



Malaysia Marine and Heavy Engineering
Holdings Berhad (17821-X)

MALAYSIA MARINE AND HEAVY ENGINEERING SDN BHD LNGC DRYDOCKING REPAIR CAPABILITY AUGUST 2023

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Strategic Location

- + **Well-Positioned** along one of the busiest shipping lanes of the South East Asia
- + **Thriving** in the heart of the heavy industrial area of Pasir Gudang, Johor, Malaysia
- + **Supported** by well-developed surrounding infrastructures
- + **Easily Accessible** from Singapore's main business districts and industrial estates
- + **Free Logistic Service** from MMHE Singapore's warehouse to **MMHE West & East Yards**



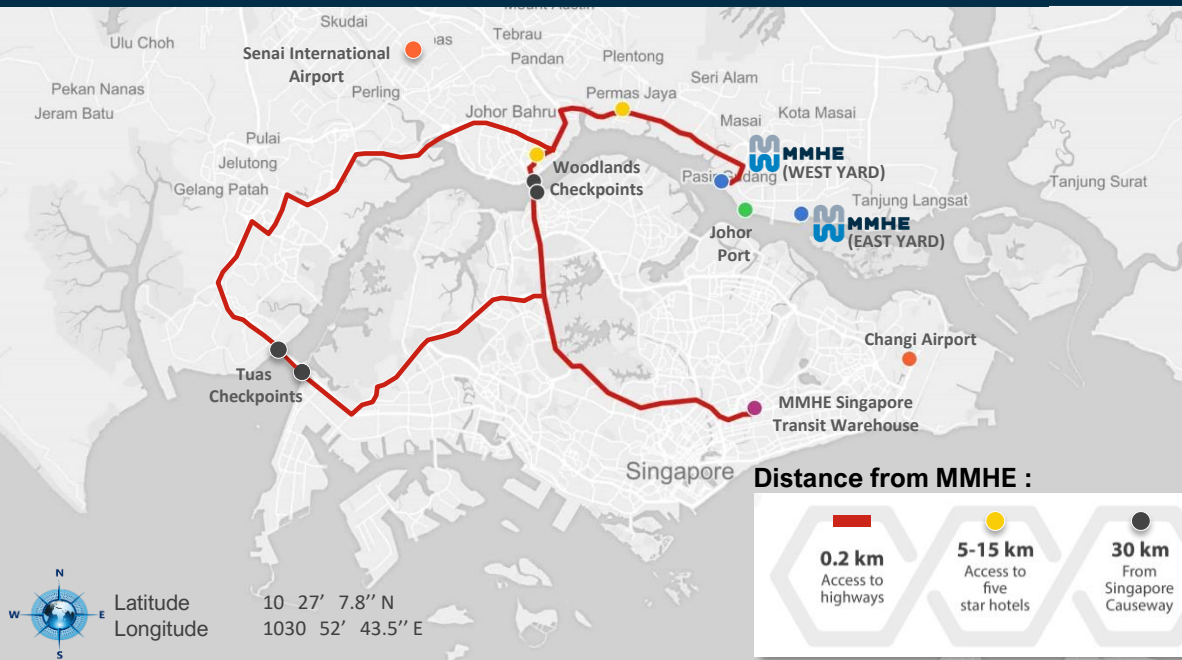
Linked by highways



From Causeway to MMHE



Easy access to five-star hotels



Easy access to Changi & Senai Airports



MMHE Singapore Transit Warehouse
53 Ubi Avenue 1, #01-49
Paya Ubi Ind. Park, Singapore
408934

Distance from MMHE :



Latitude 10 27' 7.8" N
Longitude 103 02' 43.5" E

MHB Corporate Structure



MALAYSIA MARINE AND HEAVY ENGINEERING HOLDINGS BERHAD
Investment Holding

- **Subsidiary**
- **Jointly Controlled Entity**



MMHE INTERNATIONAL SDN BHD
Chemical cleaning of ship tanks, boilers, cylinder covers and various ship equipment and machinery (dormant)



MALAYSIA MARINE AND HEAVY ENGINEERING SDN BHD
Provision of oil and gas engineering and construction works, marine conversion and repair services



T.EN MHB HULL ENGINEERING SDN. BHD
(formerly known as Technip MHB Hull Engineering Sdn. Bhd.)
Build and develop hull engineering and engineering project management capacities (dormant)



MALAYSIA MARINE AND HEAVY ENGINEERING SAUDI LIMITED
Provision of engineering, procurement, construction, installation and commissioning services for offshore and onshore facilities



TECHNO INDAH SDN BHD
Sludge disposal management (dormant)



MMHE LNG SDN BHD
Provision of repair services and dry docking of liquefied natural gas vessels (dormant)



MHS INTEGRATED ENGINEERING SDN BHD
Plant turnaround and shutdown maintenance



MMHE EPIC MARINE & SERVICES SDN BHD
Provision of repair services and dry docking of marine vessels at the ship repair facilities located in Kemaman, Terengganu (dormant)



MMHE-TPGM SDN BHD
Provision of engineering, procurement, construction, installation and commissioning services (dormant)



MMHE-ATB SDN BHD
Manufacturing of pressure vessels and tube heat exchangers (dormant)



Who We Are and What We Do

Malaysia Marine And Heavy Engineering Holdings Berhad (MHB) is a Globally Trusted, Energy and Marine Solutions Provider, for a Wide Range of Heavy Engineering Facilities and Vessels.

50 Years

of delivering integrated and complex solutions



Delivered over 200 offshore facilities



Delivered over 3,800 marine solutions



Completed more than 30 conversion projects in one location

Highest level in **Quality, Health, Safety & Environment Culture**

- **ISO 45001: 2018 Certified**
Occupational Health & Safety Management System
- **ISO 14001: 2015 Certified**
Environmental Management System
- **ISO 9001: 2015 Certified**
Quality Management System
- **ISO 3834 – 2: 2005 Certified**
Quality Requirements for Fusion Welding of Metallic Material
- **EN1090 – 1: 2009 + A1: 2011 Certified**
Execution of Steel Structures and Aluminium Structures
- **ISO 29001: 2020 Certified**
Petroleum, Petrochemical and Natural Gas Industry
- **CSA Standard W47.1 Certified** - Certification of Companies for Fusion Welding of Steel

We adhere to the highest standard of **Integrity**

- **ISO 37001: 2016 Certified**
Anti-Bribery Management System

LNGC Projects Key Milestones



Technical Service Agreement with GTT



MSE entered the full fledged LNGC docking repair business through MISC – “Puteri Firus” (NO96)



1st International LNGC ship repair – MOL “Al-Deebel” (MkIII)



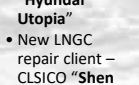
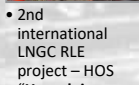
- 1st LNGC RLE project – MISC “Tenaga Tiga” (NO88)
- 1st MOSS LNGC project “Hyundai Oceanpia”



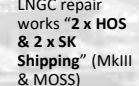
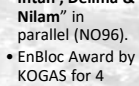
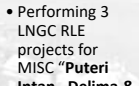
First LNGC Conversion project – MISC “FSU Lekas” (NO88)



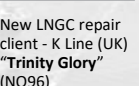
- 1st international LNGC RLE project – MOL “LNG Aquarius”
- 1st DFDE propelled LNGC project – MISC “Seri Balhaf” (NO96)



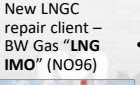
- New LNGC repair client – KNUTSEN OAS “Ribera del Duero Knutsen” (NO96)
- Performing 3 LNGC RLE projects for MISC “Puteri Intan , Delima & Nilam” in parallel (NO96).
- EnBloc Award by KOGAS for 4 LNGC repair works “2 x HOS & 2 x SK Shipping” (MkIII & MOSS)



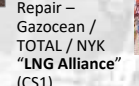
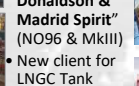
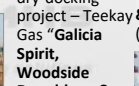
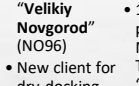
Awarded to undertake 2 LNG FSU modification works “FSU Lekas & FSU Cepat” (NO88)



- 3rd international LNGC RLE & upgrading project – HOS “Hyundai Greenpia” (MOSS)
- New LNGC repair client – BW Gas “LNG IMO” (NO96)



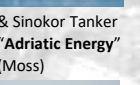
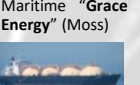
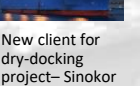
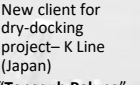
- New LNGC repair client – SCF Management Services / Sovcomflot “Velikiy Novgorod” (NO96)
- New client for dry-docking project – Teekay Gas “Galicia Spirit, Woodside Donaldson & Madrid Spirit” (NO96 & MkIII)
- New client for LNGC Tank Repair – Gazocean / TOTAL / NYK “LNG Alliance” (CS1)



