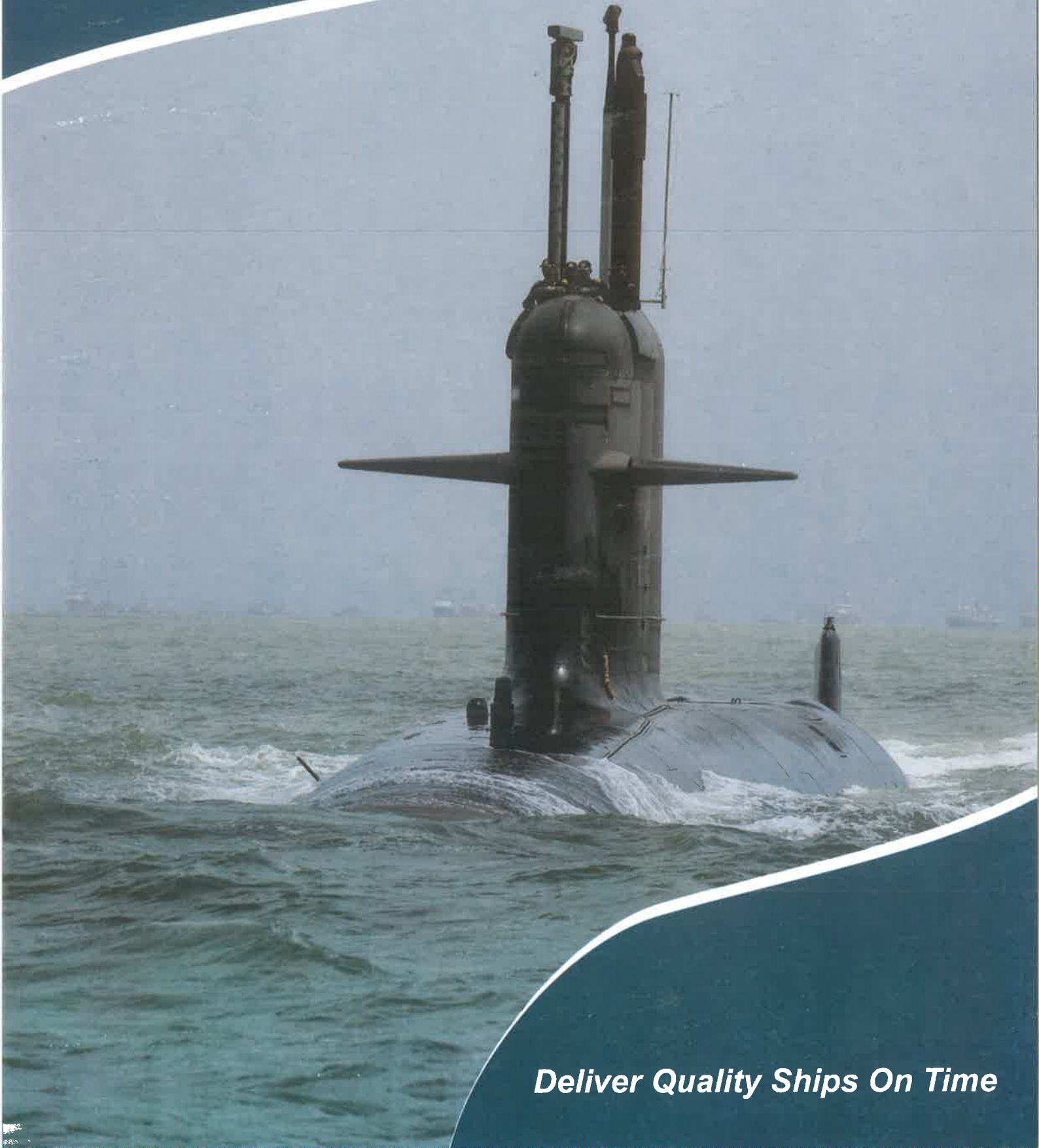




MAZAGON DOCK SHIPBUILDERS LTD



Deliver Quality Ships On Time

MAZAGON DOCK SHIPBUILDERS LIMITED



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 Mazagon 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 Miniratna1 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 796 vessels including 25 warships and 4 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 FIVE 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



SSK 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 nos
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 - 7nos
for Indian Coast Guard



MSV
2 nos

SUBMARINE CONSTRUCTION

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. The fact that this submarine is still in service today is testimony to the skill of the MDL workforce.

It was therefore 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.

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 planet, 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 will indeed make her a force to reckon with.

