



एक कदम स्वच्छता की ओर

माझगांव डॉक शिपबिल्डर्स लिमिटेड

(भारत सरकार का उपक्रम)

Mazagon Dock Shipbuilders Ltd.

(Formerly Mazagon Dock Limited)

(A Govt. of India Undertaking)

CIN : U35100MH1934GOI002079

डॉकयार्ड रोड, माझगांव, मुंबई - 400 010

Dockyard Road, Mazagon, Mumbai - 400 010

Certified - ISO 9001-2015

संदर्भ क्रमांक

Ref. No.

10 Oct 2022

दिनांक

Date

To
BSE Limited
Phiroze Jeejeebhoy Towers
Dalal Street,
Mumbai- 400 001
Scrip Code: 543237

To
National Stock Exchange of
India Limited
Exchange Plaza, C-1, Block G
Bandra Kurla Complex
Bandra (E), Mumbai - 400 051
NSE Symbol: MAZDOCK

Sub: Intimation under Regulation 30 of SEBI (Listing Obligations and Disclosures Requirements) Regulations, 2015 –Publication.

Dear Sir,

1. This is to inform that Mazagon Dock Shipbuilders Limited, Mumbai will be participating in the DEFEXPO 2022, the biennial Defence exhibition organised by the Ministry of Defence to be held from 18 to 22 Oct, 2022 at Gandhinagar, Gujarat.
2. Replies to the questionnaire by various under mentioned publications, to be released on the occasion of the DEFEXPO 2022, are attached herewith for your reference:

i) SAP Media ii) IADB iii) Geopolitics iv) Indian Express	v) SP Guide vi) Aeromag Magazine vii) Raksha Anirveda viii) Chanakya
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This is for your kind information.

Thanking You,
Yours Faithfully,
For MAZAGON DOCK SHIPBUILDERS LIMITED

VIJAYALAKS Digitally signed by
VIJAYALAKSHMI
HMI KAMAL KAMAL KUMAR
KUMAR Date: 2022.10.10
11:34:55 +05'30'

(Vijayalakshmi Kumar)

Company Secretary

Encl: as above



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REPLIES ON QUESTIONNAIRE FROM SAP MEDIA FOR DEFEXPO 2022

1. What has been the impact of COVID on Mazagon Dock Shipbuilders?

Ans- Offices & Workshops of MDL were closed in lockdown condition from mid Mar 20 to mid Jul 20 due to unavailability of Public Transportation system, severe constraints were experienced by personnel reporting to work. Mobilisation of manpower gradually increased over a period of time. However, the pace of work had slowed down again from start of Apr 21 till Jun 21 due to second wave of Covid-19 and impacted the progress of the Projects & pace of work. Vendors/Sub-contractor's premises were also closed down / partially operating thus, affecting material supply/ service support to the Project.

Despite the Covid-19 pandemic, MDL delivered two Submarines of Project 75 viz. INS Karanj & INS Vela on 15 Feb 21 & 09 Nov 21 respectively and also commissioned one stealth-Guided Missile Destroyer under Project 15B , INS Visakhapatnam on 21 Nov 21 to Indian Navy. In addition, in current financial year, MDL has already launched 04 vessels including 01 Scorpene submarine, 01 P15B Missile Guided Destroyer and 02 P17A Stealth Frigates. All efforts are at hand to deliver 01 Scorpene submarine (fifth in the series of P75) and 02 Guided Missile Destroyer by end of the year 2022.

2. Which are the ongoing orders being executed currently?

Ans- For the next 5-6 years, we have the order book of Rs 42900 Cr Approx. The order broadly comprises of the construction of four in Nos Visakhapatnam Class Project 15B Guided Missile Destroyers (one out of four already delivered), four in Nos Nilgiri Class Project 17A Stealth Frigates and two in Nos Project 75 Scorpene Submarine (four out of six already delivered). Medium Refit & Life Certification (MRLC) of one Submarine in collaboration with German Collaborator M/s tkMS, Germany is also in progress.

3. How are new age technologies like Artificial Intelligence, Internet of Things, 3D Printing, Robotics being implemented to improve the ship building process and ensure quicker delivery of projects?

Ans- MDL has setup a state of the art Virtual Reality Centre leading to the reduction in physical effort to understand and analyse complex issues in compartment layouts of ship building. Any clashes between laying of piping cables ventilation duct etc. is virtually visualised in office environment and is resolved in the design stage itself. In addition to VRC, MDL, in collaboration with IITM, Chennai, has developed AI based machines and methods for various key processes

of Shipbuilding. Artificial Intelligence enabled Robotic Weld Inspection tool using phased array technic to replace manual radiography is one of them.

MDL has also developed an Artificial Intelligence enabled Remotely Operated Vehicle (ROV) with collaboration of IIT Madras and in the process of induction and also commercialisation.

Submarine division adopt stringent quality norms with very low margins of tolerance in the construction process. MDL has also implemented Quality Management System certified with ISO 9001:2015 for Design, Development, Construction, Refits and Test & Trials of Submarine to meet the International standards of quality.

4. How is the indigenisation programme progressing?

Ans- MDL has been able to significantly enhance the indigenous content in the warships/project it has delivered to the Indian Navy. While the warships under Project 15 delivered way back in 90s had an indigenous content of approx. 42%, present under-construction warships under project 15B and 17A will have an indigenous content between 70 to 75%.

MDL has indigenised 20 items/equipment which if procured from indigenised sources would result in considerable savings in Foreign Exchequer. Currently indigenisation of 09 major items/equipment through Indian Industries is in progress. Out of 09 items, 02 items are being indigenised under MAKE II process.

Efforts are also being made to take up Indigenisation of equipment for future projects under 'Atmanirbhar Bharat' and 'Make in India' programs. A separate indigenisation cell has also been constituted to give thrust to indigenisation of equipment/ item at company level, apart from efforts made at MOD/IN level.

