



MAZAGON DOCK SHIPBUILDERS LIMITED

NAVRATNA SHIPYARD LISTED IN STOCK EXCHANGE SINCE 2020



SHIPBUILDERS TO THE NATION
ONLY SHIPYARD TO BUILD CONVENTIONAL
SUBMARINES AND DESTROYERS





MAZAGON DOCK SHIPBUILDERS LIMITED

CHAIRMAN'S MESSAGE :

Mazagon Dock Shipbuilders Limited (MDL) is a leading Defense Public Sector Undertaking under Ministry of Defence and listed in the Bombay Stock Exchange since 2020. It is one of the India's premier shipyards with a capacity to meet all maritime requirements of the nation. MDL has Indigenously built major frontline Warships and Submarines for Indian Navy which includes Destroyers, Frigates, Conventional Submarines, Corvettes, Missile Boats etc. Since 1960, MDL has built 28 Warships and 07 Submarines which indicates the prowess of MDL in strengthening the Indian Navy as a builder's Navy not a buyer's Navy.

Indigenous warship building has been a distinct success story in MDL's attempt to be self-reliant in Defence. Indigenous contents have steadily increased in these construction programs and presently it is pegged at 72-75%.

MDL has embarked on a Diversification & Innovation drive with revival of Ship Repair vertical, construction of Midget Submarine along with collaborating with esteemed organizations for developing Fuel Cell Electric Vessel, AUV Swarm Drones, Mobile Target Emulator, Expandable Underwater Target, Unmanned Vessels etc.

The world today is changing at rapid pace and becoming increasingly digital. MDL is also continuously fostering innovation in all operations and processes to keep pace with the changing world.

As a testament to MDL's commitment to further fortifying India's maritime defense capabilities and advancing towards self-reliance MDL has recently been granted Navratna status.

VISION

MDL shall strive to be progressive and profitable shipyard
building world-class warships and submarines
using state-of-the-art technology

MISSION STATEMENT

To deliver quality ships in time within budgeted costs
and be a world leader in warship building



PROLOGUE



The history of Mazagon Dock dates back to 1774, when a small dry dock was constructed in Mazgaon village, Mumbai, to service ships of the British East India Company.

Over the next 250 odd years, this small dock progressively developed into the massive conglomerate that is today universally known as Mazagon Dock Shipbuilders Limited. It passed through

various ownerships like the P&O Lines and the British India Steam Navigations company. It was established as a Public Limited Company in 1934. Finally, in the year 1960, the Government of India took over the yard to further its warship development programme and incorporated it as a PSU under the Ministry of Defence.

From the initial order for building six Leander class frigates, under a transfer of technology from the British Admiralty, to the sophisticated destroyers, frigates and submarines currently on order, the yard has come a long way. Today, it is the premier and lead warship building and ship repair yard in the country; a Navratna company producing and repairing world class warships, submarines and other commercial crafts. It is the backbone of shipbuilding in the country and provides the muscles through production of world class stealth frigates, destroyers and submarines for the Indian Navy.

Since 1960, MDL has built a total number of 802 vessels including 28 warships and 7 submarines. MDL has also delivered cargo ships, passenger ships, supply vessels, MSVs, water tankers, tugs, dredgers, fishing trawlers, barges etc for various customers in India and abroad. It's ship building & submarine and heavy engineering divisions are both ISO 9001:2015 certified.



TRACK RECORD OF OVER SIX DECADES

Major front line warships & submarines



Leander Class Frigate
6 nos



Missile Boat
4 nos



Godavari Class Frigate
3 nos



Delhi Class Destroyer
3 nos



Khukhri Class Corvette
3 nos



Shivalik Class Stealth Frigate
3 nos



Kolkata Class Stealth Destroyer
3 nos



HDW Class Submarine
2 nos



OTHER CRAFTS



Multi-purpose Support Vessel - 1 no
for Oil & Natural Gas Corporation Ltd



Offshore Supply Vessel - 8 nos
for Oil & Natural Gas Corporation Ltd



Dredgers-Cutter Section/Grab - 11 nos
for Port Trusts/Dredging Corporation of India



