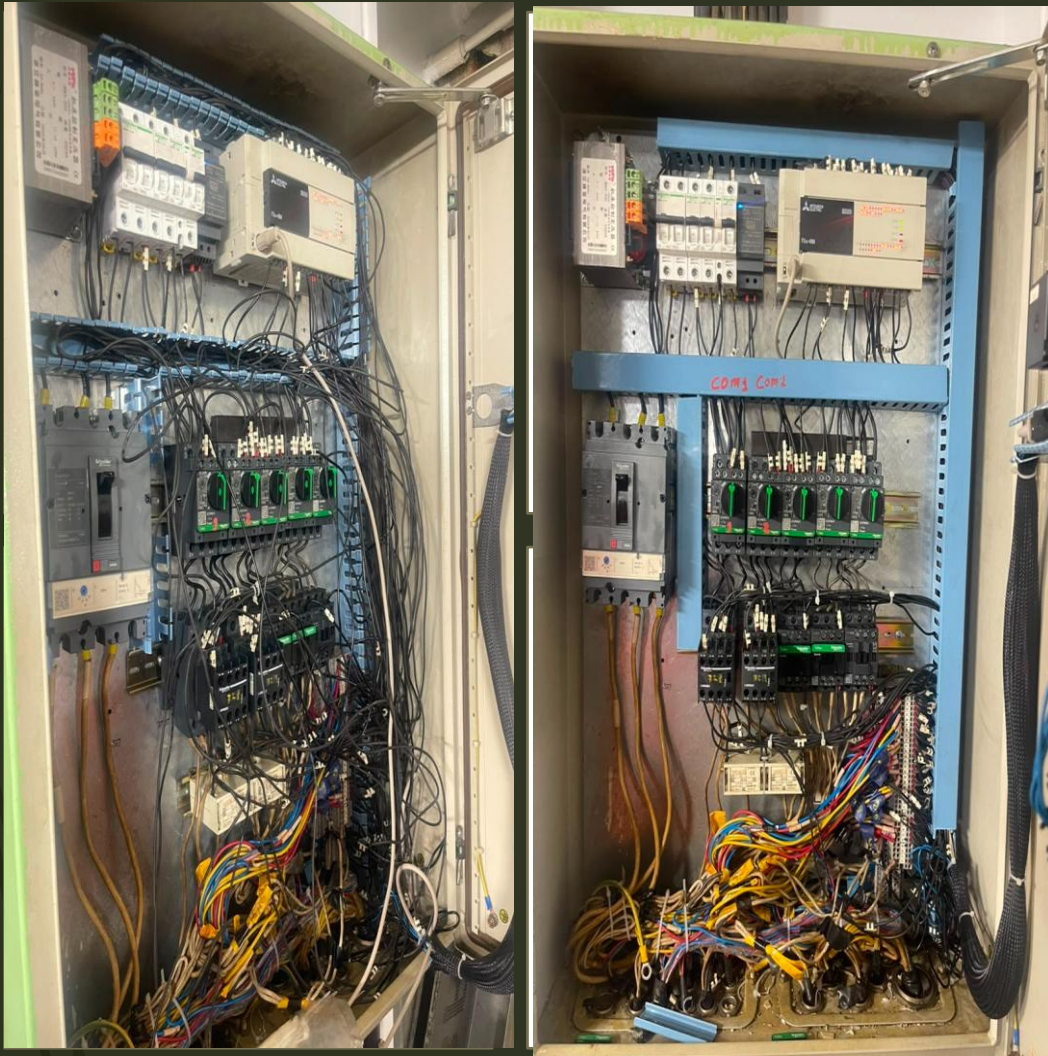
FAULTY COMPRESSOR 1 DECOMISSIONED



INSTALLATION OF NEW COMPRESSOR 1 AND DISCHARGE PIPES RENEWAL



Control panel



Control panel
troubleshooting, repairs,
and rewired.