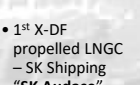
- New client for dry-docking project– Brunei Gas Carrier “Arkat & Amadi” (NO96 & MkIII)
- 1st MEGI propelled LNGC – MOL LNG Transport (UK) “Southern Cross & Beidou Star” (NO96)



- New client for dry-docking project– Golar Management Norway AS) “Golar Maria” (NO96)
- New client for dry-docking project– K Line (Japan) “Tangguh Palung” (NO96)
- New client for dry-docking project– Sinokor Maritime “Grace Energy” (Moss)
- & Sinokor Tanker “Adriatic Energy” (Moss)



- Undertake Global test and cargo tank inspection at offshore Sabah (1st Global test in the world at Gas Condition) - Petronas “PFLNG 1” (NO96)
- 1st X-DF propelled LNGC – SK Shipping “SK Audace” (MARK III Flex)



Facilities • MMHE West Yard General Overview

DRYDOCKING FACILITIES

- Dry Dock 1: 385m x 80m x 14m Capacity : 450,000 dwt
- Dry Dock 2: 270m x 46m x 12.5m Capacity : 140,000 dwt
- Dry Dock 3 : 350m x 80m x 14m Capacity : 400,000 dwt
- Shiplift : 188m x 33.8m x 8m Capacity : 50,000 dwt



CAPACITIES

- Annually at 129,700 MT
- West Yard 379.82 acres (Area: 1,537,090m²)
- East Yard 115.76 acres (Area: 468,450m²)

TOTAL AREA

CRANAGE

- 4 x 250T Crawler Cranes
- 9 x 50T Rough Terrain Cranes
- 17 x Luffing Cranes (Up to 80 MT)
- 2 x 600T x 150m(W) x 100m(H) Goliath Cranes
- 134 x Overhead & Gantry Cranes

FABRICATION AREA

- 9 fabrication/assembly areas totaling 524,522 m² (East and West)

SKID TRACK / BULKHEADS

- MMHE West
- 55,000 MT, 40,000 MT, 12,000 MT, 5,000 MT

WORKSHOPS

- 36 workshops fully equipped service and production workshop

SEA FRONTS

- 1800m length sea front

Facilities • MMHE West Yard General Overview - New Dry Dock No. 3



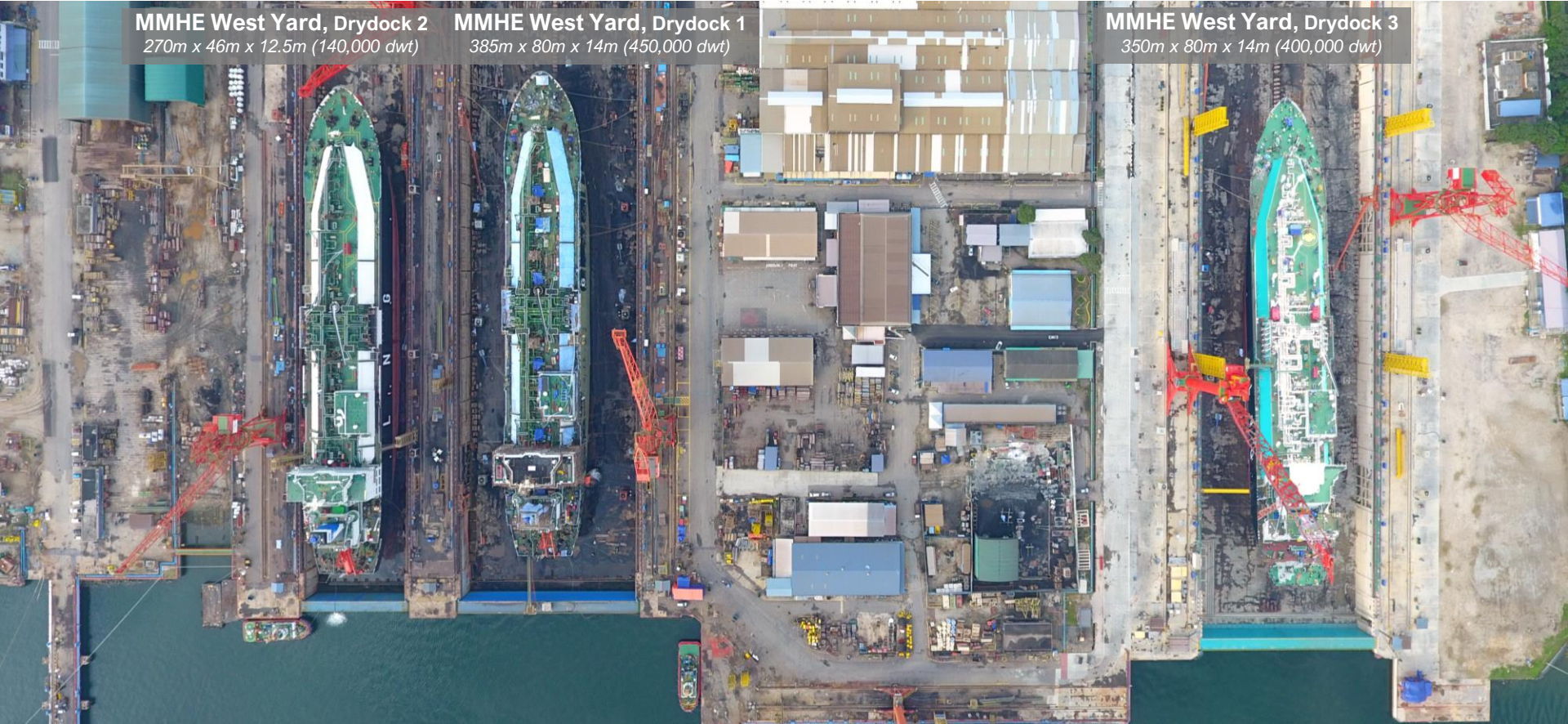
MMHE West Yard, Drydock 3
350m x 80m x 14m (400,000 dwt)

Facilities • MMHE West Yard. Dry Dock No. 1, No.2 and No.3

MMHE West Yard, Drydock 2
270m x 46m x 12.5m (140,000 dwt)

MMHE West Yard, Drydock 1
385m x 80m x 14m (450,000 dwt)

MMHE West Yard, Drydock 3
350m x 80m x 14m (400,000 dwt)



Facilities • MMHE West Yard – Marine Repair



| Facilities | Information & Dimension | |
|--|--|-----------------------|
| Dry dock 1 <i>(One of the Largest in S/East Asia)</i> | 385m x 80m x 14m | Capacity: 450,000 dwt |
| Dry dock 2 | 270m x 46m x 12.5m | Capacity: 140,000 dwt |
| Dry dock 3 | 350m x 80m x 14m | Capacity: 400,000 dwt |
| Land berth 1 | 345m | Capacity: 142 t/m |
| Land berth 2 | 345m | Capacity: 125 t/m |
| Shiplift <i>(One of the largest in the world)</i> | 188m x 33.8m x 8m | Capacity: 50,000 dwt |
| 6 Quays/ Berths | Up to 1,889m in length | 8 m draft average |
| LNGC Repair Facilities | <ul style="list-style-type: none"> ▪ Cryogenic workshop (1062 m2 area) ▪ Invar welding centre ▪ Global test control rooms ▪ Acoustic and helium testing equipment ▪ Mobile cargo tanks monitoring instruments console | |