Dredgers-Cutter Section - 1 no
for Dredging Corporation of India



Cargo Cum Passenger Vessels - 2 nos
for Andaman & Nicobar Administration



Tugs of Various Tonnage - 15 nos
for Port Trusts



Offshore Patrol Vessels - 7 nos
for Indian Coast Guard



MSV - 2 nos
for Bahamas & Mexico

INNOVATION & DIVERSIFICATION

MAN



UNMANNED VESSELS 12 PT AERIAL

LITHIUM ION BATTERIES

Indigenous development of Lithium Ion Battery and BMS solution for conventional submarines.

Product	48V/50Ah	Capacity	50Ah
Nominal Voltage	3.6 V	Weight	1.25 Kg
Dimensions	287 x 205 x 339 mm		



AUV SWARM DRONES

The swarm of AUVs will help in locating mine and neutralizing it after getting confirmation from Mothership

Length	1.80 m (Scalable)	Endurance	4 hr @ 4 Knots
Max Speed	4 Knots	Payload	7kg (Neutralizer)
Max Operating Depth	60 m	Propulsion	Electrical

MOBILE TARGET EMULATOR

Attracts the torpedoes away from the counter maneuvering submarine (target) by emulating the acoustic and dynamic behavior of a target submarine.

Length	1211 mm	Endurance	12 Min
Max Speed	15 Knots	Weight	23 Kgs
Max Operating Depth (MOD)	400 Meters	Launching Platform	Ships & Submarine



EXPENDABLE UNDERWATER TARGET

To train the crew of IN ships, submarine, aircraft in detecting, tracking & attacking an underwater target.

Length	1500 mm	Endurance	4 hrs
Max Speed	8 Knots	Weight	50 Kgs
Max Operating Depth (MOD)	150 Meters	Launching Platform	Ships, Submarine, Aircrafts

FUEL CELL ELECTRIC VESSEL

In 2022, MDL unveiled India's first Fuel Cell Powered Electric Vessel, a '6- Pax Proof of Concept' that laid the foundation for the development of a 24 Pax fuel cell powered ferry named "Suchi," this eco-friendly vessel was successfully launched on May 14, 2024. "Suchi" symbolizes a leap towards sustainable maritime travel, powered by zero-emission fuel cell technology.

Length	13.27 m	Breadth	3.05 m
Max Speed	9 Knots	Capacity	24 Pax
Endurance (Combined)	13 Hours	Fuel Cell (PEM)	7 KW



SOLAR ELECTRIC HYBRID BOAT

Launching of India's fastest Solar-Electric Boat (SaurShakti). completed on 13 Dec 23 at Kochi. It has been meticulously conceptualized and developed by MDL with M/s NavAlt as technology partner. This vessel represents a paradigm shift in eco-friendly Maritime Transportation.



REVOLUTIONIZING MARITIME AUTONOMY: MDL'S TRIUMPH WITH THE MDL TUG ANDAMAN

MDL achieved a milestone with the successful sea trials of its fully autonomous pilotage system aboard the MDL Tug Andaman, marking a significant advancement in autonomous technology in India



OFFSHORE PROJECTS



Major establishments Indian offshore industry was earlier constructed by MDL. Company is again set to regain its leadership position in this field. MDL has signed a contract for PRPP with M/s ONGC. The Scope of the project is part replacement of Subsea pipelines (approx. 44 km). The project is under execution and expected to be completed by Dec 2024.

INNOVATION AND DIVERSIFICATION

MRO of MI17 HELICOPTER: As part of diversification MDL has recently bagged order for Maintenance, Repair & Overhaul (MRO) and supply of spare parts for MI17 helicopter of the Master General of Ordnance (Provision), Nepali Army Headquarters, Nepal. Further MDL is looking forward to carry out similar works in maintenance, repair & overhaul of helicopters.



SHIP REPAIRS

MDL has revived its Ship repair vertical in 2019 and has undertaken several repair/ refits projects since then for the Indian Navy, Indian Coast Guard, MPA and commercial ships from domestic and international owners. Apart from the above Major Refit and Life certification was also undertaken for one Submarine for Indian Navy.