Row



MEAT ROOM AND VEGETABLE ROOM TXV, ORIFICE, Charging valves, and solenoid replaced



Row



FLUSHING OF THE SYSTEM USING NITROGEN GAS



REPAIR OPERATIONS PROCESS

- Decommission of defective compressor
- Installation of new compressor.
- Replacement of new foundation bolts.
- Installation of compressor lubricant warmer.
- Refill of compressor 1&2 lubricant BSE32 approximately 2.6 liters volume for each compressor.
- Reconstruction of compressor no 1 discharge line and replacement of condenser copper ring.
- Flushing of refrigeration system (condenser, evaporator, suction and discharge lines) using Nitrogen gas at 30 bar pressure.
- Replacement of discharge and suction side gaskets and coupling.
- Replacement of Danfoss 5/8" dryer/eliminator.
- System leak test using nitrogen and leak detector solution for 24 hours at a maintained pressure of 28 bar.
- Vacuum operation with an 1/2 horse power vacuum machine for 2 hours.
- Introduction and charging of refrigerant (R407C) to a discharge pressure of 15 bar.
- Temperature monitoring of the reefer store for 8 hours with temperature value drop from 29.3 for meat room and 22.2 for vegetable room to 7.8 and 11.5 respectively.



Operations Parameters after repairs:

- Meat Room Temperature-15°C
- Optimal Air In at Evaporator-11°C
- Optimal Refrigerant Evaporator Outlet Temp (near TXV bulb)-19°C
- Temperature 5cm after TXV Bulb-22°C
- Compressor Suction Temperature 13.5°C
- Compressor Suction Pressure 0 – 0.5 bar.
- Low Compressor Discharge Temperature 121°C
- High Compressor Discharge Pressure 15bar
- Normal Compressor Crankcase Temperature 95°C
- HMI AS-LEFT Parameter Stemp setting (Setpoint) = -12Deg & 4.0Temp HYST = 2.0deg & 2.0degTemp High Alarm = -5.0deg & 15.0degTemp Low Alarm = -21.0deg & 0.0deg

Post-Repair Operations:

- Evaporator capacity in Meat room 2.58kw @ -22°C
- Evaporator capacity in vegetable room 1.88KW @ 4°C Required room temperature.
- Meat -22°C, Vegetable +4°C Evaporating temperature
- Danfoss TXV model/code, TX2 Temperature is -40 Pressure is 34bar.
- Compressor capacity is 10HP

POST JOB ACTIVITIES :

Crew Inspection and Quality Control:



- The repairs undergo a thorough inspection by the Second Engineer and ETO.
- Verification that all repairs and replacements comply with design specifications, safety standards, and operational requirements.
- Inspection checkpoints include:
 - Dimensional accuracy in pressure for gas and temperature outputs.
 - Weld integrity and quality of all joints with airtight leakage.
 - Surface preparation, including cleaning, sanding, and corrosion protection.
 - The both compressor were properly installed and grounded



POST JOB ACTIVITIES :

House Cleaning and Demobilization:

Upon completion of all assigned tasks, thorough housekeeping was carried out to ensure the work area was left clean, safe, and free of debris.



POST JOB ACTIVITIES :

Limitations:

- Manual transfer of materials, tools, and equipment was required as the vessel was at anchorage where crane operation wasn't allowed, limiting lifting efficiency for heavy components.
- Absolute PLC and HMI with no password to re-programme for upgrade.
- Time for test run was very short as the vessel cargo operation was done with and the vessel needed to kick out less than 12hrs for testing the repairs done.

POST JOB ACTIVITIES :

RECOMMENDATIONS :

- - Recommendations / Next Steps:**
 - SIEMENS PLC and HMI are required for the refer provision store upgrade, save operation and optimal operations :
 - ORIFICE of both meat room and vegetable room should be upgraded
 - New valve and solenoid on both meat room and vegetable room are required
- 48Hrs test run after repairs is required.



CONCLUSIONS :



➤ Handover Statement :

The Medaan Project Coordinator formally handed over the completed repair works to the **Chief Engineer of MSC DIAMOND II** upon satisfactory completion.