5. What are the current expansion programmes in place?

Ans- In recent years, the infrastructure at the shipyard has been modernized and up-graded to meet the technological advancements in Naval construction. Under Mazdock Modernization program, MDL has augmented its Infrastructure facility like Submarine Section Assembly workshop (SSA), Cradle Assembly Workshop (CAS), 300 T Goliath Crane, Shore Integration Facility (SIF), Angre Wet Basin. Submarine Launch Facility is also being created to upgrade MDL infrastructure to facilitate launching of Submarines directly and independent of availability of deep dry dock.

6. What new orders is Mazagon Dock expecting both from the Navy and internationally?

Ans- Having built all the previous Destroyers for the country, MDL is a strong contender for construction of five in Nos Next Generation Destroyer pegged at Rs. 50000 Cr.

Being the only builder of Conventional Submarines in the country, MDL is a strong contender for construction of six in Nos Project 75-I, conventional submarine fitted with air independent propulsion amounting to Rs 43000 Cr. Approx. Further, Indian Navy has also accorded Acceptance of Necessity (AON) to MDL for Medium Refit and Life Certification (MRLC-2) of INS Shankush. RFP for MRLC-2 is expected shortly from IN.

MDL has submitted bids to Indian Navy & Indian Cost Guard for various Naval platforms worth Rs. 24,000 Cr.

MDL has submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction & delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes.

MDL has also submitted bids for following projects:

- Acquisition of 08 Fast Patrol Vessels (FPV) for Indian Coast Guard, Acceptance of Necessity (AoN) - Rs. 803.68 Cr
- Repair/ Refit of 01 MRLC-2, 01 MRLC-3, 01 MRLC-4; Estimated value - Rs. 5200 Cr
- Retro fitment of AIP on 06 P75 Submarine, Estimated value - Rs. 18000 Cr

Subjects: Questionnaire from IADB for DEFEXPO- 22

Q 1: What products and production values we could expect MDL over the next ten years?

Ans- MDL is committed to continue being the lead Shipyard of the country engaged in building State of the Art Warships and Submarines conforming to International Standards. Our mission is to deliver Quality Ships and Submarines on time. We have built an entire range of platforms from naval vessels to offshore platforms at Bombay High for ONGC. Mazagon Dock's USP is building state-of-the-art Destroyers, Stealth Frigates and conventional Submarines.

For the next 5-6 years we have our hands full with the order book of Rs 43000 Cr Approx. The order broadly comprises of the construction of four in Nos Visakhapatnam Class Project 15B Guided Missile Destroyers (one out of four already delivered), four in Nos Nilgiri Class Project 17A stealth frigates and six in Nos Project 75 Scorpene Submarine (four out of six already delivered) and Medium Refit and Life Certification of INS Shishumar. Our major goal in coming years will be the timely delivery of these under-construction warships to the Indian Navy for their operational preparedness.

Order in the offing, for which MDL will be a strong contender is six in Nos Next Generation Destroyer which is pegged at Rs. 50000 Cr.

Another order, MDL will be vying for is six in Nos Project 75-I, conventional submarine fitted with air independent propulsion amounting to Rs 43000 Cr. approx. Since MDL is the only conventional submarine builder in India, we hope to bag this order with our modernized infrastructure facilities and spare capacity. Further, Indian Navy has also accorded Acceptance of Necessity (AON) to MDL for Medium Refit and Life Certification (MRLC-2) of INS Shankush. RFP for MRLC-2 is expected shortly from IN. In addition to the above, MDL has also submitted bid for 11 Nos Next Generation Offshore Patrol Vessels (NGOPV).

2. How is the progress on Yard 11879 (Vagir) trials? How prepared is MDL for the upcoming project P75I and how different would the required preparations for project P75I would be as compared to project P75?

Ans- Presently, Yard 11879 (Vagir) is undergoing rigorous Sea trials and the progress is very satisfactory.

Whilst P75(I) submarines employ AIPs and LIB battery, in term of construction there is no much of difference between P75 (I) & P75 Project except for few advancement & design changes. However, in recent years, the infrastructure at the shipyard has been modernized and up-graded to meet the technological advancements in Naval construction. Under Mazdock Modernization program, MDL has augmented its Infrastructure facility specifically to cater for Submarine construction viz. Submarine Section Assembly workshop (SSA), Cradle Assembly workshop (CAS), 300 T Goliath crane, Shore Integration Facility (SIF), Angre wet basin. Submarine Launch Facility is also being created at Alcock Yard to facilitate launching of Submarines directly independent of availability of deep dry dock to upgrade MDL infrastructure for future projects such as Project P75(I).

3. With the construction of Kalvari Class nearing completion, what steps are being taken to preserve the skill sets and knowledge gained during the programme, more so in the light of the immense problems faced when the Shishumar programme was suspended and knowledge, capabilities and skills were apparently partially lost by MDL in submarine construction.

Ans- The human skill sets are unique and specialized, developed through training programs designed for the respective job areas and experience gained over the years on the job. Efforts have also been made to have effective utilization and retention of the vital hard-acquired Submarine construction skills of the operatives and gainfully employ them to the extent feasible on similar jobs of shipbuilding division of MDL to preserve the skill sets and knowledge gained during the programme of construction of Kalvari Class Submarine.

4. What are the plans for MDL to look at modular construction concepts of warships? What technologies need to be developed for this process?

Ans: As part of the Mazdock Modernization, 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 technology is being used for the construction of Nilgiri Class Frigates.