MDL is at advance stage of discussion for exports to various countries for different types of vessels.

MDL has also signed Master Ship Repair Agreement (MSRA) with the US government represented by NAVSUP Fleet Logistics Centre (FLC) Yokosuka. There are only three shipyards in the country including MDL who have signed the MSRA. The agreement is expected to open-up voyage repairs of US Navy Ships at MDL.

WARSHIPS UNDER CONSTRUCTION

At present design and construction of four stealth destroyers of P15-B class and four stealth Frigates of P17-A class is in progress in MDL.

P15-B Stealth Destroyers

The P15-B class of Stealth Destroyers are followon of the P15-A class Destroyers with enhanced stealth features and indigenisation content, in line with the 'Make in India' policy of the Government of India. The 163 M long ship, propelled by four gas turbines, is designed to achieve a speed of over 30 knots at a displacement of approx 7500 tonnes. This indigenously designed stealth destroyer will have state-of-the-art weapons, sensors, an advanced information and Communication system, an integrated platform management system, sophisticated power distribution system and host of other advance features. The first of the class, Visakhapatnam was commissioned on 21st November 2021. The second destroyer Mormugao was commissioned on 18 Dec 2022. The third destroyer Imphal was commissioned on 26th Dec 2023. The Fourth destroyer Surat was launched on 17 May 2022 and is at an advance stage of outfitting, likely to be delivered in 2024



Commissioning of INS Imphal
on 26 December 2023



Surat getting launched on 17 May, 2022

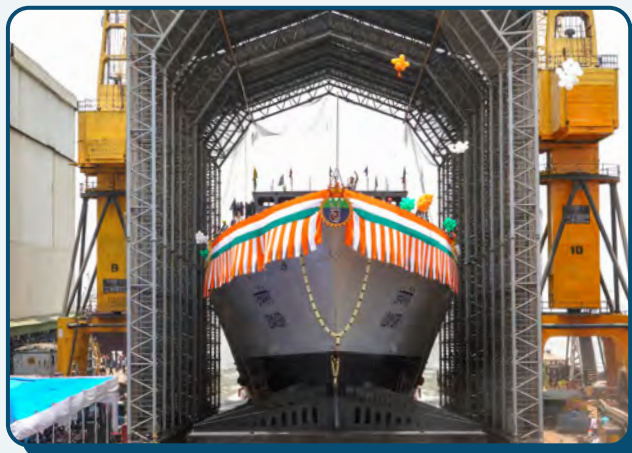




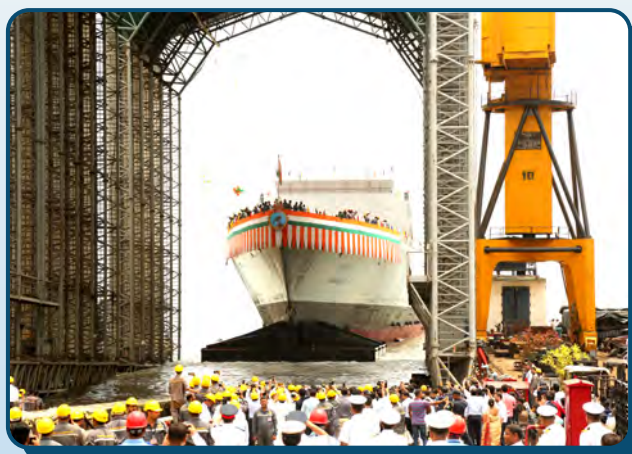
P17-A Stealth Frigates

The P17-A class Stealth Frigates are derivatives of P17 Shivalik class Stealth Frigates with enhanced stealth & automation features and are being constructed using integrated construction methodology, which involves extensive pre-outfitting of about 60% to 70% at the block stage and thus would considerably reduce the build period.