➤ Closing Statement:

We trust that the above-summarized onsite repair activities carried out on **MSC DIAMOND II** by the **Medaan Engineering Services Limited project team** meet your technical and operational requirements.

Should any additional information or clarification be required, please do not hesitate to contact the undersigned. **Medaan Engineering Services Limited** remains committed to delivering services of the highest technical standard, safety, and reliability always.

Best Regards,

For: **MEDAAN ENGINEERING SERVICES LIMITED**

Sunday Alabi

Technical Sales Manager

Mobile: +234 9087440266, +234 8067026831

Email: sales@medaanengineeringservices.com, medaanegineeringservices@gmail.com



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JOINT COMPLETION CERTIFICATE (JCC)

Vessel: MSC DIAMOND II

System: Reefer Provision Refrigeration System

Contractor: MEDAAN Engineering Services Limited

Date: 12 August 2026

JOINT COMPLETION CERTIFICATE MSC DIAMOND II REFEER PROVISION STORE REPAIRS

This Joint Completion Certificate (JCC) is issued jointly by **MEDAAN Engineering Services Limited** and the **Management/Authorized Representative of MSC DIAMOND II** to formally confirm the completion, testing, commissioning and satisfactory operational restoration of the **Reefer Provision Refrigeration System** onboard the vessel.

The original scope covered restoration of the refrigeration plant, replacement of the failed No. 1 provision compressor, PLC/HMI repairs and rewiring, restoration of automatic defrost and temperature control, refrigeration circuit leak elimination, commissioning and extended operational testing. The original technical documentation identifies the Mitsubishi FX3U-48MR/ES-A PLC and MCGS TPC7032NI HMI as the installed automation equipment

Completed Works

- New refrigeration compressor installed and commissioned.
- PLC and HMI rewiring and repairs completed and tested successfully.
- Freezing/refrigeration and automatic defrost cycles successfully tested.
- Refrigeration system operated continuously for **24 hours with no observed pressure drop**.
- Final system performance confirmed satisfactory by the vessel's **2/E and ETO**.
- 2/E to replace/change the existing orifice in the Meat and Vegetable Reefer Room from No. 6 to No. 9 using the available onboard spare, as No. 9 orifice was not available in the local Congo market.
- Chief Engineer (2ndE) confirmed and agreed to carry out the above orifice replacement accordingly.

JOINT CONFIRMATION AND ACCEPTANCE

By signing this Joint Completion Certificate, both parties confirm that:

1. The agreed technical repair and restoration works have been completed by MEDAAN Engineering Services Limited.

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2. The new provision refrigeration compressor has been installed and successfully commissioned.
3. The PLC and HMI systems have been rewired, repaired, tested and returned to operational service.
4. The PLC-HMI communication and associated refrigeration control functions have been successfully tested.
5. The automatic defrost cycle has been restored and successfully completed.
6. The refrigeration/freezing cycle has been successfully tested.
7. The refrigeration system has undergone a continuous 24-hour operational test.
8. **No pressure drop was observed during the 24-hour operational test.**
9. No active refrigerant leakage was identified during the final operational inspection.
10. The system was demonstrated to the vessel's **2nd Engineer (2/E) and Electro-Technical Officer (ETO).**
11. The vessel's representatives have confirmed that the system is operating satisfactorily.
12. The completed works are considered **technically completed and accepted for operational service**, subject to the vessel's normal operation and preventive maintenance requirements.

The technical acceptance objective was to achieve stable operating pressure, normal compressor operation, stable temperature control, successful defrost operation and satisfactory performance during the 24-hour monitoring period.

JOINT ACCEPTANCE

Both parties confirm that the above works have been completed, tested, commissioned and accepted for normal operation.

FOR MEDAAN ENGINEERING SERVICES LIMITED

Name: Engr. Babalola Adeyemi

Position: Team Lead/Marine Engineer.

Signature: _____

Date: 12/08/2026

FOR MSC DIAMOND II

Name: _____

Position: Chief Engineer/Vessel Rep.