Facilities • Main Fabrication Facilities

| Facilities | Information & Dimension | | |
|---|--|---|--|
| Annual Fabrication Capacity | <ul style="list-style-type: none"> • 129,700 MT | | |
| Fabrication Area | <ul style="list-style-type: none"> • Total of 9 Fabrication / Assembly areas totaling 524,522 m² (East and West) | | |
| Workshops/Storage | <ul style="list-style-type: none"> • Automated Cutting & Assembly Workshop • Centralised Piping Workshop • Exotic Piping Workshop • Auto-Blast & Primer Workshop • Centralised Chemical Cleaning Workshop • Structures Fabrication Workshop • Blasting & Painting Workshop • Marine Repair Workshop • Shiplift Workshop • Pressure Vessel Fabrication Workshop • Centralised Scheduled Waste Storage • Centralised Warehouse | | |
| Skid Tracks & Bulkheads | <table border="0"> <tr> <td style="vertical-align: top;"> <p>MMHE West</p> <ul style="list-style-type: none"> • 55,000 MT • 40,000 MT • 12,000 MT • 2 x 5,000 MT </td> <td style="vertical-align: top;"> <p>MMHE East</p> <ul style="list-style-type: none"> • 25,000 MT • 2 x 15,000 MT • 5,000 MT </td> </tr> </table> | <p>MMHE West</p> <ul style="list-style-type: none"> • 55,000 MT • 40,000 MT • 12,000 MT • 2 x 5,000 MT | <p>MMHE East</p> <ul style="list-style-type: none"> • 25,000 MT • 2 x 15,000 MT • 5,000 MT |
| <p>MMHE West</p> <ul style="list-style-type: none"> • 55,000 MT • 40,000 MT • 12,000 MT • 2 x 5,000 MT | <p>MMHE East</p> <ul style="list-style-type: none"> • 25,000 MT • 2 x 15,000 MT • 5,000 MT | | |
| Cranes | <ul style="list-style-type: none"> • 4 x 250T Crawler Cranes • 9 x 50T Rough Terrain Cranes • 17 x Luffing Cranes (Up to 80 MT) • 2 x 600T x 150m(W) x 100m(H) Goliath Cranes • 134 x Overhead & Gantry Cranes | | |



Facilities • Warehouse & Storage Area



New Centralized Warehouse

20,350 m²

- WH 3 Covered : 2,400 m²
- WH 2 Covered : 14,950 m²
- WH 1 Cold Room : 2,000 m²
- Chemical & paint : 1,000 m²
- Storage : Pipe fitting, E & I , Mechanical Item, Tools Centre, Paint & Chemical

Warehouse A (Project Material)

5,676 m²

- Covered : 1,361 m²
- Cold Rm : 1,250 m²
- Open : 3065 m²
- Storage item : Pipe fitting, E&I and mechanical item

Warehouse B (Consumables)

6,240 m² (Consumables Area)

- Covered : 1,295 m²
- Open : 3,450 m²
- Storage item : Inventory, paint, chemical, electrode & consumable item

1,496 m² (Pipe Inventory)

- Open : 1,035 m²
- Storage item : Pipe inventory

Spare Part Receiving Facility

2,400 m²

- 20-ton overhead crane inside WH3.
- 5-ton Forklift
- WH3 (covered) & dedicated team for material/equipment handling and documentation



Facilities • Warehouse & Storage Area

Warehouse 1 (Cold Room Facilities / Storage)



2,000 m²

Cold Room Facilities :

- Purpose – To store sensitive equipment (ex: Electronic Panel, Cryogenic Equipment)
- 2 storey storage area = 2,000 m²
- Humidity Control (Range 20~80%)
- Temperature Control (Range 20~35°C)

Quality Accreditations • Certification & Audit

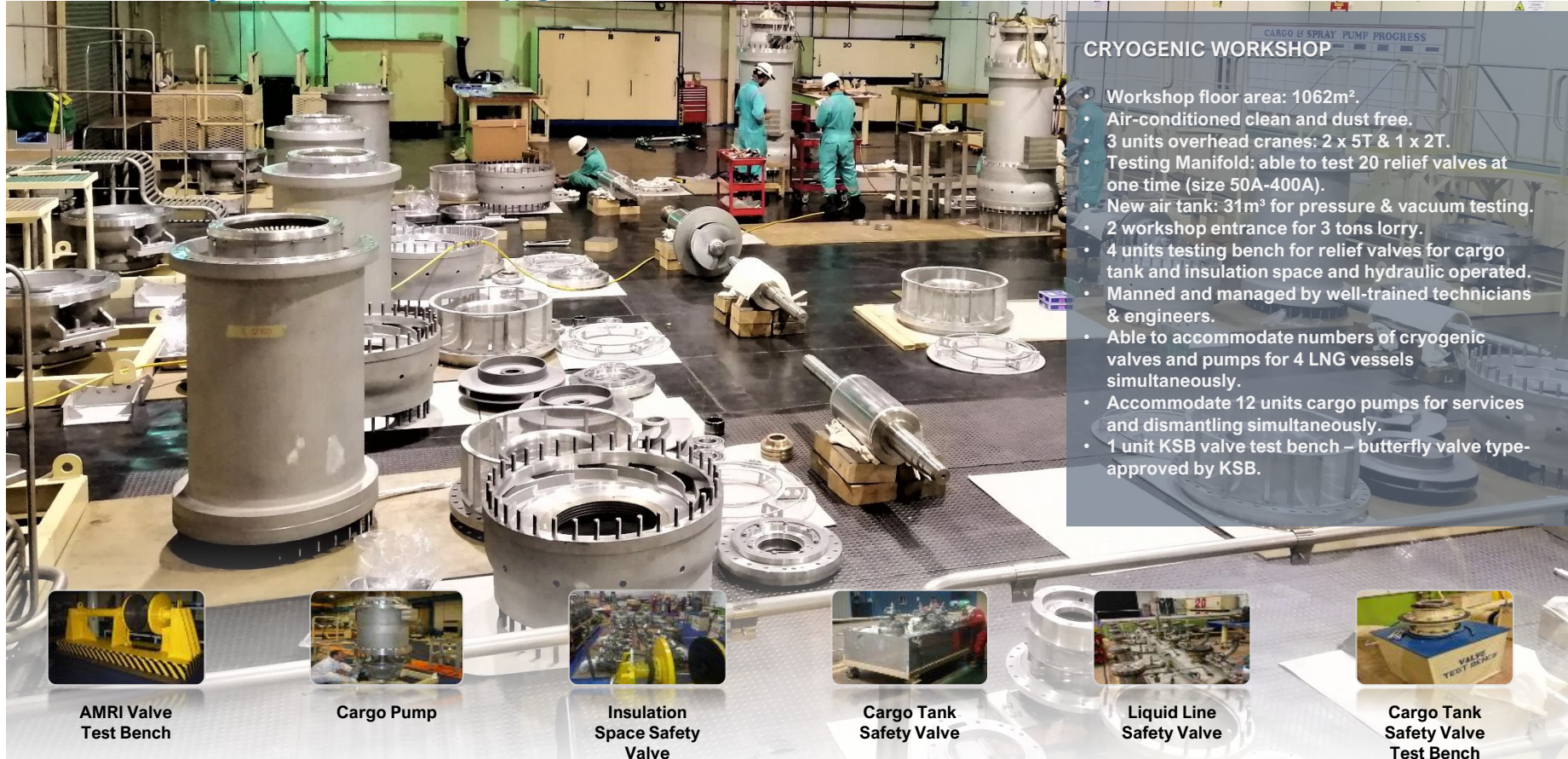
MMHE is ISO 9001:2015 certified for its Integrated Management System.



MMHE is ISO 45001:2018 & ISO 14001:2015 certified EMS

| YEAR | AUDITOR (LNG RELATED CLIENTS) |
|------|--|
| 2023 | <ul style="list-style-type: none"> • Excelerate Energy, Inc • Chevron Asia Pacific Shipping Pte Ltd • K Marine Ship Management Pte. Ltd. |
| 2022 | <ul style="list-style-type: none"> • Seapeak • BP Shipping • Bumi Armada and Total SA |
| 2021 | <ul style="list-style-type: none"> • K-Line Energy Ship Management Co., Ltd (Japan) |
| 2020 | <ul style="list-style-type: none"> • Nigeria LNG Limited • Brunei Gas Carriers and STASCO |
| 2019 | <ul style="list-style-type: none"> • MOL LNG Transport (Europe) Ltd • Knutsen OAS Shipping AS • Exmar Shipmanagement NV • Tokyo LNG Tanker Co. Ltd. • Teekay Gas Ltd • Flex LNG / Frontline Management AS • Gazocean and Total SA |
| 2018 | <ul style="list-style-type: none"> • China Energy Ship Management • Mitsui-OSK-Line (MOL) Ltd, Japan • NYK LNG Shipmanagement Limited • LNG Marine Transport Limited • Golar Management Norway AS • "K" Line Ship Management (Japan) • BW Fleet Management AS |
| 2017 | <ul style="list-style-type: none"> • MISC Berhad • Gaslog & STASCO • Sovcomflot (SCF) Management Service |
| 2016 | <ul style="list-style-type: none"> • "K" Line LNG Shipping (UK) • Mitsui-OSK-Line (MOL) Ltd, Japan • MISC Berhad • STASCO |
| 2015 | <ul style="list-style-type: none"> • Petronas • Mitsui-OSK-Line (MOL) LNG UK Ltd • Knutsen OAS (LNG) Norway • MISC Berhad • STASCO |

LNGC Repair Facilities • Cryogenic Workshop



CRYOGENIC WORKSHOP

- Workshop floor area: 1062m².
- Air-conditioned clean and dust free.
- 3 units overhead cranes: 2 x 5T & 1 x 2T.
- Testing Manifold: able to test 20 relief valves at one time (size 50A-400A).
- New air tank: 31m³ for pressure & vacuum testing.
- 2 workshop entrance for 3 tons lorry.
- 4 units testing bench for relief valves for cargo tank and insulation space and hydraulic operated.
- Manned and managed by well-trained technicians & engineers.
- Able to accommodate numbers of cryogenic valves and pumps for 4 LNG vessels simultaneously.
- Accommodate 12 units cargo pumps for services and dismantling simultaneously.
- 1 unit KSB valve test bench – butterfly valve type-approved by KSB.