The first Scorpene submarine is named Kalvari, which is the dreaded Tiger Shark, a deep sea predator. The first Kalvari (which was also the first Indian Submarine) was commissioned into the Indian Navy on



Hon'ble Prime Minister commissioning INS Kalvari

08 December 1967 and was decommissioned on 31 May 1996 after almost 30 years of yeoman service to the nation. As is the tradition, decommissioned vessels of the Navy are re-incarnated, by naming new vessels after them.

INS Kalvari, was commissioned into the Indian Navy on 14 December 2017, by Mr. Narendra Modi, Prime Minister of India. The second Submarine, Khanderi, was commissioned on 28 September 2019 by Mr. Rajnath Singh, Raksha Mantri. Karanj and Vela, the third and fourth submarines respectively, launched in 2018 and 2019 are undergoing various trials. The last two submarines are in various stages of outfitting.

By undertaking Project 75, MDL reaffirmed giant strides taken by it in the 'Make in India' program. Looking ahead, MDL is committed to serve India's need of submarines to safeguard her maritime interests. The state of the art infrastructure, expertise and skill sets acquired in Project 75 are a treasured asset for future submarine construction projects in India.



**Hon'ble Raksha Mantri
Commissioning INS Khanderi**

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 follow-on 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. Three ships of P 15B viz. Visakhapatnam, the first ship of this series, Marmugao, the second ship and Imphal, the third ship were launched on 20 April 2015, 17 September 2016 and 20 April 2019 respectively. The production of the fourth vessel is in progress.



Production start of Y 12654, Fourth ship of P 17A



Hon'ble Raksha Mantri with other guest of honours at Nilgiri launching





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. Nilgiri, the first ship of the series was launched on 28 September 2019.



Keel laying of Yard 12652, second ship of P17-A series



Launching of Nilgiri, the first ship of P17-A series



GLIMPSES OF ACTIVITIES IN THE SHIPYARD

Mazagon Dock's forte lies in using a healthy blend of traditional ship building and ship repair skills and modern technology to perform challenging tasks.

The different shipbuilding activities including precision work, lifting of units / ducts, trials of various machineries etc. as seen in the photographs.



Lifting Gas Duct



Ship control centre



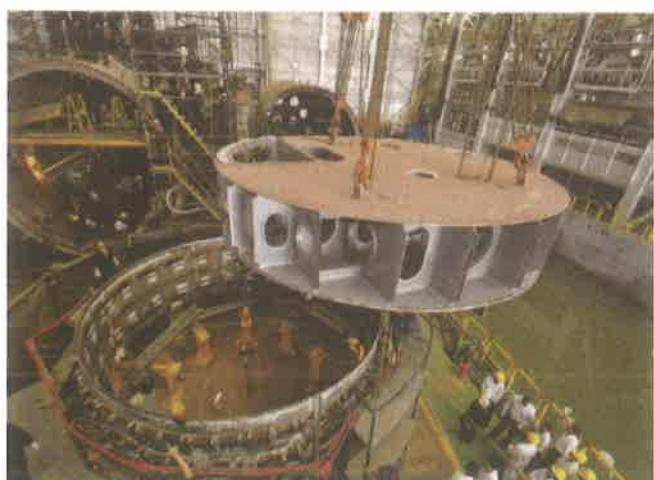
Piping work in Gas Turbine Room (GTR)



Trial of Gas Turbine Generator (GTG)



Scorpene submarine under construction.
The hull moving onto a pontoon for final assembly.
Also seen are outfitting and battery loading activities.