Signature: _____

Date: 12.08.2026

STATUS: COMPLETED – TESTED – COMMISSIONED – ACCEPTED

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Job Ref No: 2025-ME121HAITI II REPAIRS

JOB COMPLETION CERTIFICATE

Attention: Mr. Rahul Vaish Senior Technical Superintendent Fleet 26, MSC HAITI II MSC SHIPMANAGEMENT LIMITED 8 Spyrou Kyprianou Avenue, Limassol, CY -3070, Cyprus	EQUIPMENT: Accommodation plant 1 and Reefer provision store refrigeration panel	DETAILS: Ac plant 1 and Reefer provision store refrigeration panel
REPORT BY: MEDAAN ENGINEERING SERVICES LIMITED TEAM	WORK SCOPE: The accommodation A.C plant 1 has leaks on pressure gauge lines. Leakage on 3/8 pressure pipes, leakages on high pressure valves and leakages in the condenser. Troubleshooting and repairs of Reefer System Panel and Servicing of all the contactors. Refrigerant leakages, Faulty sensors, and electrical Panel Issues.	
Job Durations: 23/07/2025 – 08/08/2025 (10 Days)	NO. OF MEDAAN PERSONNEL ONBOARD: 11 (2X HVAC Specialist And 2X Electrical Technicians)	

ACTIVITY REPORT FOR MSC HAITI II REPAIRS IMO: 9225251

JOB SCOPE: 1. The accommodation A.C plant 1 has leaks on pressure gauge lines.
 Leakage on 3/8 pressure pipes, leakages on high pressure valves
 leaked and clogged condenser coils. Defrosting Lines Repairs.

2. Extensive Troubleshooting repairs of Reefer System Panel and
 Servicing all the contactors. Refrigerant leakages, Faulty sensors,
 and electrical Panel Issues.

PORT LOCATION: Sand Pedro Port and Abidjan Anchorage

JOB COMPLETION DATE: August 08, 2025.



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- 1.1. Medaan Workshop Mobilization and Logistics:** Personnel Head count was done in preparation for Onboard Medaan Workshop on MSC HAITI II at San Pedro Cote d'Ivoire Port and Abidjan Anchorage respectively. On arrival at the ports, we were inducted by Maritime Port Authority senior safety manager on terminal safety rules and regulations.
- 1.2. Meeting with Chief Officer/ Technical Crew:** We had a brief meeting with the Captain and the Chief Officer on Medaan Engineering Services Limited Job Procedures. This was followed by the introduction of Medaan team personnels and specialist to the Chief Engineer. We also aligned on the support required from the vessel crew.
- 1.3. On-site Safety Talks and Head Counts:** All repairs' materials were offloaded onboard the vessels. HSE manager took the team through the HSE induction and marine working environment safety rules and regulations as per Job requirements.
- 1.4 Onsite Medaan Team:** The team Comprises of Project Manager, Supervisor, Offshore Certified Safety Officer, HVAC Specialist, Electricians, Helpers and Administrative Officers.

2.1 Materials Required for the A.C Plant and Refrigeration.

1. 1 roll of 1/4inches copper pipes.
2. 10 units of ¼ T-Copper accessories
3. 2 units of 3/8 diagonal flare nuts
4. 3mtrs of 3/8 copper pipe
5. 5 cans (5ltrs each = 25ltrs) of compressor Oil.
6. 12can (10kg per can= 120kg) of 407 Refrigerant Oil
7. Gasket and O seal
8. 50 bars Oxygen and acetylene gas for welding
9. 50 bars Nitrogen gas for flushing condenser tube.
10. Chemical for cleaning of condenser. (Descalant)
11. Programmable logic control (PLC) FX2n-16MR
12. Vacuum Pump