Besides, MDL has continuously thrived to implement next generation technologies in order to improve the shipbuilding process-

a) AI assisted "Automatic Defect Recognition" in X-ray welding: X-Ray weld defect detection is a vital task when it comes to shipbuilding industry, which requires trained experts to perform routine inspection. Use of AI assisted Automatic Defect Recognition has reduced the time required by faster detection of defects in weld joints.

b) The use of Industry 4.0 technologies like Virtual & Augmented Reality and Artificial Intelligence are very imperative for MDL. We can now provide access to 3D design models to production and inspection teams working on the actual vessel. Not just that, it enables them to see each and every inch of design details in 1:1 scale by superimposing the model data on the physical ship. We are proud to announce that the complete technology has been developed indigenously as part of the honourable PM's Aatmanirbhar Bharat and Digital India initiatives.

c) Aveva Net: For enhancement of production activities on board it is envisaged that the 3D CAD Model of ship shall be made available on board ship, Production, Planning SQC and other departments. Aveva Net system which is empowered with intelligent search can be accessed from MDL Intranet Portal. This will make the 3D CAD Model available along with other related information like drawings, sketches, Installation, Manuals, Inspection reports etc. attached to the model. This System bridges the gap between various departments and allows the proper synchronization between the Departments thereby reducing the time required for execution.

d) Virtual Reality and Augmented reality: Line out inspection of the ships are carried out as a part of preliminary inspection which is a time taking process as there are almost about 500 Compartments in the Ship. MDL in its VR Lab facilitates this Line out inspection by providing emersive 3D environment of the actual compartment in a lucid way to our esteemed clients thereby reducing ample amount of time required.

e) In future, MDL is also looking forward to implement AI based systems for "Predictive Failure Analysis" for receiving early warnings in case of any anticipated failure in critical systems having higher failure rates due to continuous movements.

5. With so much focus on defence exports, what are MDL plans to export or make ships for neighbouring countries?

Ans- MDL has been selected as the preferred production partner to undertake major ship construction activities for M/s SSK Zvezda Shipbuilding Complex, Russia. Zvezda Shipbuilding complex (SBC) is ambitious on development of a shipbuilding cluster in the Far East Russia and the project will open up a large scale export business

opportunity for India and specifically to MDL in future as the envisaged quantum of work is really huge spanning for years. MDL intends to take this business opportunity forward.

MDL has submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction & delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes.

MDL is also participating in various Defence Exhibitions like DEFEXPO, AERO INDIA etc for marketing the products built by MDL for exploring the opportunities to increase the exports. In addition, MDL is working on diversification of products which would enhance exports.

A dedicated section has been formed in the Submarine Division for business development and providing competitive bids to customers. MDL is also making all-out efforts to tie-up with various private companies to grab opportunities/orders from international market.

MDL is trying to penetrate other markets as well for export and some of their offerings are as follows:-

- a) Refit & Repair of Submarines
- b) Autonomous Underwater Vehicle.
- c) Electric & Solar powered vehicles
- d) Air Boat (Fan Boat)
- e) Heavy Engineering works

Q 6. What is the MDL's total current capacity utilisation?

Ans: With its augmented Infrastructure, the construction capacity of MDL has increased from 06 to 11 Submarines with parallel construction lines and from 8 to 10 Warships. Currently MDL is building 2 conventional submarines (4 nos already delivered) against the capacity of 11 and 7 warships against the capacity of 10.

REPLIES OF GEOPOLITICS QUESTIONNAIRE

1. What are the future warship building programmes being considered at MDL?

Ans. MDL has submitted bids to Indian Navy & Indian Coast Guard for various Naval platforms worth Rs. 24,000 Cr.

MDL has also submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction & delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes

In addition, MDL has also submitted bids for following projects:

- (i) Acquisition of 08 Fast Patrol Vessels (FPV) for Indian Coast Guard, Acceptance of Necessity (AoN) - Rs. 803.68 Cr
- (ii) Repair/ Refit of 01 MRLC-2, 01 MRLC-3, 01 MRLC-4; Estimated value - Rs. 5200 Cr
- (iii) Retro fitment of AIP on 06 P75 Submarine, Estimated value - Rs. 18000 Cr

Further, MDL is competing for two big ticket orders including construction of 06 Nos. P75 (I) Conventional Submarines fitted with AIP package worth Rs 43,000 Cr and 05 Nos. New Generation Destroyers (NGDs) worth Rs. 50,000 Cr.

2. What are the major indigenisation initiatives that have taken place in warship building over the last few years?

Ans- MDL has set-up a dedicated Department of Indigenisation in Oct 2015 to boost and strengthen the indigenisation effort and to provide focused impetus to the Hon'ble Prime Minister's vision of "Make-in-India".

MDL has launched a separate "Atmanirbhar Bharat" Webpage in the company's website. The process of indigenisation, various items/equipment indigenised, items required to be indigenized (EoIs) are displayed under the webpage. Success stories of indigenisation are published on MDL website as a compendium of items indigenised.

MDL has hosted 404 imported items for around Rs 2034 Crores on the MoD/DDP initiated website www.srijandefence.gov.in. MDL is interacting with the Indian firms showing interest in listed products.

MDL is in the process of floating two challenges in Defence India Start-up Challenge (DISC)-6 and it also floated one challenge under DISC-5 organised by iDEX (Innovation for Defence Excellence)

MDL has indigenised 20 items/equipment which if procured from indigenised sources would result in considerable savings in Foreign Exchequer. Currently indigenisation of 09 major items/equipment through Indian Industries is in progress. Out of 09 items, 02 items are being indigenised under MAKE II process.

3. How is the Scorpene programme progressing and when will MDL commence the refit of the first submarine?

Ans- The construction of submarines of the Scorpene Project P75 at MDL is presently at a very advanced stage wherein 04 out of the six submarines have already been delivered to Indian Navy and are being deployed for their combat role in defending our Indian maritime boundaries. The fifth submarine is getting ready for the delivery shortly and the last submarine is planned to be delivered by 2024.

The Normal (long) refit of the first submarine is likely to be in end 2024 / early 2025, wherein the fitment of the Ingeniously (NMRL) developed Air Independent Propulsion is planned for integration into the submarine.