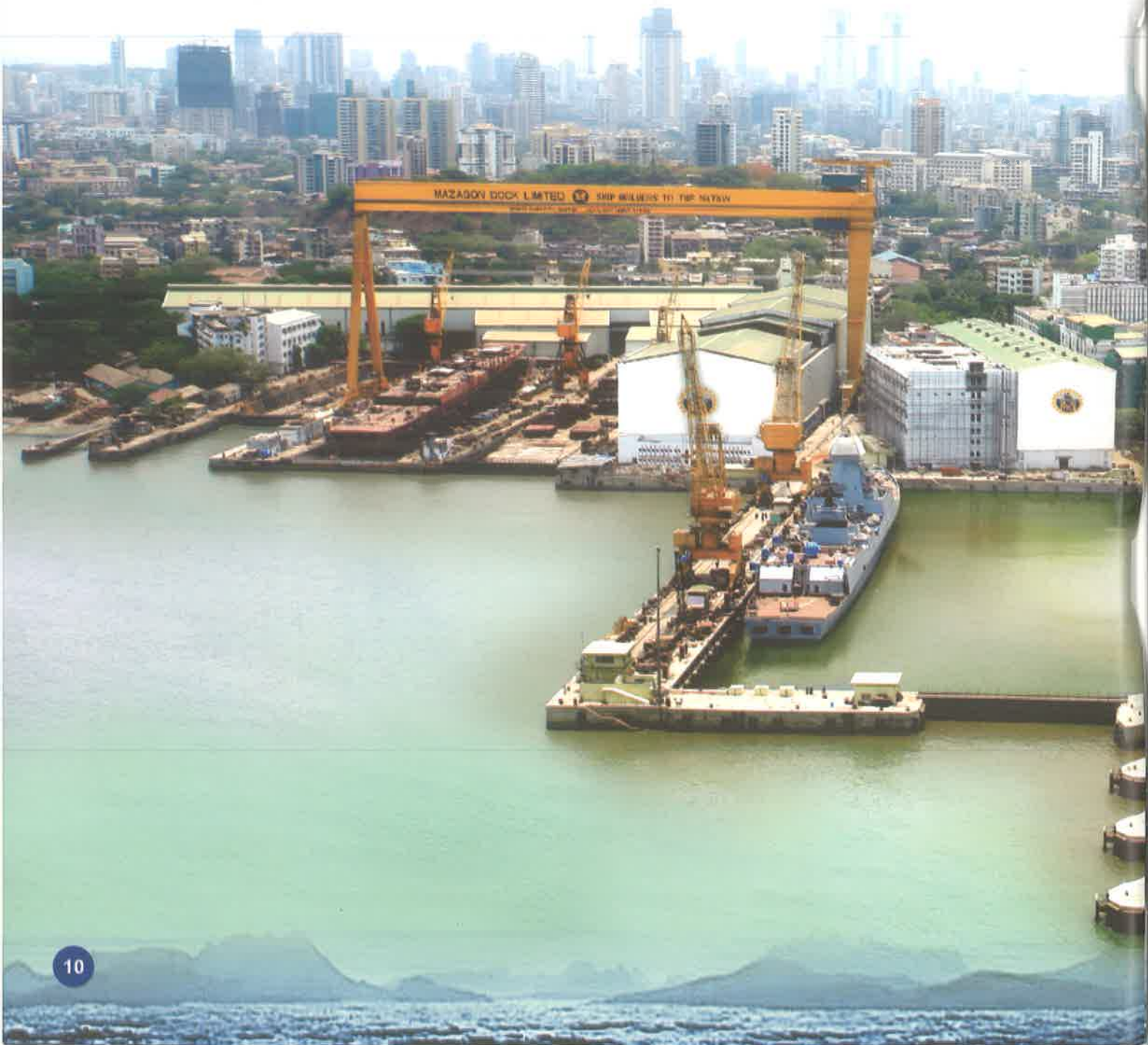


MAZDOCK MODERNISATION PROJECT

To keep up with the latest trends in shipbuilding, Mazagon Dock went in for a massive modernisation program named The Mazdock Modernisation Program or simply MMP.

The infrastructure comprised of facilities like a new wet basin, heavy duty Goliath crane, module workshop, cradle assembly shop and special stores.

The state-of-the-art module shop with retractable roof together with the Goliath crane has enabled MDL to adopt the integrated concept of modular construction. The Goliath crane is heavy duty gantry spanning over the existing slipways and Module shop and is capable of lifting up to 300 tonnes with features like overturning operations.





The new Kanhoji Angre wet basin is a civil engineering marvel, executed in a marine environment. It has facilitated berthing of two warships and two submarines at a time.

A Cradle Assembly Shop (CAS) has been constructed to boost up the construction of Scorpene submarines. With a capacity for simultaneous assembling of 6 to 8 cradles (100 tonnes each), CAS has helped in overcoming the space constraints being felt since long.

MMP has not only enabled the company to meet the challenges in terms of technology but has also bridged the gap between MDL and other world class shipyard. It has increased the shipbuilding capacity of MDL to 10 warships and 11 submarines at a time.



EXISTING INFRASTRUCTURE / FACILITIES

Fabrication Shops	Cranage (T)
South yard plater & assembly shop	20x2, 10x4
North yard assembly shop	30x2, 10x2, 5x1
East yard workshops A,B & C	180x2, 60x2, 20x3
Alcock yard workshop	15x5, 75x2, 25x1, 18x1

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



Slipways			
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 (L X W) (in meters)	Depth (in meters)	Cranage (in tonnes)	
			Fixed Crane	Rail Mounted
Kasara wet basin	274 x 26.21	9.14	80 (1 No)	15 (2 Nos)
Kanhoji Angre 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
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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.