2.2 Consumables

1. 2pcs Thread Tape
2. 5pcs Braising Rod
3. Welding Powder



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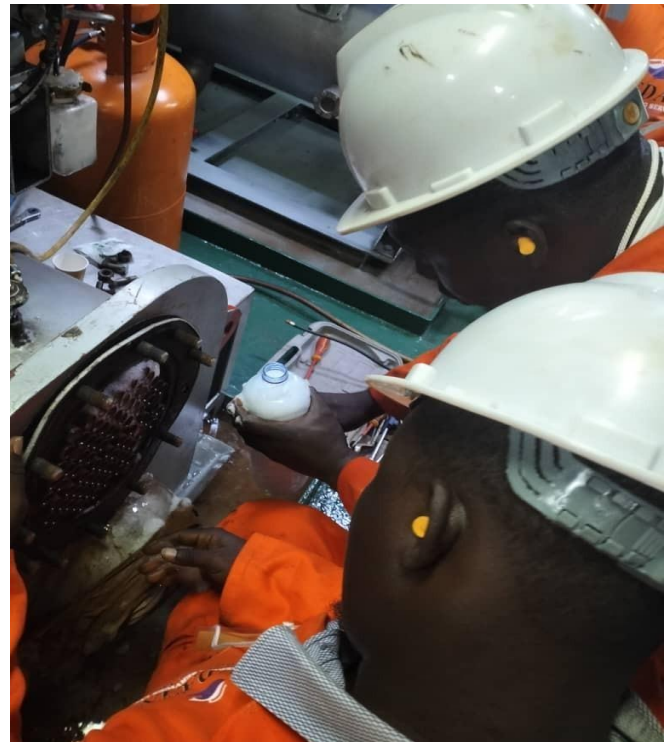
3.1 Medaam Repairs Activities and Procedures

3.2 Accommodation A.C Plant 1

Description of Repairs / Inspection Findings

1. The accommodation A.C plant 1 has leaks on pressure gauge lines.
2. Leakage on 3/8 pressure pipes, leakages on high pressure valves
3. Leakage and clogged condenser coils.
4. Defrosting Lines.
5. Low pressures alarm system
6. Refrigerant leakages

Medaam Team Testing Condenser Tubes For Leakages



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A.C condenser leakage findings



Medaam Job Procedure and Activities for AC Plant 1

1. Fabrication of new pressure gauge lines using $\frac{1}{4}$ size copper pipes.
2. Fixing of leakages on $\frac{3}{8}$ pressure pipes.
3. Fixing of leakages on condenser tube by construction of brass bullets
4. Changing of gasket and seals around the condenser.
5. Flushing of the condenser using nitrogen gas
6. Replacement of compressor oil and compressor gas (407 gas).
7. We pressure test for Ten (10) hours with the pressure at 45psi and it maintains the pressure.



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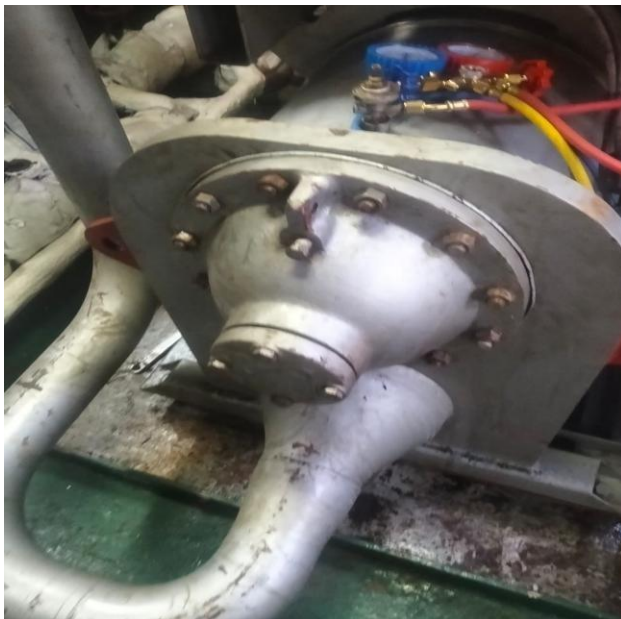
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A.C Condenser Tube Repairs