AMRI Valve
Test Bench



Cargo Pump



Insulation
Space Safety
Valve



Cargo Tank
Safety Valve



Liquid Line
Safety Valve



Cargo Tank
Safety Valve
Test Bench

LNGC Repair Facilities • Mock-up & Invar Welding Training Center



95 m² area with 10 welder stations



Invar Protection Mockup for
GTT No. 88 , 96



Mockup for GTT MKIII / NO 96



Invar welding training
for welder



Invar welding training
for welder



Invar welding training
for fitter

LNGC Repair Facilities • Cargo Tank Membrane Integrity Test



GAZTRANSPORT & TECHNIGAZ S.A.

CERTIFICATE for VACUUM TIGHTNESS TESTING CAPACITY
on
GTT MEMBRANE LNG TANKS

| | |
|---------------------------------------|--|
| <i>Certificate reference:</i> | ATMV-14-002/22-0232 |
| <i>This certificate is issued to:</i> | MALAYSIA MARINE AND HEAVY ENGINEERING SDN. BHD. |
| <i>Date of Agreement:</i> | 28 th of September, 2015 |
| <i>Scope of Agreement:</i> | Membrane Vacuum Testing Method and Equipment for In Service GTT Membrane Vessels |
| <i>Term of Validity:</i> | 28 th of September, 2023 and subject to further extension |

This is to confirm that under the afore mentioned agreement, GTT successfully audited MMHE testing methods and equipments.

GTT performs regular checks on MMHE testing methods and equipments so as to ensure periodically their conformity with GTT testing methods and requirements.

Under this agreement, MMHE has committed to provide the personnel qualification and the calibration certificates references and validity of the relevant personnel and equipment on each testing report. Furthermore, MMHE has committed to provide the personnel qualification and the calibration certificates at request.

Done in Saint-Rémy-Lès-Chevreuse
 On 09th of September, 2022

Certified by:
 Rémy DIRLES
 In Service Department Manager

 Gaztransport & Technigaz S.A.

GTT (Gaztransport & Technigaz) SA – Tél. : + 33 (0)1 30 23 47 89 – Fax : + 33 (0)1 30 23 47 00 – www.gtt.com
 SA au capital de 370 783,57 € – RCS Versailles B 662 001 403 – Siège Social : 1, route de Versailles – 79470 Saint-Rémy-Lès-Chevreuse – France

MMHE is the only yard that is referenced by GTT for the provision of testing services to LNG Carriers in service



Portable Global Test Control Room – 4 units



Helium Test Instrument x 2 units



Acoustic Emission Test Instrument – 4 sets



Acoustic Emission Test Instrument – 4 sets

LNGC Repair Facilities • Others



**Control Valve & Instrumentation
Facilities**



**Dry-Air Tank Facility for Cryogenic
Safety Valve**



Scaffolding for LNG Cargo Tank



**Wooden Block for Membrane
Protection-Mark III**



**Wooden Block for Membrane
Protection-NO.88,96,CS1**



Bulk N2 Cargo Tank Purging

Competency • GTT And Class Approval



Technology for a sustainable world

CERTIFICATE for REPAIR SHIPYARD MAINTENANCE CAPACITY

on
GTT MEMBRANE TANKS

| | |
|---------------------------------------|--|
| <i>Certificate reference:</i> | TSAR-n°02-003-22-0288 |
| <i>This certificate is issued to:</i> | MMHE Malaysia Marine and Heavy Engineering SDN BHR (MMHE) |
| <i>Date of Agreement:</i> | Effective since 15 th October, 2002 |
| <i>Scope of Agreement:</i> | Maintenance of Membrane Type Cargo Containment and Cargo Handling Systems |
| <i>Term of Validity:</i> | 14 th October 2023 with automatic renewal and possible termination within 3 months notice |

This is to confirm that GTT has entered into a Technical Services Agreement (TSA) with MMHE for repair and maintenance work in Membrane type cargo tanks.

Done in Saint-Rémy-Lès-Chevreuse
On November 08th, 2022

Certified by:
Rémy DIRLES
In Service Department Manager

Gaztransport & Technigaz S.A.

GTT (Gaztransport & Technigaz) SA - Tél. + 33 (0)1 30 23 47 89 - Fax. + 33 (0)1 30 23 47 00 - www.gtt.fr
SA au capital de 270.783.57 € - RCS Versailles B 492.001.400 - Siège Social : 1, route de Versailles - 78470 Saint-Rémy-Lès-Chevreuse - France

Certificate No: KLR1700593
Page 1 of 1

Approval of Service Suppliers

Office: **Paik Gudang**
Date of Issue: **23 August 2017**
Title to certify Part: **Malaysia Marine And Heavy Engineering Sdn. Bhd.**
Paik Gudang Industrial Estate, 81757 Paik Gudang, Johor, Malaysia (hereinafter referred to as "Supplier")

Tel: +60-066 3047 Fax: +60-278 0969 Email: mhauf@mmhe.com.my

Parties have entered into a voluntary agreement in accordance with the requirements of Lloyds Register Procedures for Approval of Service Suppliers as Supplier from the address specified above for the provision of:

Tightness testing of primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service
Service recognition as per following:
1. Global Testing of Primary and Secondary Barriers.

This approval is conditional upon the Supplier maintaining the documented scheme as audited by any member of the Society's Register Class and hereby approved, and notifying Lloyds Register in writing of any change to that scheme including any change in personnel, equipment or procedures.
This certificate is subject to the Supplier complying with the necessary conditions, as set out in the certificate referred to below.
This certificate is valid until: **24 August 2026**

Approved by:
M. M. Alami
General Manager
A subsidiary of Lloyds Register Group Limited

Certificate Number: 1630317072181A
ABS Port Office: **Johor, Malaysia**
Effective Date: **03 August 2015**
Service Provider's Address: **FLO 3 JALAN PEKELILING P.O. BOX 77 PASIR GUDANG JOHORE**
Service Provider's Website: www.abs.com.my
Unless specified under this certificate refers on: **04 August 2019**
For particular conditions of recognition, see the ABS web site: www.abs.org

Certificate of Service Recognition

This is to certify that
MALAYSIAN MARINE AND HEAVY ENGINEERING
having been audited by ABS and having given a satisfactory practical demonstration of the service listed below, is recognized by ABS as a Service Provider to provide services which ABS Supervisors may rely on to make decisions affecting classification or statutory surveys.

Barrier Testing of Gas Carriers with Membrane CCS

It is the responsibility of the Service Provider to employ, train and qualify persons in the service provided if the service requires approval from manufacturers, the service provider is responsible to maintain contact with the manufacturer and maintain any service manuals up to date. The employees who will conduct the servicing are to have their identification and, if allowed, be listed on the company's web site (listed above). The products and models allowed to be serviced are to be listed on the company's web site. The ABS office issuing this certificate to be kept up-to-date with changes to the management of the company, its employees, products and models on file for and any changes made.

Note: Please refer to the ABS web site: www.abs.org for any comments regarding the services provided.

Service Recognition: **Global Vacuum Testing of Primary and Secondary Barriers.**

Management's Declaration:
M. M. Alami
General Manager
Supervisor

Classed by ABS as a Service Provider in accordance with the Rules, which are available on the website of the American Bureau of Shipping and is issued only for the use of its Members. This certificate is representative only and the Company has been entered in accordance with ABS procedures and is subject to periodic audits to ensure compliance with the Rules and applicable regulations. This certificate is governed by the terms and conditions on the reverse side thereof and by the Rules, Guidelines or approvals of the American Bureau of Shipping, which shall remain the sole jurisdiction.



NIPPON KAIJI KYOKAI

CERTIFICATE OF APPROVAL FOR FIRMS ENGAGED IN TIGHTNESS TESTING OF PRIMARY AND SECONDARY BARRIERS OF GAS CARRIERS WITH MEMBRANE CARGO CONTAINMENT SYSTEMS FOR VESSELS IN SERVICE

Certificate No. 18HE03990

This is to certify that

MALAYSIAN MARINE AND HEAVY ENGINEERING SDN. BHD.
FLO3, JALAN PEKELILING, P.O. BOX 77, 81700 PASIR GUDANG JOHOR, MALAYSIA

is approved as a firm engaged in tightness testing of primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service under the Rules for Approval of Manufacturers and Service Suppliers of the Society.