The 143 M long ship, propelled by two gas turbines (LM2500 IEC), two diesel engines, two CODOG reduction gearboxes and two controllable pitch propellers, is designed to achieve a speed of over 28 knots at a displacement of approx 6670 tonnes. These indigenously designed stealth frigates will have state-of-the-art weapons, sensors, an integrated platform management system, an Integrated bridge system, an advanced composite communication system and a combat management system. All the four ships of this class namely Nilgiri, Udaygiri, Taragiri and Mahendragiri have already been launched. The first of the class i.e. Nilgiri is scheduled to be delivered to the Indian Navy in 2024.



Udaygiri getting launched on 17 May, 2022



Mahendragiri getting launched on 01 September 2023



SUBMARINE CONSTRUCTION



SSK CLASS SUBMARINES (02 NOS.)

History was made on 07 February 1992, when India joined the exclusive group of Submarine constructing nations, with the commissioning of the first Indian built submarine, INS Shalki, constructed by Mazagon Dock Shipbuilders Ltd. Later in 1994, MDL has delivered 2nd SSK Class Submarine, INS Shankul to the Indian Navy. The fact that these submarines are still in-service today is the testimony to the skill of the MDL workforce.

SCORPENE CLASS SUBMARINES (PROJECT-75)

It was no surprise that MDL was entrusted with the onerous responsibility of executing the prestigious Project-75, which envisages the construction of six Scorpene class submarines, with M/s Naval Group of France as collaborator and MDL as the builder. Under Project-75, MDL has till now delivered 05 Submarines to Indian Navy namely INS Kalvari, INS Khanderi, INS Karanj, INS Vela and INS Vagir. The Sixth and last submarine in the series is currently under trials phase and will soon be added in the arsenal of Indian Navy.

One of the most modern and sophisticated submarines, the Scorpene can undertake multifarious types of missions which include Anti Surface Warfare, Anti-Submarine Warfare, Intelligence Gathering, Mine Laying, Area Surveillance etc. As she glides silently through the deep and vast oceans covering our plane, the Scorpene's unmatched stealth will give her an incomparable invulnerability, and the ability to launch a crippling attack on the enemy using various precision guided weapons.



Launching of Boat 6 on 20 April, 2022





SUBMARINE REFITS

MDL has successfully completed Medium Refit and modernization of 04 SSK class Submarines during 1998-2011. Currently, Medium Refit cum Life Certification (MRLC) of INS Shishumar is completed and INS Shankush (SSK class Submarine) is in progress at MDL. This has forged MDL's position as the only Shipyard India to build & provide Life Cycle Support for Conventional Submarines.



Existing Infrastructure / Facilities



Fabrication Shops

South Yard Plater & Assembly shop
North Yard Assembly shop
East Yard Workshops A, B & C
Alcock Yard Workshop

Crannage (T)

20x2, 10x4
30x2, 10x2, 5x1
180x2, 60x2, 20x3
15x5, 75x2, 25x1, 18x1

Dry Docks

Name of Dry Dock	Length (in meters)	Width (in meters)	Crannage Capacity (in tonnes)
North Yard	216.00	18.90	15 (2 nos)
South Yard	129.84	16.76	15 (2 nos)
East Yard	89.39	17.00	180 (2 nos)
Mazagon	41.15	10.06	Mobile



Slipways

Name of Slipway	Length (in meters)	Width (in meters)	Crannage Capacity (in tonnes)
South Yard 1	188	26	40, 15
South Yard 2	188	26	40, 15
North Yard	190	29	60, 15

Impounded Wet Basin

Name of Basin	Size (LxW) (in meters)	Depth (in meters)	Crannage (in tonnes)	
			Fixed Crane	Rail Mounted
North Yard Wet Basin	274 x 26.21	9.14	80 (1 No)	15 (2 nos)
South Yard Wet Basin	225 x 112	-6.0 MCD	100 (1 No)	50 (1 No) & 15 (2 No)





Module Workshop

Dimension	: 200m (L) x 30m (W) x 30m (H)
Telescopic roof	: 35m Long-6 nos. & capable of telescopic movement
EOT Cranes	: 2 x 50 Tonnes
Blasting & Painting Chamber	: With associated ventilation & fume dust extraction system for integrated construction

Goliath Crane

Capacity : 300 MT that straddles across the two slipways and the module workshop



SSA Workshop

Dimensions-220 X 45 X 39 m, with 07 EOT/Semi Goliath cranes

Submarine assembly workshop (SSA) is a pre-engineered building structure with a total of 07 EOT/semi Goliath cranes at different levels to handle construction of multiple submarines. The facility also has an office complex addition to the workshop with a unique architectural design. The submarine assembly workshop in addition to the various infrastructure facilities created under the Mazdock Modernisation Project will gear up MDL in meeting the long term needs of submarine construction for the Navy.