4. Please provide an update on the medium refit and Life Certification being undertaken for IN SSK's by MDL?

Ans- Medium Refit with Life Certification(MRLC) of INS Shishumar contract awarded to MDL in Jul 2018 with an order value of Rs. 1342 Cr. MDL is the Prime Contractor and M/s Thyssen Krupp Marine Systems (TKMS), Germany is the Prime Sub-Contractor.

Major milestones such as cutting of Pressure Hull, degutting of all equipment from the submarine, Survey & Repair of Pressure Hull, embarkation of Main Propulsion Motor, Joining of Pressure Hull, Embarkation of Diesel Generators and mounting of Propeller have been completed.

Presently, MRLC is in advanced stage of outfitting with all major equipment installed onboard. Setting to Work (STW) and Harbour Acceptance Trials (HATs) are in progress. Also preparations for major milestones of Battery Loading & Separation are in progress.

The project is impacted by Covid-19 pandemic situation & associated delays in material supply from Indian & Foreign OEMs. MDL has initiated the process for mitigation of delays by crashing of balance activities, pro-active planning, increased in-house resources and sub-contracting, wherever feasible.

5. MDL was the first shipyard in India to establish a Virtual Reality Lab (VRL), please elaborate?

Ans: Virtual Reality is implemented in MDL as part of yard's migration to Industry 4.0 standards. The Virtual Reality Centre (VRC) set-up at MDL's Design Department is first of its kind in the shipbuilding industry. The VRC consists of a large sized screen (20' x 8') equipped with rear end high definition projectors that produce a 3 Dimensional Stereoscopic Immersive Environment.

The VRC facilitates the visualization of the entire warship and critical & complex compartments like Engine Room, Steering Gear compartment, Operation Room and enclosed Bridge at the detailed design stage. The users of the VR can be layout designers, ergonomics experts, system operators, ship staff, and naval architects. VR installation is a step towards keeping with the latest technology and attaining higher customer satisfaction which can also visualize the end product well prior to construction.

The appreciation of Ergonomics and Human Factor Engineering take prominence with the implementation of VRC as it allows to check and inspect habitability/ergonomics /user feedback/walk through review by user / operator and anthropometric dimensional analysis with a human model/mannequin.

6. How is MDL preparing for the growing shift towards digital manufacturing, Industry 4.0, use of AI and Big Data in warship manufacture?

Ans: As elaborated above, MDL has setup a state of the art Virtual Reality Centre leading to the reduction in physical effort to understand and analyse complex issues in compartment layouts of ship building. Any clashes between laying of piping cables ventilation duct etc. is virtually visualised in office environment and is resolved in the design stage itself. In addition to VRC, MDL, in collaboration with IITM, Chennai, has developed AI based machines and methods for various key processes of Shipbuilding. Artificial Intelligence enabled Robotic Weld Inspection tool using phased array technic to replace manual radiography is one of them. MDL has also developed an Artificial Intelligence enabled Remotely Operated Vehicle (ROV) with collaboration of IIT Madras and in the process of induction and also commercialisation.

7. Please elaborate on MDL's partnerships with foreign shipyards?

Ans: MDL has been selected as the preferred production partner to undertake major ship construction activities for M/s SSK Zvezda Shipbuilding Complex, Russia.

Zvezda Shipbuilding complex (SBC) is ambitious on development of a shipbuilding cluster in the Far East Russia and the project will open up a large scale export business opportunity for India and specifically to MDL in future as the envisaged quantum of work is really huge spanning for years. MDL intends to take this business opportunity forward.

Replies for Questionnaire from Indian Express:- (Defexpo 2022)

1. PM Modi said that the MDL will partner Russia's Zvezda for construction of commercial ships. Please share some details.

Ans- MDL has been selected as the preferred production partner to undertake major ship construction activities for M/s SSK Zvezda Shipbuilding Complex, Russia.

Zvezda Shipbuilding complex (SBC) is ambitious about developing a shipbuilding cluster in the Far East Russia and the project will open up a large scale export business opportunity for India and specifically to MDL in future as the envisaged quantum of work is large and spanning for execution in few years. MDL intends to take this business opportunity forward.

2. Can you share the progress of the Project P 75I?

Ans- In recent years, the infrastructure at the shipyard has been modernized and upgraded to meet the technological advancements in Naval construction. Under Mazdock Modernization program, MDL has augmented its Infrastructure facility specifically to cater to Submarine construction. Submarine Launch Facility is also being created at Alcock Yard to facilitate launching of Submarines independent of deep dry dock which will also immensely contribute to future projects such as Project P75(I).

MDL is actively preparing to bag the order for Construction of six Submarines under P75 (I) program for which RFP has been issued to shortlisted strategic partners. Selection of OEM and subsequent discussions towards Bid preparation is in process.

3. What are the future plans of MDL with regards to export?

Ans- MDL has submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction &

delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes.

MDL is also participating in various Defence Exhibitions like Defexpo, Aero India etc. for marketing the products built by MDL for exploring the opportunities to increase the exports. In addition, MDL is working on diversification of products which would enhance exports.

A dedicated section has also been formed in the Submarine Division for business development and providing competitive bids to customers. MDL is also making all-out efforts to tie-up with various private companies to grab opportunities/orders from international market.

MDL is trying to penetrate other markets as well for export and some of their offerings are as follows:-

- a) Refit & Repair of Submarines
- b) Autonomous Underwater Vehicle.
- c) Electric & Solar powered vehicles
- d) Air Boat (Fan Boat)
- e) Heavy Engineering works

4. What is your order book position and how much you have been able to fulfil?

Ans- For the next 5-6 years, we have the order book of Rs 42900 Cr Approx . The order broadly comprises of the construction of four in Nos Visakhapatnam Class Project 15B Guided Missile Destroyers (one out of four already delivered), four in Nos Nilgiri Class Project 17A Stealth Frigates and six in Nos Project 75 Scorpene Submarine (four out of six already delivered). Medium Refit & Life Certification (MRLC) of one Submarine in collaboration with German Collaborator M/s tkMS, Germany is also in progress.