AC PLANT 1 Repairs Process by Medaan Team



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3.3 Procedure and Activities for Reefer Refrigeration Plant

Description of Repairs / Inspection Findings

1. Faulty contactors
2. Faulty Electrical control wiring and connections
3. Faulty Electrical program panel
4. Faulty Temperature Sensors

Low Pressure Alarm System Before Repairs



Low Pressure Alarm System After Repairs By Medaan Team



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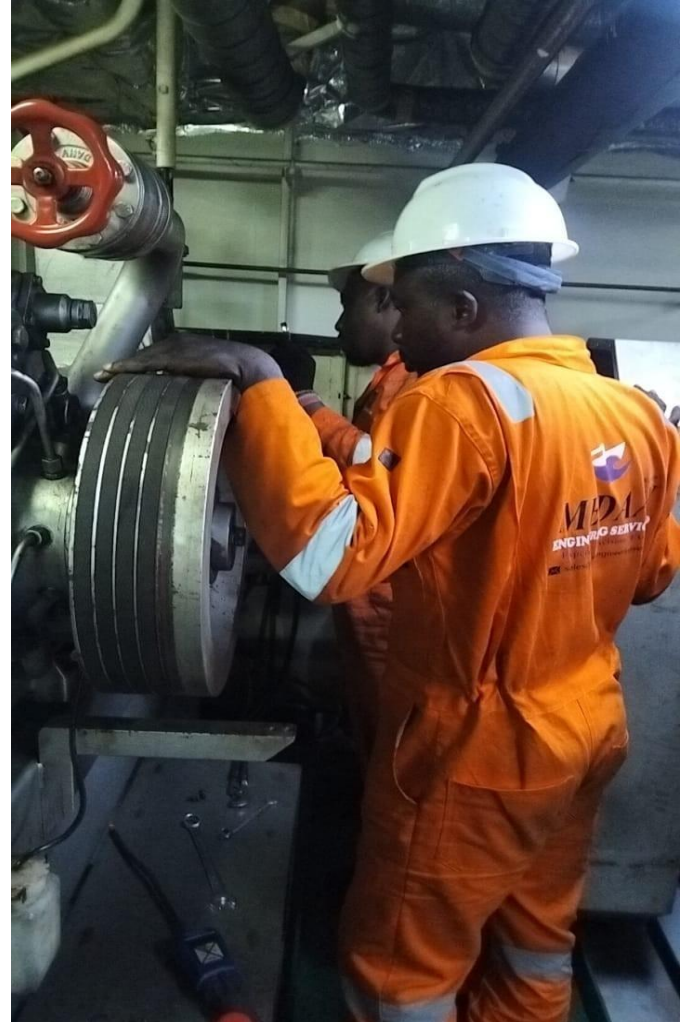


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Reefer Refrigeration System On going Repair Work by Medaan Team



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Medaan Job Procedure and Activities for Reefer Refrigeration Plant

1. Repairs and serving faulty contactors
2. Electrical control wiring troubleshooting and terminals connections repairs and servicing
3. Repair Faulty Electrical program panel
4. Repairs Faulty Temperature Sensors

Reefer Refrigerator Repairs by Medaan Team
Medaan Team Tracing The De frozen Signal Cable To The Refrigeration Room.



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Cleaning and Serviced Electrical Wiring Connection And Contactors by Medaan Team



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4.2 Results & Testing

- Visual inspection post-repair: **[Pass]**
- Vacuum Leak test results: **[Pass]**
- Pressure and Temperature Test **[pass]**
- Extended Testing **[The system AC Plan runs for 10 hours with pressure stability]**

We trust these summarized onsite activities on MSC HAITI II Repairs work **MEDAAN ENGINEERING SERVICES LIMITED TEAM**. Should you require any further information, please do not hesitate to contact the undersigned. Always assure you of our best delivery services.

Best Regards,

For: **MEDAAN ENGINEERING SERVICES LIMITED.**

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Technical Sales Manager

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