UPCOMING INFRASTRUCTURE/ FACILITIES

Floating Dry Dock: Floating Dry Dock (FDD) of dimension **180mx44m (outer beam) x 32m (inner beam) and 12000t lifting capacity** is also being constructed to carry out roll on roll off of vessels from NHY and MDL's submarine launch facility. The Floating Dry Dock is being constructed at Nhava Yard and will be operational by Sep 2025.

Nhava Yard: MDL possess approximately 40 acres yard at Nhava. MDL as part of the long term utilization plan intends to develop Nhava Yard into a Greenfield shipyard with dry berths, transfer facility, graving dry dock convertible to wet basin etc for refits and new builds. Once developed, Nhava yard can act as shipbuilding and ship repair facility suitable for construction and repair of warships and commercial ships with larger dimensions to cater for domestic as well as international future markets.

South Yard Annex: MDL as part of expansion plans have recently acquired MbPA adjacent land. MDL is planning to convert one of the existing wet basin to dry dock cum wet basin and slipways to dry berths. Both these facilities shall be used for dry docking ships for fitment of special appendages and repairs.



INDIAN COAST GUARD PROJECTS IN PROGRESS



For the first time in the history of MDL, MDL has back to back successfully emerged as the lowest bidder for three Coast Guard projects viz. 01 no. Training Ship, 06 nos. Next Generation Offshore Patrol Vessels and 14 nos. Fast Patrol Vessels.

TRAINING SHIP

This 107 meter ship, an in-house design by MDL, acts as a training platform with integral helicopter capable for blue water operations to all the ICG Charter of Duties. The ship shall provide basic sea training to Coast Guard personnel as primary role and has the capability to carry out Patrolling & policing maritime zones of India, SAR operations and detect & prosecute hostile small craft, trawlers and fast boats in area of operations as secondary role.

Displacing around 3200 tonnes, the vessel can achieve a speed of more than 20 knots and have endurance of 7500 nautical miles at cruising speed. The ship has the capability to survive and undertake operational missions up to Seastate 7.

The ship is manned by a total crew of 107 and in addition trainee & training staff of 116 personnel onboard.

Plate cutting has commenced for the training ship and the vessel is scheduled to be delivered by Dec 2026.



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NEXT GENERATION OFFSHORE PATROL VESSELS

These 115m ships, an in-house design by MDL, act as a long range surface platform with integral helicopter, capable for operations in maritime zones of India including Island territories in minimum depth of 6 meters. The superstructure of the ship is aerodynamically designed to optimize air drag and enhancing the aesthetic look of the ship

Displacing around 2800 tonnes, this vessel, once delivered, will be the largest OPV operating in the Indian Coast Guard fleet. Primary roles include Coastal and Offshore patrolling, Fisheries protection & monitoring, anti-smuggling & anti-piracy, Search & Rescue operations and Ocean Surveillance & Monitoring of Sea lines of communication (SLOCs)

These ships can achieve speed in excess of 23 knots and have endurance of 5000 nautical miles at cruising speed. The ship has the capability to survive and undertake operational missions up to Seastate 7. The vessel is manned by a total crew of 121.

Plate cutting has commenced and the first ship is scheduled to be delivered by July 2027.



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FAST PATROL VESSELS

These 55 meter vessels, an in-house design by MDL, medium range surface platform is capable for operations in Maritime zones of India and around island territories in depths greater than 3.5 meters. These vessels are designed for patrolling, anti-smuggling and anti-piracy operations. These FPVs will have inherent capability to switch over to wartimes roles as a convoy escort and provide communication link

Displacing around 340 tonnes, the ship can achieve a speed in excess of 33 knots with three waterjets. The vessel shall be capable of operating up to and including sea state 4 and have sea worthiness and survivability up to sea state 6.