SP Guide Publications

Q1. What are your plans to implement Prime Minister Narendra Modi's vision of Atmanirbhar Bharat?

Ans- MDL has launched a separate "Atmanirbhar Bharat" Webpage in the company's website. The process of indigenisation, various items/equipment indigenised, items required to be indigenized (Eols) are displayed under the webpage. Success stories of indigenisation are published on MDL website as a compendium of items indigenised.

MDL has proactively pursued indigenous development for items/ equipment of foreign OEMs. Collaborations are being progressed with a range of private players for indigenized development of Equipment/spares for the Submarine Projects. Efforts are also being made to take up Indigenisation of equipment for future projects under 'Atmanirbhar Bharat' and 'Make in India' programs. MDL has also participated in iDEX (Innovations for Defence Excellence) for self-reliance in defence sector.

A separate indigenisation cell has also been constituted to give thrust to indigenisation of equipment/ item at company level, apart from efforts made at MOD/IN level.

Q2. What are the current warships you are building & what is their indigenisation content?

Ans- The current surface ship order broadly comprises of the construction of 04 Nos Visakhapatnam Class (Project 15B) Guided Missile Destroyers, out of these four, one has already been delivered and 04 Nos Nilgiri Class (Project 17A) Stealth Frigates.

The under-construction warships under project 15B and 17A will have an indigenous content between 70 to 75%.

The licensed construction of six Scorpene class Submarines (Project-75) in collaboration with French Collaborator M/s Naval Group, France is in progress at MDL. MDL has delivered four out of six Scorpene Class Submarines of Project 75 to the Indian Navy. The Fifth Submarine is being slated for delivery shortly and the sixth and final Submarine is in the advance stage of trials and outfitting. To-date, MDL Submarines of P75 Project have indigenous content of approx. 32% by value.

Q3. What is the progress on Project 75 to build Scorpene Submarines & what all technologies your company has been able to absorb to be able to implement them independently?

Ans- Under the Scorpene project, the Collaborator has provided 'Know-How' under ToT for building the submarines. ToT includes provision of Technical Data Package, Software & Hardware, Shipyard Training & Advising and Overseeing of Construction of first two Boats. MDL has fully absorbed the transfer of technology to construct the Scorpene submarines independently without any active support from the collaborator M/s Naval Group, France. MDL has successfully built 3rd and 4th Submarines without such support from Naval Group.

Q4. The RFP for Project 75(I) was issued to your company & M/s Larsen & Toubro (L&T) to build six AIP fitted Conventional Submarines under the Strategic Partnership Model. What is the progress on it?

Ans- RFP for P75I was issued on 20 Jul 21 to shortlisted strategic partners. MDL being one of the shortlisted strategic partner, is in the process of selecting of one FC (Foreign Collaborator) from the five shortlisted FCs viz. M/s Naval Group - France, M/s Navantia - Spain, M/s ROE - Russia, M/s tkMS - Germany and M/s DSME - South Korea by IHQ/ MoD(N).

Q5. Apart from the Navy are you taking up any projects for Indian Coast Guard?

Ans- Besides warships for the Indian Navy, MDL has also constructed a series of offshore patrol vessels for the Indian Coast Guard ("ICG") in the past. Seven Coast Guard ships, which today form the mainstay of the ICG fleet, were built and delivered to the ICG between 1983 and 1990.

Recently, MDL has also undertaken repairs of three ICG vessels, namely INS Achook, INS Shaurya and INS Savitribai Phule.

MDL has submitted bids to Indian Navy & Indian Cost Guard for various Naval platforms worth Rs. 24,000 Cr. including 08 Fast Patrol Vessels (FPV) for Indian Coast Guard.

Q6. It has been reported that you have taken up Construction of Border Out posts for the BSF which are floating police stations. Would you like to give some details?

Ans: MDL has undertaken construction of Border Outposts (BoPs). Each of these BoPs, also called as floating police stations, are equipped with four high speed boats. MDL has built and delivered nine such vessels to Border Security Force from year 2003 to 2004.

AEROMAG MAGAZINE QUESTIONNAIRE

1. Over these decades, Mazagon Dock Shipbuilders Limited (MDL) has grown to become the premier war-shipbuilding yard in India. What are the major milestones in the success journey?

MDL, today, is the premier shipbuilding yard in the country, producing world class state of the art warships and submarines. Over the last six decades, MDL has delivered over 799 vessels which include 26 capital warships and 06 submarines. In commercial sector, 631 vessels have been built out of which 243 vessels have been exported to countries such as Mexico, France, UK, Iran, Yemen, Mozambique etc. Presently ships built at MDL form sharpest cutting edge platforms for the Indian Navy.

Following are MDL's major milestones in the last couple of decades:

- a) Delivery of four Scorpene class submarines to Indian Navy under project 75.
- b) Delivery of first Visakhapatnam class Destroyer to Indian Navy under project 15B.
- c) Delivery of three in Nos Kolkata class Destroyers to Indian Navy under Project 15A.
- d) Delivery of three in Nos Shivalik class Frigates to Indian Navy under project 17.
- e) Commissioning of Mazdock Modernisation Project (MMP) which has enhanced MDL's capacity of warship building from 8 to 10 and submarine building from 6 to 11. With the commissioning of MMP, MDL has become India's only shipyard to possess two independent submarine assembly & launch lines.
- f) Successful launch of MDL IPO in end Sep 20; listing on 12 Oct 20 at NSE & BSE which was Oversubscribed by more than 157 times.
- g) Successful launch of 01 Missile Guided Destroyer, 02 Stealth Frigates & 1 Submarine in the year 2022.

2. The fifth of six Scorpene-class submarines completed its first sea sortie recently and will now undergo rigorous trials before being delivered to the Navy later this year. Could you talk more about the vessel and the project?