Service recognition as per following:

- 1) Global Vacuum Testing of Primary and Secondary Barriers

Issued at Tokyo on 25 June 2018.

This certificate is valid until 24 May 2021*.

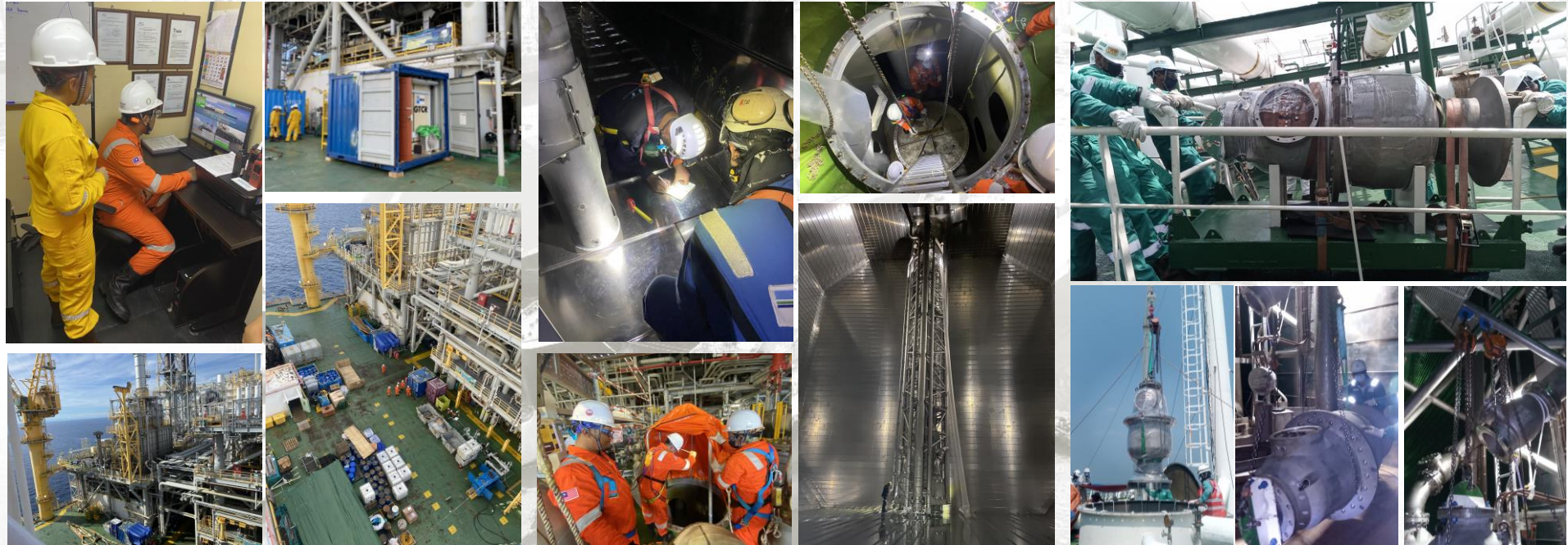
M. M. Alami
General Manager
Hull Department

Note:

This certificate is valid as long as authorization of the system designer is effective.

Competency • Offshore LNG Floater (FSU / FLNG) Maintenance

Onsite Global Test, Tanks Inspection, Cryogenic Pumps Replacement and Cargo Valves Maintenance



Global Test

Cargo Tank Inspection

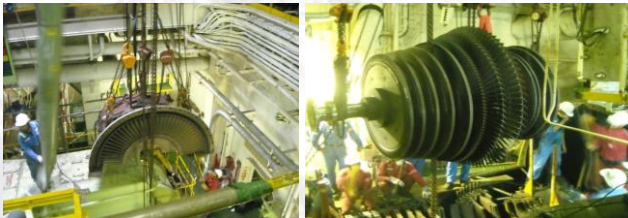
Cryogenic Pumps Replacement

Competency • Steam Turbines & Main Boilers Maintenance & Repair Record



Competency :

- Main Boiler & Accessories
- Main Turbine & Gearing
- High Pressure Piping & Valves
- Various Heat Exchangers
- Turbo/Diesel Generators
- Various Instrumentation Control Equipment

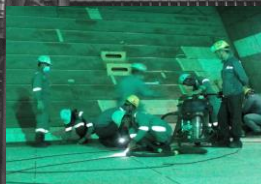


| EQUIPMENT | BRAND | NO. | TOTAL |
|--------------|--------------------------|-----|-------|
| Main Turbine | Kawasaki | 74 | 188 |
| | Mitsubishi | 42 | |
| | Stal Laval | 16 | |
| Main Boiler | Kawasaki | 90 | 282 |
| | Mitsubishi | 82 | |
| | Foster Wheeler / Babcock | 68 | |

Competency • Testing & Repair

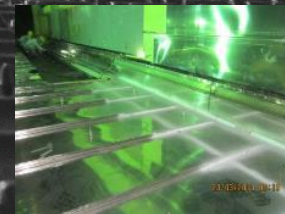
CARGO TANK REPAIR :

- ✓ Cryogenic Pumps
- ✓ Cryogenic Valve
- ✓ Membrane SUS / Invar Welding Repair
- ✓ Inner Hull Repair
- ✓ Pump Tower Base Support Repair (PTBS Repair)
- ✓ Cargo Control Valve Services / Calibration
- ✓ Cargo Instrumentation Services
- ✓ Cargo Pipeline Renewal / Modification
- ✓ Cargo Pipeline Insulation Renewal

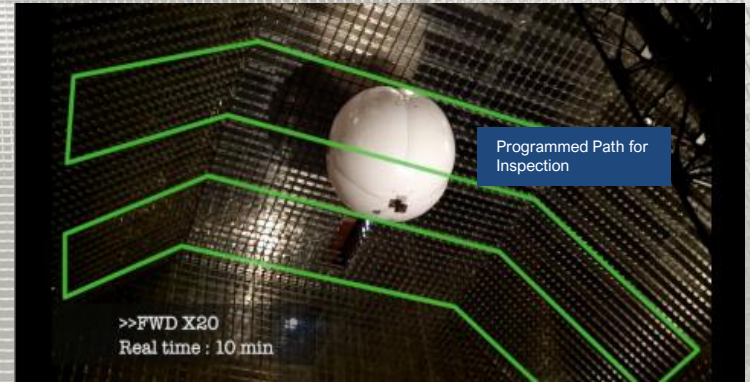


CARGO TANK TESTING :

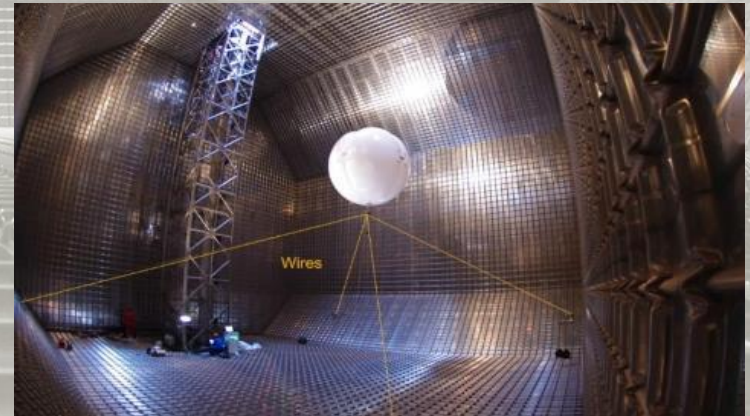
- ✓ Global Test
- ✓ Secondary Barrier Tightness Test (SBTT) – Mark III
- ✓ Primary Barrier Global Test (PBGTT) – Mark III
- ✓ Acoustic Emission Test (AE)
- ✓ Helium Leak Detection Test
- ✓ Dye-Penetrant Test (DPT)



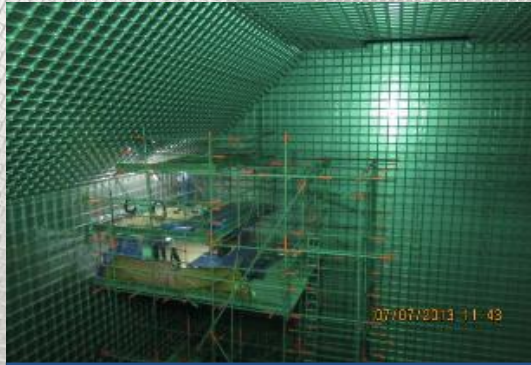
Competency • Motorized balloON : MOON



- Inspection / test of tank top parts without installation of scaffolding
 - ✓ Helium test
 - ✓ Visual inspection
- High accuracy of Balloon motion controlled by 4 motors located at the corner of the tank
- Quick deployment
- Motion controlled manually or automatically through a dedicated software
- Ability to embark up to 10kg of equipment