These vessels are manned by 42 crew and can operate for five days continuously at sea.

The design approvals are in the advance stage and the production of the vessel is to commence in the third quarter of 2024 with scheduled delivery of the first vessel in March 2026.



EXPORTS

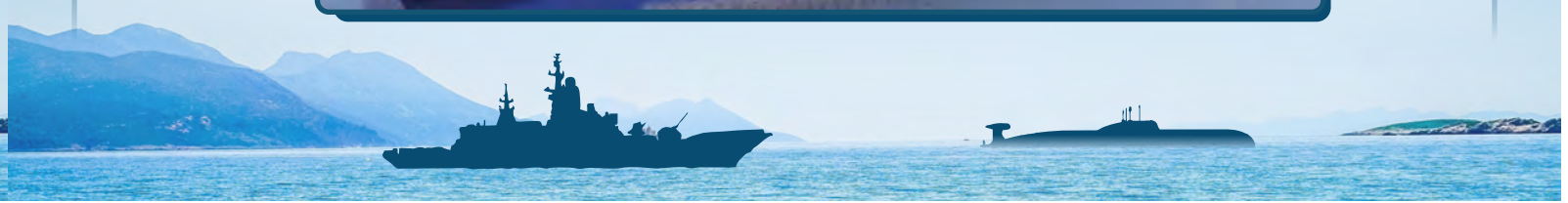
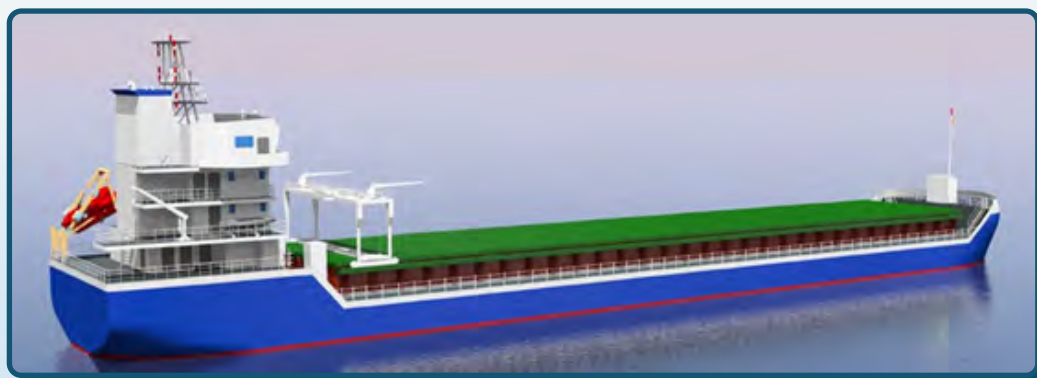
MULTI-PURPOSE DRY CARGO VESSEL

MDL received an order for design, build and delivery of 6 + 4 (optional) vessels of 7500 DWT multipurpose Dry Cargo Vessel (MPV) for a Danish client. It is a major milestone for MDL as it bagged the order at international market after sixteen (16) years. The vessel shall be equipped with hybrid propulsion drive and shall be built to stringent emission norms and shall be classed under DNV.

The Vessel shall be designed and be built as Ice Class 1B, a single screw, Controllable pitch, medium speed diesel engine driven Multi-Purpose Dry Cargo Ship and constructed with Electrical Energy Storage space meeting the requirements of DNV Class notation Battery (Safety) for unrestricted worldwide service.

The vessel shall be able to carry Dry bulk cargoes, Project Cargoes, Containers, Steel Products, General Cargoes including packaged freight, palletized and bagged cargoes, Forest products and dangerous cargoes.

The design approvals are in advanced stage and the production of the vessel is to commence in third quarter of 2024 with scheduled delivery of the 1st vessel in April 2026.

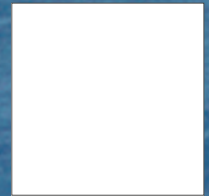




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