The state-of-art features of the Scorpene include superior stealth features and the ability to launch a crippling attack on the enemy using precision guided weapons. While the attack can be launched with both torpedoes and tube launched anti-ship missiles, and whilst underwater or on surface, the stealth features give it an invulnerability, unmatched by most classes of submarines. The Fifth Submarine is slated for commissioning shortly and the sixth and final Submarine is in the advance stage of trials and outfitting.

3. Which are the on-going defence projects at MDL? Could you talk about the operations at the submarine arm of MDL?

The order broadly comprises of the construction of 04 Nos Visakhapatnam Class (Project 15B) stealth Destroyers (one out of four already delivered), 04 Nos Nilgiri Class (Project 17A) stealth Frigates. The licensed construction of six Scorpene class Submarines (Project-75) in

collaboration with French Collaborator M/s Naval Group, France is in progress at MDL. MDL has successfully delivered four out of six Scorpene Class Submarines of Project 75 to the Indian Navy. The initial feedback of Navy on P75 is satisfactory. Medium Refit & Life Certification (MRLC) of one Submarine in collaboration with German Collaborator M/s tkMS, is also in progress.

4. MDL is committed to indigenize equipment and systems on warships and submarines and support Atmanirbhar Bharat and Make in India initiatives. What are the activities in this regard?

A separate indigenization cell has been constituted to give boost to indigenization of equipment/ item at company level, apart from efforts made at MOD/IN level.

Also, a separate "Atmanirbhar Bharat" Webpage has been launched by MDL in the company's website. The process of indigenisation, various items/equipment indigenised, items required to be indigenized (EoIs) are displayed under the webpage.

Success stories of indigenization are published on MDL website as a compendium of items indigenized. The under-construction warships under project 15B and 17A will possibly have an indigenous content between 70 to 75%.

MDL has proactively pursued indigenous development for items/ equipment of foreign OEMs. Collaborations are being progressed with a range of private players for indigenized development of Equipment/spares for the warship Projects. Efforts are also being made to take up Indigenization of equipment for future projects under 'Atmanirbhar Bharat' and 'Make in India' programs.

5. Could you shed some light onto MDL's order book? Who all are the major clients?

MDL has an order book of Rs. 42,900 crores approx. The major client for construction and repair of Ships and Submarines is Indian Navy.

6. How strong is the export division of the MDL? Could you give us the details of the export operations and clientele base?

A dedicated section has been formed for business development and providing competitive bids to customers. MDL is also making all-out efforts to tie-up with various private companies to grab opportunities/orders from international market.

MDL has submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction & delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes.

MDL has been selected as the preferred production partner to undertake major ship construction activities for M/s SSK Zvezda Shipbuilding Complex, Russia. Zvezda Shipbuilding complex (SBC) is ambitious on development of a shipbuilding cluster in the Far East Russia and the project will open up a large scale export business opportunity for India and specifically to MDL in future as the envisaged quantum of work is really huge spanning for years. MDL intends to take this business opportunity forward.

MDL is trying to penetrate other markets as well for export and some of their offerings are as follows:-

- a) Refit & Repair of Submarines
- b) Autonomous Underwater Vehicle.
- c) Electric & Solar powered vehicles
- d) Air Boat (Fan Boat)
- e) Heavy Engineering works

7. How did the Covid-19 pandemic affect MDL's operations? What are the major operations in the post-pandemic times?

During the first wave, Covid-19 pandemic had affected the company's ability to maintain continued operations or otherwise operate or conduct its business at pre-pandemic levels as manpower was deployed for only essential work of the organisation. However, remote work arrangements kept the conduct of the business going to a certain extent.

Thereafter, there had been a surge in the number of Covid cases in Mumbai and its suburbs during the second wave. MDL had resorted to reduced strength of executives and non-executives in accordance with the Government of Maharashtra Covid-19 guidelines issued from time to time and in order to break the chain.

Presently, based on the directives of the Govt, Shipyard has been fully operationalized with complete manpower. The company by all means is leaving no stones unturned to achieve the targets vis-a-vis following all Covid-19 protocols and safety measures at workplaces. The scenario is more or less similar across the complete spectrum of all manufacturing sectors. MDL could tide over the pandemic situation and reach closely towards defined VoP targets.

8. What are the highlights of MDL's participation at DefExpo 2022? How do you look at the expo to expand the global reach of the company?

MDL is participating in Defexpo 2022 for marketing the products constructed by the shipyard for exploring the opportunities to increase the exports. MDL is working on diversification of products which would enhance exports.

Interview Questions by Raksha Anirveda: CMD - Mazagon Dock

Shipbuilders Ltd

Q1. Globally Ship building industry is becoming leaner and using modular technology. As one of the leading Defence PSU and "Ship builder to the nation," are you using modular technology in ship building? What steps are being taken to emerge as a leaner and competitive organisation with commercial ship building footprint in near future?

Ans: The Project 17A Stealth Frigates being built at Mazagon Dock Shipbuilders Ltd. are being built with the Integrated Construction(IC) methodology wherein the hull construction and outfitting progresses concurrently with attendant savings in the build timelines along with enhanced quality. This method is being implemented for the first time in the history of warship building in India wherein the conventional shipbuilding process is re-engineered with a different Build Strategy, Detailed Design, procurement process and inspection sequencing. While adopting this construction approach, MDL is also fully leveraging the modernized infrastructure that has been exclusively created for the purpose.

The latest state-of-the-art technologies such as Virtual Reality Centre (VRC), Shore Integration Facility (SIF), Product Data Management/Product Lifecycle Management (PDM/PLM) have also been implemented at MDL.

Q2. How do you view the government focus on Atmanirbhar Bharat? In what ways MDL has been contributing towards this initiative to make it a success? Kindly provide a detailed account of MDL's role play.