NHAVA YARD



Nhava Yard of MDL is spread over an area of 37 acres with a 141m long jetty. Currently, Nhava yard has a workshop with area of 3600 Sq mtrs and land ties are fixed in area of approx. 1300 sq meters for fabrication of ship units. The yard is located on 11 m deep draft channel and strategically positioned in proximity of JNPT, upcoming Navi Mumbai Airport, Nhava Sewri sea link and Kharkopar railway station.

In the past, MDL was undertaking offshore fabrication work for ONGC at this yard. On 07 May 2019, after revival, the yard was inaugurated by Secretary (DP), Dr Ajay Kumar. Currently, MDL is fabricating units of P17A ships in this yard and spare capacity is likely to be leased on royalty charges basis to the prospective work share partners.

MDL is planning to develop here a green field shipyard with a docking facility of 16,000 tonnes alongwith supporting infrastructure like feeder workshops, goliath crane, stores and buildings to carry out shipbuilding and ship repair activities.



Flagging of unit of Project 17A from Nhava yard to MDL



'MAKE IN INDIA' / INDIGENISATION

Building / construction of the ships and submarines by MDL in itself is a major indigenisation success story. The first indigenously built frontline warship INS Nilgiri was built by MDL and commissioned into the Indian Navy in the year 1972. Since then, MDL has been continuously striving to enhance the indigenous content in the successive deliveries of ships and submarines. A Make in India Cell is active in MDL since May 2015 and to further boost and strengthen the indigenisation effort a dedicated indigenisation department has been setup. MDL's stellar efforts and commitment towards indigenisation are evident from the fact that percentage of indigenisation in the ships built by MDL has increased from 42% (Delhi Class) in the year 1977 to approximately 59% (Kolkata Class) in the year 2016.

In the ships under construction the indigenisation content is expected to further increase to about 72% in P-15B ships and approximately to 75% in P-17A ships. Similarly, MDL plans to achieve indigenisation content to the tune of 47% (of maximum possible indigenisable content) in the ongoing submarine construction under P-75.

In recognition for its contribution to Indigenisation initiatives, MDL has been conferred with the 'Governance Now 5th PSU Award 2018' for playing a pivotal role in Make in India.

Department of Indigenisation

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DHAROHAR – MDL HERITAGE GALLERY

The MDL Heritage Gallery – Dharohar inaugurated by Hon'ble Raksha Mantri Shri Rajnath Singh on 28 Sept '19 showcases the rich history of MDL from 1774 till date. It also encapsulates the maritime history of India and portrays the development of Mumbai from 7 islands to the current city of Mumbai. The gallery also has a section on family history of the Wadia master builders of the Bombay Dockyard who have built notable ships like the HMS Minden, HMS Cornwallis and HMS Trincomalee.

The gallery also depicts the history of the Company under the ownership of Peninsular & Oriental Steam Navigation Company and British India Steam Navigation Company. The aesthetic display of ship and submarine models shows the entire portfolio of MDL's products post nationalization. The gallery also showcases the skilled workforce like the Chinese fitters and Pathan riveters to the current workmen who build warships and submarines.

The experience center shows the evolution of shipbuilding in Mumbai from making sail ships to the most complex submarines and its vision for the future during the era of Artificial Intelligence and Industry 4.0.



MDL has come a long way from being a small ship repair yard in the late 18th century to the country's leading Defence Shipyard capable of meeting the requirements of the Indian Navy. As the lead Defence Shipyard of India, MDL is committed to deliver quality ships on time. Over the year the company has won numerous awards in various categories including the 'Best Shipyard' for the year 2014-2015.

A fourteen-member delegation team from Philippines visited Mazagon Dock Shipbuilders Limited, country's premier warship building shipyard recently. The delegates were received by Cinde TV Thomas, Director (Corporate Planning & Personnel), MDL. The delegation was shown the yard facilities including under construction ship, modernisation project, heritage gallery etc. A detailed presentation exhibiting MDL's capabilities was also made to the delegation.

of Jesus Roy Avilla, the head of delegation was extremely impressed with the facilities and professionalism of the IADL and conveyed his appreciation for the hard work, modeling and impressive accomplishments of the IADL staff and expressed keenness to have his

Defence Secret

DR. A. COLLEGE, Shipbuilder Rakesh Arora, who reviewed the ongoing Saryan production facilities and MDL's capabilities.