Competency • MARK III



Top Chamfer Inspection



Vacuum Test



Secondary Barrier Repair



Secondary Barrier Repair



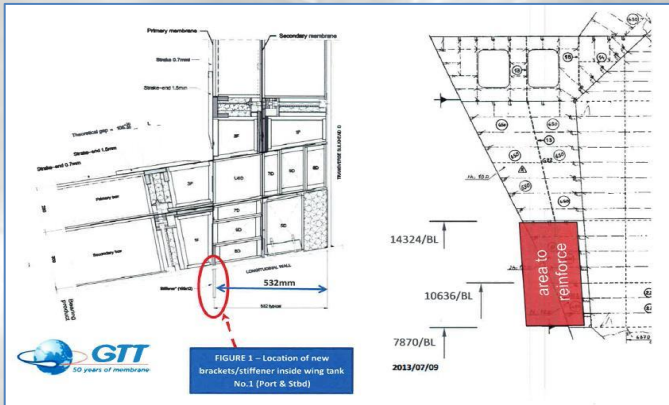
Mark III Membrane Welding



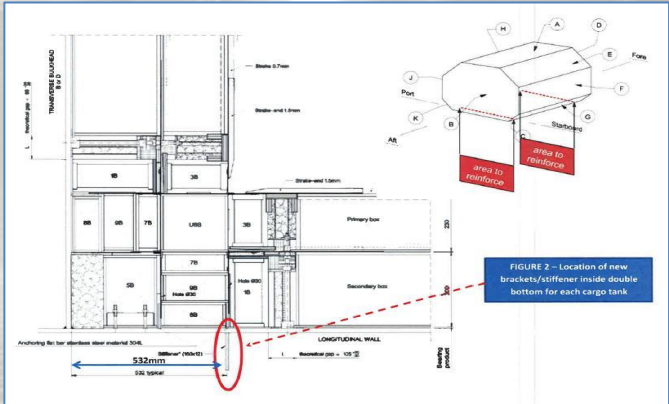
CTMS Upgrading (Capacitance to Radar)

Competency • GT NO 96 (Reinforcement)

Installation the steel brackets on the inner hull (adjacent to cargo tank anchoring bars) from inside WBT



Arrangement for Cargo Tank No.1 – Bracket location at wing tank no.1 (P & S) Fwd



Arrangement for Cargo Tank No.1,2,3,4 - Bracket location at double bottom tank no.1, 2, 3 & 4 (P & S) Fwd and Aft.



Mockup Test



MPI Test



Material Preparation



Cosmetic Work



Fit and Weld Process



Close Side Shell Access

Competency • MOSS Type



Cargo pump removal & overhauling



Insulation Repair



New CTMS / Penetration Installation



Various Outfitting Works



Full dome's staging & dome cosmetic work



Cargo dome seal renewal

Track Records • LNGC projects

3,800+

Marine Repair Projects



12~14 average

Average Gas Carriers Repaired per year



21 BWTS

Ballast Water Treatment System retrofits completed



10 RLE

LNG Carriers Major RLE projects

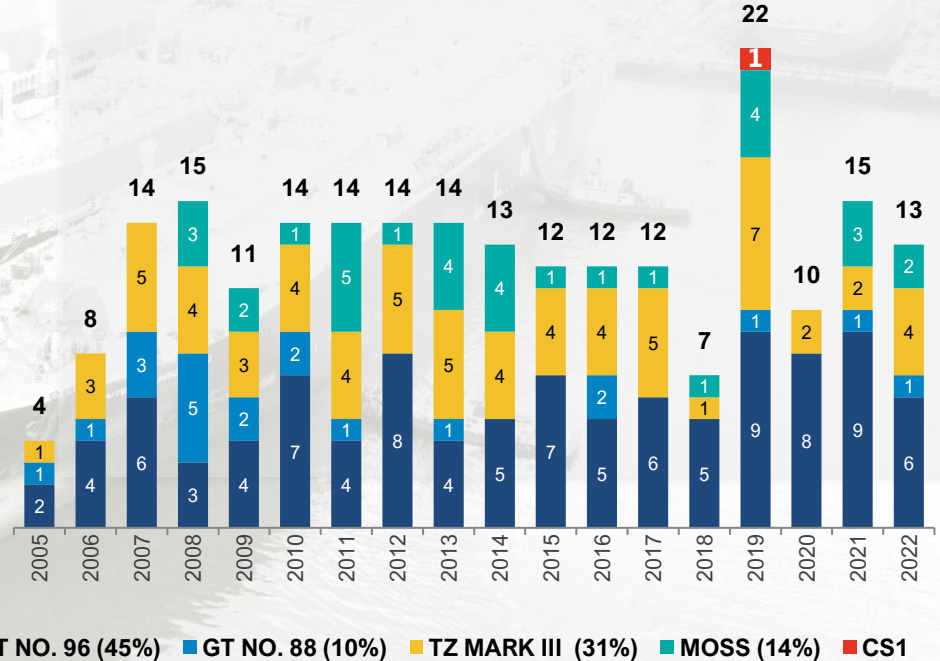


1 CONVERSION

LNG FSU Conversion project



NO. OF LNG CARRIERS REPAIRED BY YEAR AND CCS TYPE



Track Records • LNGC RLE & Conversion Projects

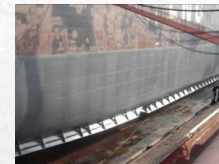
Project - FSU LEKAS (LNGC Tenaga Satu) / FSU 1

Owner / Operator - MISC Berhad

Working Period - 8 months

Major Work scope

- Cargo Tank Assessment
- Tank coating – 187,208m²
- Ship Side Full Blast – 23,000m²
- Cargo pipeline Renewal – 900m
- Heating Coil Renewal – 8000m
- Boiler Tube Renewal
- Steelwork Repair – 710 tons
- Ballast Pipe Renewal – 30m
- Sewage Treatment Plant Renewal
- Pipe Insulation Renewal
- Sandwich Plate System (SPS)
- Winches / Windlass Renewal – 8nos
- Passenger Lift Renewal
- Motor Overhaul – 60nos
- Fresh Water Generator Renewal
- Lifeboat & Davit Renewal x 1no
- Electrical Cable & Lighting Upgrade
- PA System Renewal
- Main Cargo Pump, Bilge, Fire Deck Wash and Emergency Fire Pump Renewal.



Track Records • LNGC RLE & Conversion Projects



Roller Fairlead Fabrication and Installation



Accommodation Refurbishment



Galley Equipments



Fabrication Mooring Fairlead Foundation



Installation of New Cargo Line



Gas Metering Skid



Mooring Winch Installation



Installation of New Offloading Platform



New Boiler Burner System Installation

Track Records • LNG Upgrading & Major Refurbishment

Project - LNG AQUARIUS

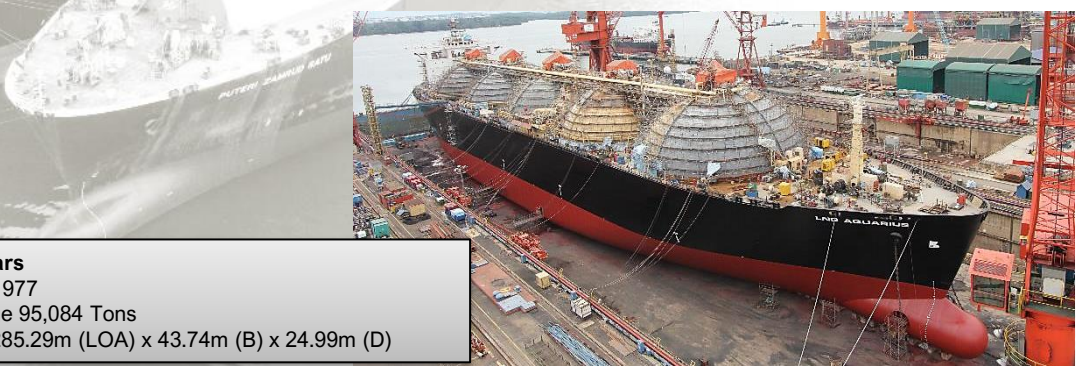
Owner - PT. Hanochem Shipping

Operator - MOL LNG Transport (Europe) Ltd.