Ans- MDL has been in the forefront of Gol's flagship programme Atmanirbhar Bharat since our inception. MDL has indigenously built some of the frontline Warships and Submarines for Indian Navy which includes Destroyers, Frigates, Conventional

Submarines, Corvettes, Missile boats, Offshore Patrol Vessels, Floating Border Outposts etc. From the time MDL was taken over by Government of India in 1960, we have built 799 vessels including 26 capital warships and 6 Conventional Submarines for the Indian Navy.

MDL has been able to significantly enhance the indigenous content in the warships/project it has delivered to the Indian Navy. While the warships under project 15 delivered way back in 90s had an indigenous content of approx. 42%, under-construction warships under project 15B and 17A will possibly have an indigenous content between 70 to 75%.

Further, MDL has been able to successfully indigenize/develop some of the critical items/assemblies to be integrated on the Warships and Submarines to promote Atmanirbhar Bharat in Defence sector.

Q3. What is your order book position and how much you have been able to fulfil? With government also focusing on defence exports, how has your shipyard been performing? Also provide an account of your current export portfolio and order status, excluding government to government export orders and your future projection for next 2-5 years.

Ans- For the next 5-6 years, we have the order book of Rs 42900 Cr Approx. The order broadly comprises of the construction of four in Nos Visakhapatnam Class Project 15B Missile Guided Destroyers (one out of four already delivered), four in Nos Nilgiri Class Project 17A Stealth Frigates and six in Nos Project 75 Scorpene Submarine (four out of six already delivered). Medium Refit & Life Certification (MRLC)

of one Submarine in collaboration with German Collaborator M/s tkMS, Germany is also in progress.

MDL has submitted proposals for Exports to various countries viz. Brazil, Peru, Argentina, Philippines, Hungary, Sierra Leone, Chile, Cameroon, etc. for construction & delivery of OPVs, FPVs, FICs, Floating Docks, Flat Bottom Shallow Boats, FAC and Corvettes.

MDL has been selected as the preferred production partner to undertake major ship construction activities for M/s SSK Zvezda Shipbuilding Complex, Russia. Zvezda Shipbuilding complex (SBC) is ambitious on development of a shipbuilding cluster in the Far East Russia and the project will open up a large scale export business opportunity for India and specifically to MDL in future as the envisaged quantum of work is really huge spanning for years. MDL intends to take this business opportunity forward.

Q4. Keeping abreast of technology is key to organisation's success. How well MDL is prepared to position itself as a leader and execute its challenging role play towards enhancing India's maritime capabilities and being at the fulcrum for building niche naval platforms?

Ans- MDL has established itself as Submarine Construction Hub in the country with two dedicated independent parallel Submarine assembly lines fully ready for operations. MDL is the only shipyard in India which has successfully constructed Destroyers and conventional Submarines with two different technologies.

MDL has completed modernization and up gradation of its facility that matches global standards with modular shop for integrated construction, wet basin, Submarine Section Assembly Shop, Virtual Reality Lab, Product Data Management, Product Life

Cycle Management which enables MDL the capability and capacity to construct at any point of time 10 warships and 11 conventional submarines simultaneously. Submarine Launch Facility is also being created to especially facilitate launching of Submarines directly, independent of availability of deep dry dock to upgrade MDL infrastructure for future projects such as Project P75(I).

MDL being a premier Shipbuilding organization has continuously thrived to keep abreast with the latest technologies and has already implemented Virtual Reality Centre (VRC), Shore Integration Facility (SIF) and Product Data Management/Product Lifecycle Management (PDM/PLM).

MDL is actively involved in developing innovative technologies through R&D using in-house resources and collaboration with academic institutions. MDL is having an in-house R&D team of dedicated personnel with specific targets in pursuit of quality R & D work with a view bridge gaps in engineering and the technology.

Q5. Do you think India needs to formulate a “National Strategy for Maritime Security” to ensure adequate naval capability to safeguard its vital interests, enhance naval forces capabilities to exercise control of the seas, be a net security provider along with upgradation of the maritime capabilities including shipbuilding, merchant shipping, ports, etc.? Your insights.

Ans- Indian Ocean Region (IOR) is of strategic interest to India being the confluence of regional and international powers. Further, the IOR is a melting pot of key engines that drive international economy. The area constitutes 95% of India’s trade by volume and 68% of trade by value. Approximately 80% of the country’s crude oil is imported by sea via the IOR also has been an arena of international geopolitics and also a theatre of maritime conflicts.

I firmly opine that we need to ensure adequate Naval capability to safeguard our vital interest. The specific roles of the Indian Navy in future would continue to extend across the entire spectrum of security of the nation; from peacekeeping, through the low intensity segment to high-intensity conventional hostilities. In the last two decades, the capabilities available with our potential adversaries have grown considerably and are forecasted to only improve with time. The Indian Navy would therefore acquire adequate deterrent war fighting capabilities.

The Indian Navy is poised to grow significantly in the upcoming few years with the induction of a large number of ships, submarines and aircrafts.

Q6. With MDL handing over the sixth submarine in 2023, Project 75 will be completed. What's the current status of Project 75-I under the Strategic Partnership model? Are you optimistic that it will finally take-off by the end of 2022 and have the unique scope for both Strategic Partners to collaborate and work together, irrespective of whoever is the winner?

Ans- MDL is actively preparing to bag the order for Construction of six submarines under P75 (I) program for which RFP has been issued to shortlisted strategic partners. Discussions with OEM for Bid preparation is in process.