Induction of PL

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Production activity of



Commodore Rakesh Anand, Chairman, Director, Mazagon Dock Shipbuilders Limited, Inauguration Commencement of Production activity of Y-12707, fourth destroyer of Visakhapatnam Class on 19 July '18 in the South Yard Production Shop, in the presence of Mr. Satish Sharma, Director (Finance); Cmsr T V Thomas, Director (Corporate Planning and Personnel); Adm A K Saxena, Director (Shipbuilding). Mr. Satish Pendharkar, Chief Vigilance Officer and other senior officials of MDL and Indian Navy.

मुंबई। माइग्रायन लिमिटेड के अ निदेशक, कर्मचारी 19 जुलाई 2018। श्रेणी के चौथे ति 12707 के उत्पादन किया। इस अवसर निदेशक (विला)



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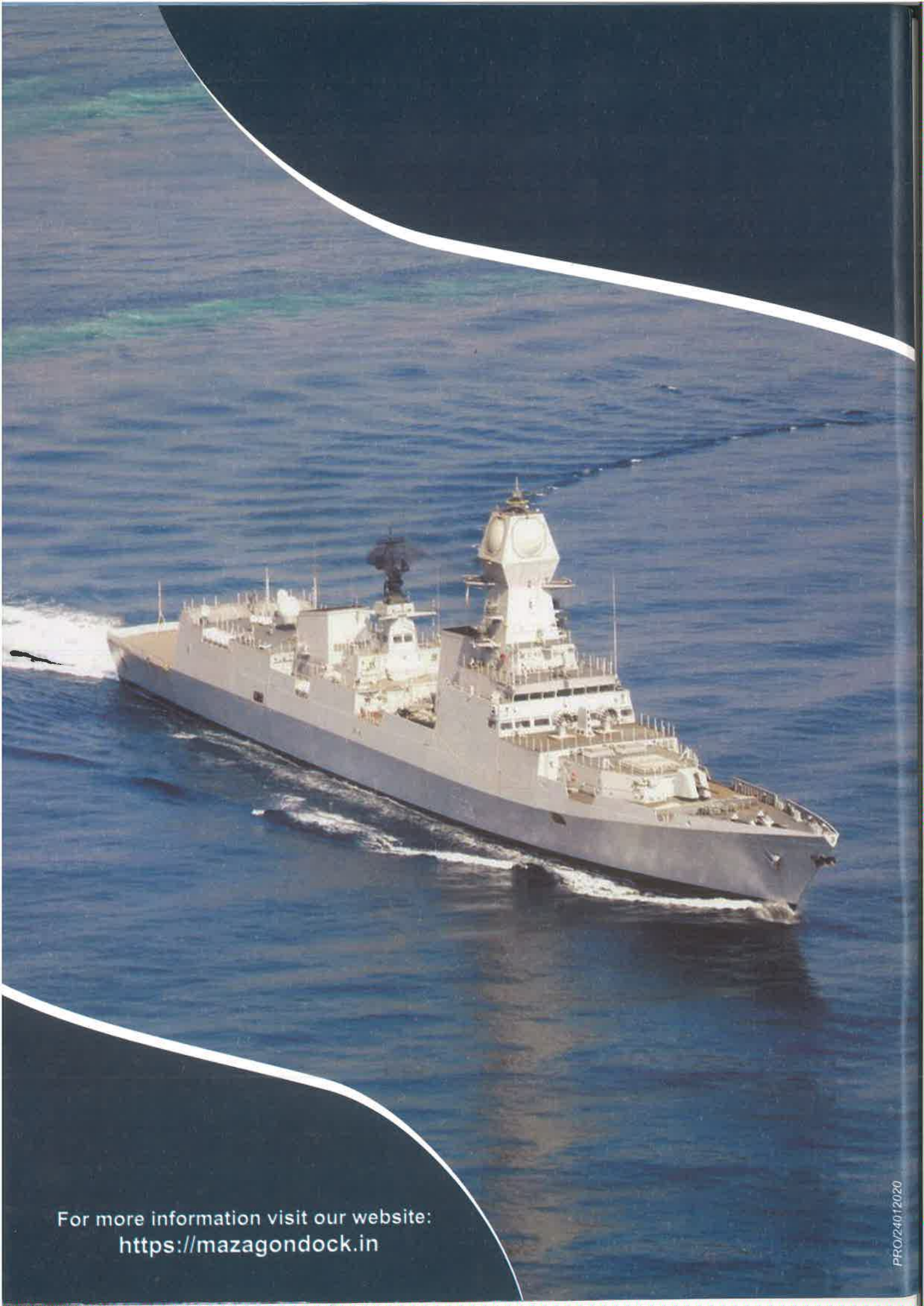
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