Working Period - 4 months (14-Oct-2013 ~ 10-Feb-2014)

Major Work Scope

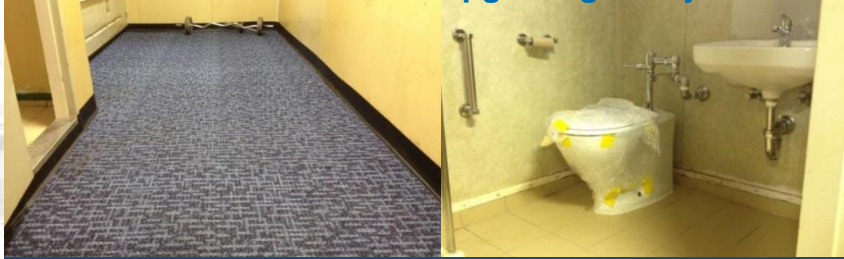
- Ship Side Full Blast – 25,035m²
- Cargo Dome Hydro Jetting and Painting
- Cargo Integrated Automation System (IAS)
- Cargo Tank Radar Gauging System
- Cargo Tank Radar Penetrations
- Removal and Replacement of Cargo Pump Cables
- Navigation Aids Upgrade
- Catwalk Structure Renewal
- Cryogenic Pipeline Support Catwalk
- Accommodation Modification and Refurbishment
- Economizer Casing Repair
- New Manifold Crane Installation
- Renewal of Air Compressor and Air Drier
- Renewal of Molded-case Circuit Breaker (MCCB)/Miniature Circuit Breaker (MCB) and Group Starter Panel
- Turbo Generator No.1 and No.2 Modification
- Ballast Tank Major Modification
- Air Conditioning System Upgrading



Vessels Particulars

- Built in June 1977
- Gross Tonnage 95,084 Tons
- Dimensions: 285.29m (LOA) x 43.74m (B) x 24.99m (D)

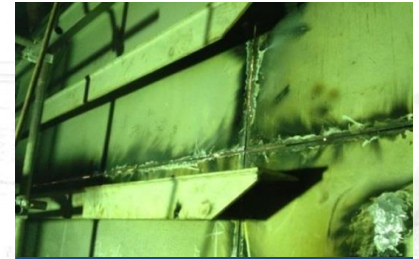
Track Records • LNGC Upgrading & Major Refurbishment



Accommodation Modification and Refurbishment



Mooring Winch Overhauling



Ballast Tank Major Modification



Power & Instrument Cable Renewal



Ballast Line Renewal



Cargo Pipe Insulation Renewal



Cargo Tank Radar Gauging System Upgrading

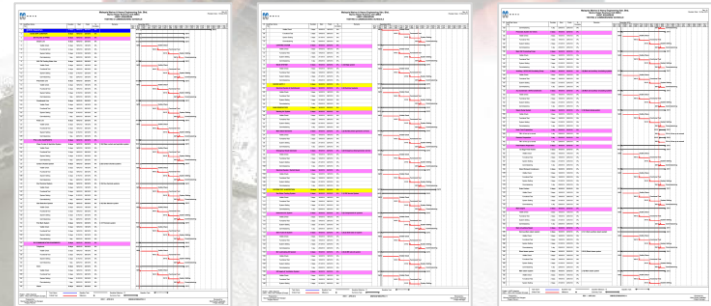
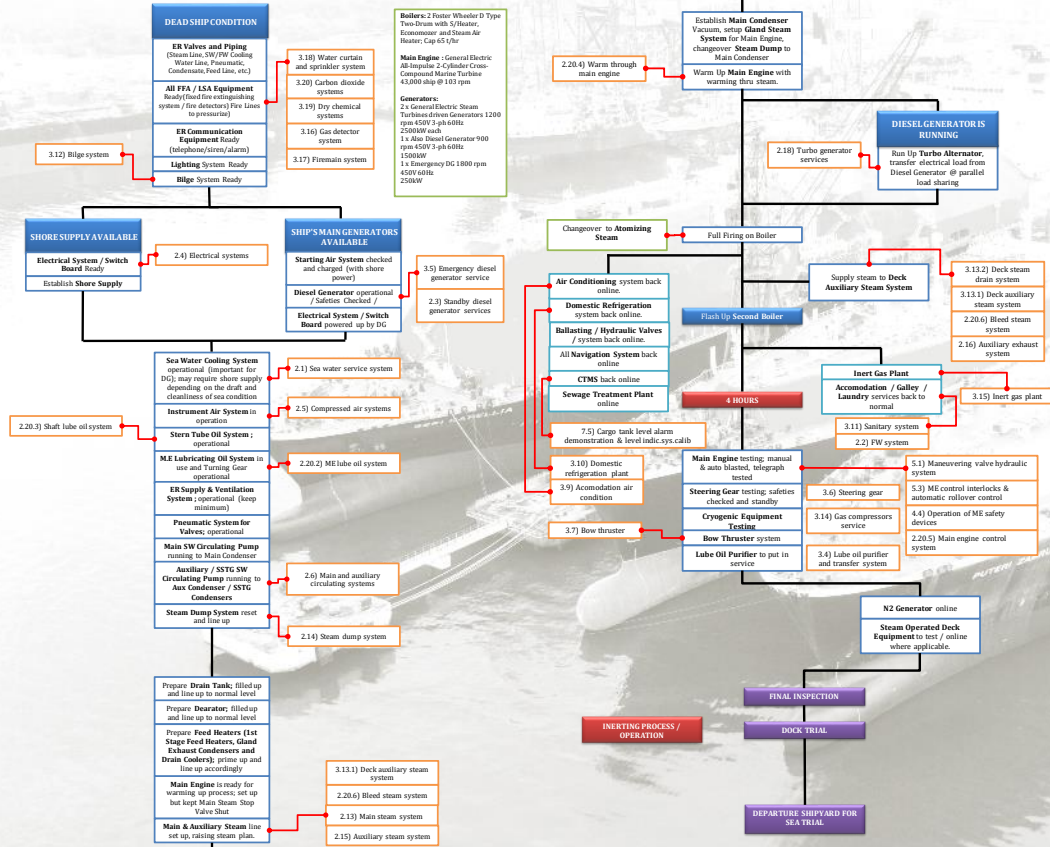


Installation of New Manifold Crane



Full dome's staging work

Track Records • LNGC Upgrading & Major Refurbishment



TESTING , COMMISSIONING AND STEAM PLANT RAISING PLANS PREPARED BY MMHE

*Extra advantages of knowledge and know how to be shared by MMHE (Due to the fact that there are few ex-LNG carrier Chief Engineer in MMHE)

Track Records • LNGC Upgrading & Major Refurbishment

Project – **HYUNDAI UTOPIA & HYUNDAI GREENPIA**

Owner – Hyundai Ocean Service Co. Ltd./ Hyundai LNG Shipping Co. Ltd.

Operator – Hyundai Ocean Service Co. Ltd.

Working Period - 43 days (10-Jun-2014 ~ 23-Jul-2014) / (31-Nov-2018 ~ 13-Dec-2018)

Major Work Scope

- Installation of Additional Mooring Winches
- Cargo Tank & Hull Structure Reinforcement
- Flying Passage Structure Renewal
- Cargo Pipe Insulation Renewal
- Monorail Crane Renewal
- Water Ballast Tanks Hydro blast & Paint
- Mooring Winches Overhaul
- Platform & Grating Renewal
- Boiler Exhaust Pipe Renewal
- Main Boiler Tubes Renewal
- New Manifold Crane Installation
- Engine Room High Pressure Steam Pipe Assessment
- Cargo Integrated Automation System (IAS)
- Inert Gas Generator Upgrade



HYUNDAI UTOPIA

Vessels Particulars

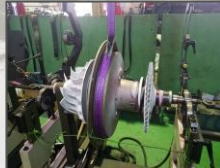
- Built in June 1994
- Gross Tonnage 103,764 Tons
- Dimensions: 274.00m (LOA) x 47.20m (B) x 26.50m (D)



HYUNDAI GREENPIA

Vessels Particulars

- Built in June 1996
- Gross Tonnage 103,764 Tons
- Dimensions: 274.00m (LOA) x 47.20m (B) x 26.50m (D)