QUESTIONNAIRE FOR CMD, MDL INTERVIEW IN DEFEXPO 2022 SPECIAL ISSUE BY

CHANAKYA: OCTOBER 2022

Q1. Mazagon Dock has grown to become one of the premier Warship building Yards in India, producing warships for the Indian Navy, including Destroyers, Frigates, Corvettes, Missile Boats, OPVs, etc. Briefly outline the construction activities of the Mazagon Dock Shipbuilders Ltd. (MDL)

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Ans- MDL is the oldest shipyard in India with inception in 1774, incorporated in 1934, and taken over by the Government of India in 1960. MDL is the only shipyard in India to have built Destroyers and two different types of Submarines for the Indian Navy with its facilities located in Mumbai and Nhava and thus MDL is also one of the unique shipyards in the world with such diverse range of products. From the time it was taken over by the Government of India in 1960, MDL has built 799 vessels, including 26 capital warships and 6 conventional submarines. MDL has the capacity to build warships, submarines, merchant ships up to 40,000 DWT.

MDL has developed itself from being a small dry dock in 1774 to being one of country's leading defence shipyard capable of meeting the requirements of the Indian Navy towards its warship building programmes including submarines.

MDL is currently building four 'P-15B Visakhapatnam' Class Guided Missile Destroyers (one out of four already delivered), four 'P-17A Nilgiri Class' Advanced Stealth Frigates and six Scorpene class submarines (four out of six already delivered) for the MoD for use by the Indian Navy. MDL is also undertaking Medium Refit and Life Certification (MRLC) of INS Shishumar Submarine. In addition to these MDL is

also undertaking refits and repairs of Coast Guard vessels and other Commercial vessels.

Q2. With the Commissioning of 4 Kalvari-Class Scorpene Submarines - INS Kalvari, INS Khanderi, INS Karanj & INS Vela, and 5th Scorpene Submarine Vagir undergoing Harbour Trials, what is the status of the 5th & 6th (Vaghsheer) Submarine of Indian Navy's Project 75? By when do you foresee the next batch of P-75 to be ordered, or/and to be refitted with the DRDO AIP System?

Ans- Fifth Submarine of Indian Navy's Project 75 is getting ready for delivery in the end of year 2022 and Sixth Submarine is in advanced stage of outfitting and trials. RFP for DRDO developed AIP System is awaited from Indian Navy. This next Project P75(I) is being progressed by MoD under Strategic Partnership (SP) model wherein MDL and L&T are two Strategic Partners (SPs) shortlisted by IHQ/ MoD(N) for which RFP has been issued. MDL is in the process of selection of Foreign collaborator for preparation & submission of bid. The placement of order/contract signing for P75(I) can be expected to be finalised in 2024/early 2025.

Q3. MDL having already delivered three P-15A Class Destroyers - INS Kolkata, INS Kochi and INS Chennai to the Indian Navy/MoD, and currently is building four P-15B Class Stealth Guided Missile Destroyers, with the recent Commissioning of INS Visakhapatnam, with Mormugao - the second P-15B Visakhapatnam-Class Destroyer under construction at MDL, which recently commenced her sea trial, and the 3rd Destroyer Imphal launched; tell us about the P-15 Projects and elaborate on the salient features of the P-15B Class?

Ans- The P15B class Destroyers are the follow on of the prestigious Kolkata Class Destroyers constructed under the P15A project. The P15B ships are a powerful testimony to the Indigenous design and building capability of frontline warships. The INS Vishakhapatnam Class Destroyers are special platforms due to their sheer size, weapon ordinance delivery potential and multi-dimensional capabilities of sensing, tracking and firing of weapons with pin point accuracy. These qualities were embedded through close control of activities involved at every stage of its evolution from design to construction and culminating in trials. The ship boasts of several new design features giving her enhanced operational capabilities in terms of survivability, stealth, sea keeping, ship and weapon handling.

The Ship also has of a very high level of automation with sophisticated digital networks such as Gigabyte Ethernet based Ship Data Network (GESDN), Combat Management System (CMS) with GbE backbone, Automatic Power Management System (APMS), Integrated Platform Management System (IPMS) and an Integrated Bridge System (IBS).

Q4. With four P-17A New-Generation Stealth Frigates being built at MDL, tell us about the status of the P-17A Class Stealth Frigates, especially Nilgiri, the First Frigate of Project 17A Class?

Four of the total seven P17A Class ships are under construction at Mazagon Dock Shipbuilders Ltd. with Integrated Construction Methodology. The First of Class NILGIRI, was undocked on 18 Feb 22 with physical progress of 42% (approx.) being achieved and duly completing all her underwater packages including outboard shafting activities. The Major Engineering & Electrical equipment have all been shipped-In and installation is in advanced stages. Nilgiri is planned to undergo Basin Trials by Dec

2023. Three frigates namely Nilgiri, Udaygiri and Taragiri have already been launched out of four such platforms under construction.

Q5. Over the last few years, MDL has increased its focus on indigenisation and indigenous content. Tell us about your 'Make-in-India' Initiatives?

Ans- MDL has set-up a dedicated Department of Indigenisation in Oct 2015 to boost and strengthen the indigenisation effort and to provide focused impetus to the Hon'ble Prime Minister's vision of "Make-in-India".

Indigenous warship building has been a distinct success story in our attempt to be self-reliant in Defence through Make in India policy. Today the country is capable of building Destroyers, Frigates, Corvettes as well as strategic submarines. Indigenous contents have steadily increased in these construction programs and presently it is pegged at 72-75%. More can be done in this direction by a collaborative approach amongst all stakeholders.

MDL has launched a separate "Atmanirbhar Bharat" Webpage in the company's website. The process of indigenisation, various items/equipment indigenised, items required to be indigenized (Eols) are displayed under the webpage. Success stories of indigenisation are published on MDL website as a compendium of items indigenised.

MDL has indigenised 25 items/equipment/systems. Most of the items are being procured by Services/ Shipyards which has resulted AtmaNirbharta and considerable savings in Foreign Exchange. The contribution of MDL in the Positive Indigenisation List (PIL) published by Hon Raksha Mantri are as follows: PIL-1:- 05 items, PIL:-2: 06 items and PIL-3:- 134 items.

Once these items are indigenised by Indian industry, it will give a big thrust on self-reliance and will have big potential on Export also.