Track Records • LNG Upgrading & Major Refurbishment

Project – PUTERI CLASS RLE AND UPGRADING PROJECTS

Vessels' Names : PUTERI INTAN , PUTERI DELIMA, PUTERI ZAMRUD & PUTERI NILAM

Owner / Operator : MISC Berhad

Covering Period ; 2 June 2015 ~ 10 Oct 2015

Common Work Scope

- Main Steam Turbine – Major Overhaul
- Main Boiler – Major Service And Steam Tube Renewal
- Turbine Alternator – Major Overhaul
- Diesel Generator – Major Overhaul
- Auxiliary Machineries Overhaul
- Steel Work Repair : 75 Tons
- Hull Fitting Work : 73 Tons
- Inner Hull Reinforcement In WBT And Cofferdam
- Galley Equipment Upgrade & Renew
- Invar Tube Junction Reinforcement
- Whessoe Modification for Punching Device
- Tower Base Support Reinforcement
- Cargo Pumps Overhaul and Cargo Tank Global Test
- Renewal of Deck Pipe : 1,095 Mtrs
- Cryogenic Pipe Insulation Renewal: 420 M2
- Motor Renewal : 28 Nos
- Water Ballast Tank Blasting & Coating : 7,000 M2
- Void Space Blasting & Coating : 2,200 M2

Vessels Particulars

- Built 1994 ~ 1996
- Gross Tonnage 86,205 Tons each
- Dimensions: 274.30m (LOA) x 43.30m (B) x 25.40m (D)



Track Records • LNG FSRU Modification

Project – **BW BATANGAS**

Owner - BW LNG AS

Operator - BW Fleet Management AS

Working Period - 23-Mar-2023 ~ 6-Jun-2023

Major Work Scope

- Mooring Modification - New Installation QRH, Panama Chock and Closed Chock
- Modification Of Regas HP Sendout Manifold And Platforms
- Modification Of Upper Platforms of Fwd Radar
- Laydown Area For Fenders On Trunk Deck
- Remove & Relocation of Equipment - Fwd Radar & Remote-control Panel
- Installation of New Equipment
 - LNG Sampling Cabinet
 - Control Cabinet
 - Phaser Vaporizer
 - Vaporizers
 - High Pressure Booster Pumps
 - Flow Meter
 - Sea Water Lift Pumps
 - Gas & heat Detectors
 - HPU
 - ERC - 10"
 - VSD
 - Telephone
- Installation of Cargo Pipe, Valves & Fittings
- Installation of New Cable and Fiber Optic



Vessels Particulars

- Built in August 2009
- Gross Tonnage 89,556 Tons
- Dimensions: 295.00m (LOA) x 43.40m (B) x 26.00m (D)

Track Records • LNGC Dry-docking & Repair

Project – **PACIFIC BREEZE**

Owner - Kawasaki Kisen Kaisha Ltd

Operator - K Marine Ship Management Pte Ltd

Working Period - 7-Mar-2023 ~ 5-Apr-2023

Major Work Scope

- Hull Cleaning, Full Underwater Blasting and Painting
- Sea and Overboard Valves Overhaul
- Water Ballast Tank Inspection
- Cargo Tanks Inspection
- Cargo and Spray Pumps Overhaul
- Cryogenic Equipment Overhaul
- Cryogenic Valve Overhaul
- Main Generator Engine Overhaul
- Turbo Charger Overhaul
- Auxiliary Boiler Inspection
- Electrical Motors and Fans Overhaul



Vessels Particulars

- Built in Mar 2018
- Gross Tonnage 144,978 Tons
- Dimensions: 299.94m (LOA) x 52.00m (B) x 28.00m (D)

Track Records • LNGC Dry-docking & Repair

MOL



Type of works : RLE
Year : October 2013

MOL



Type of works : Special Survey
Year : July 2020

MOL



Type of works : Special Survey
Year : August 2020

K K LINE



Type of works : Special Survey
Year : March 2019

K K LINE



Type of works : Intermediate Survey
and BWTS Installation
Year : November 2021

HMM
HYUNDAI MERCHANT MARINE CO., LTD.



Type of works : Special Survey
Year : May 2019

HMM
HYUNDAI MERCHANT MARINE CO., LTD.



Type of works : Intermediate Survey
Year : July 2017

HMM
HYUNDAI MERCHANT MARINE CO., LTD.



Type of works : Intermediate Survey
Year : May 2016

SK shipping



Type of works : Special Survey and
Cargo Tank Repair
Year : September 2019

SK shipping



Type of works : Special Survey and
Cargo Tank Repair
Year : June 2015

Track Records • LNGC Dry-docking & Repair



Type of works : Special Survey
Year : July 2019



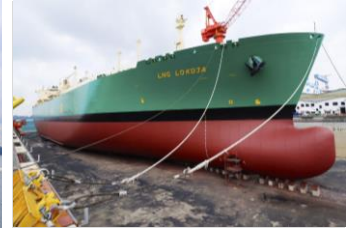
Type of works : Special Survey
Year : August 2019



Type of works : Special Survey and Stern
Tube Bush Renewal
Year : July 2012



Type of works : Special Survey
Year : April 2018



Type of works : Special Survey
Year : September 2021

Golar LNG



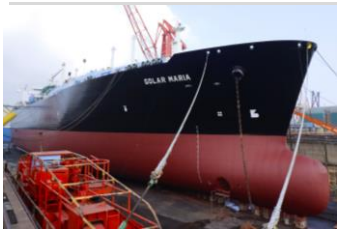
Knutzen OAS
Shipping



GAZOCEAN

SCF
Sovcomflot

SCF
Sovcomflot



Type of works : Special Survey and
BWTS Installation
Year : June 2021



Type of works : Special Survey
Year : November 2015



Type of works : Intermediate Survey and
Cargo Tank Repair
April : April 2019



Type of works : Special Survey
Year : January 2019



Type of works : Special Survey
Year : March 2020

Track Records • LNGC Dry-docking & Repair



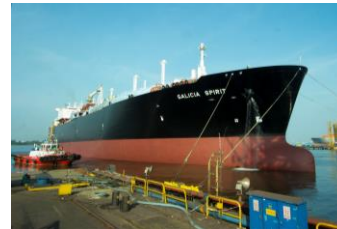
Type of works : Special Survey
Year : May 2011

Type of works : Special Survey
Year : July 2011

Type of works : Intermediate Survey
Year : April 2008

Type of works : Special Survey
Year : June 2011

Type of works : Intermediate Survey
Year : April 2013



Type of works : Special Survey and
BWTS Installation
Year : September 2020

Type of works : Special Survey
Year : October 2020

Type of works : Special Survey and
BWTS Installation
Year : February 2019

Type of works : Special Survey and
BWTS Installation
Year : April 2019

Type of works : Special Survey and
BWTS Installation
Year : July 2019

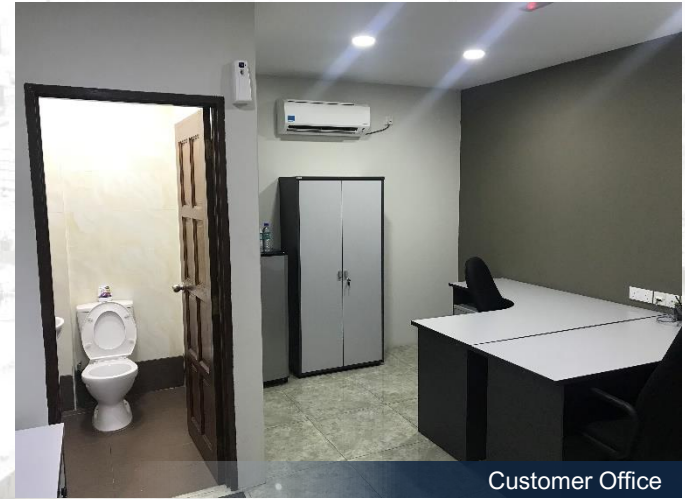
Clientes



Other Services • Customer Care

New Customer Service Office

- 2 stories building to accommodate 31 rooms for customer offices (15 offices located on ground floor and 16 offices located at the upper floor) with individual toilet and IT facilities.
- 1 dedicated meeting / conference room located at the upper floor.
- Equipped with new CCTV for security purpose.
- A Discussion Room at ground floor.
- Strategically located at the centre of Yard.
- Two work group s system and a rotation system for stand-by on Saturday, Public Holidays.
- Collection of dirty coveralls on every Tuesday, Thursday and Saturday with dedicated cleaner.



Customer Office



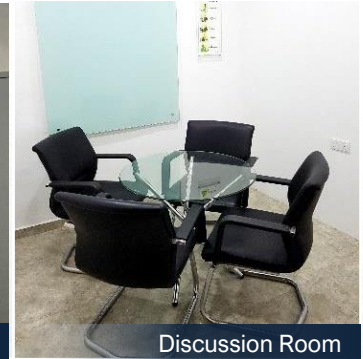
Conference Room



Lounge



Shower and Changing Room



Discussion Room



“Engineering Solutions”

Thank You

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