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LATSCO

Marine Management Inc.

Pathways & Initiatives to Sustainable Shipping

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1 INTRODUCTION

Latsco Marine Management Inc.[1] (LMM) is a company of LATSCO Shipholding Management, that was originally established in the 1940s when the company's founder, Captain John S. Latsis, first ventured into passenger and commercial deep-sea shipping.

Spanning over 70 years of experience in the shipping industry, the company originally operated under the name "Petrola International S.A.". Throughout the years, the Group has operated a fleet of over 100 vessels, ranging from Ultra Large Crude Carriers (ULCCs) to dry cargo vessels.

Today, Company provides with worldwide ship management, supervision and construction services, assisting its customers to manage their resources in an efficient, safe, environmentally sound and profitable manner. LMM operates a fleet of 29 vessels comprising of the following types:

- 5 LR2 product carrier vessels;
- 13 MR product carrier vessels; and,
- 11 VLGCs and LGCs vessels dealing with the transportation of LPG and Ammonia.

The following table provides an overview of LMM Vision, Mission and Values:

	***VISION*** *To become the leaders in our field through continuous development of business excellence, health, safety, quality, protection of the environment and energy efficiency, embracing innovation & new technologies, while treating in a responsible manner the social concerns of the Industry and in a continuous interaction with our Stakeholders.*
	***MISSION*** *The mission of LMM is to operate in the most safe efficient and effective way a continuously growing fleet of Oil, Chemical, and LPG carriers serving the needs of our customers, protecting their interests and fulfilling their expectations, by providing and maintaining a working environment where the risk is properly appreciated, understood and managed through a commitment to continuous improvement of health, safety, quality, environmental and energy performance.*
	***VALUES*** Company's Values have been identified through the active involvement of its employees and based on feedback provided by Company stakeholders. Company's Values are: ✓ Business Excellence & Quality ✓ Safety & Environment ✓ Focus on Customers ✓ One Team ✓ Care for People

Table 1: *LMM Vision, Mission and Values*

[1] "About LATSCO Profile", LATSCO, accessed July 29, 2020, https://www.latsco.com/en/about/profile

2 HOW IS THE SHIPPING INDUSTRY IMPACTED BY SUSTAINABILITY

As part of the United Nations family, the International Maritime Organization (IMO) is actively working towards the United Nations (UN) 2030 Agenda for Sustainable Development and the associated Sustainable Development Goals[2]. The 17 SDGs are integrated, which means that action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability.

As a member of the international shipping community, LMM is dedicated to contribute and be part of the achievement of the SDGs by working with the various stakeholders of the maritime industry for the promotion of sustainable development.

Picture 1: *The 17 UN Sustainable Development Goals[3]*

[2] "UN Sustainable Development Goals" United Nations, accessed July 29, 2020, https://www.un.org/sustainabledevelopment/sustainable-development-goals/

[3] "UN Sustainable Development Goals Communications Material" United Nations, accessed July 29, 2020, https://www.un.org/sustainabledevelopment/news/communications-material/

3 MAIN SUSTAINABLE GOALS TO WHICH LMM FOCUSES ON

The sustainable development of the Company is linked with the input from her stakeholders such as charterers, financial organizations, social community, associations etc.

The Company focuses on:

- Transportation through environmental friendly ships, which protect the marine environment from oil and chemical pollution and waste streams while they protect the coastal and Marine Ecosystems from transportation of sediments and aquatic microorganisms;
- Taking operational and technological initiatives for reduction of air emissions and contributing to IMO de-carbonization strategy and reduction of Green House emissions;
- Applying onboard sustainable consumption and production patterns;
- Participating in programs and promoting investment in energy infrastructure and clean-energy technology;
- Ensuring the good health and well-being of the people onboard assuring a full compliance with IMO regulations and industry recognized standards and Maritime Labour Convention;
- Strengthening the partnership with the shipping stakeholders for a material sustainable development.

We believe that the sustainable development of shipping is likely to lead to profound changes in the shipping industry over the next 30 years. LMM as a leading shipping company with global operations wants to be part of this revolution and contribute actively and materially to these changes and not just be affected by these. In this respect, Company is focusing on the close monitoring and continuous improvement of the impact of all activities undertaken concerning sustainability.

The following table provides an overview of the alignment of LMM sustainability approach with the UN SDGs.

#	Topic	Sustainable Development Goals
1	Oil and Chemical Pollution	
2	Water Streams	
3	Coastal and Marine Ecosystems	
4	Air Emissions	

5	Energy Efficiency & De-Carbonization Strategy	
6	Efficiency & Performance Monitoring	
7	Ship Recycling	
8	Investment in energy infrastructure & clean-energy technology	
9	Personnel management in a sustainable manner	

Table 2: *Alignment of LMM Sustainability Approach with the UN SDGs*[4]

[4] "UN Sustainable Development Goals" United Nations, accessed July 29, 2020, https://www.un.org/sustainabledevelopment/sustainable-development-goals/

4 HOW LMM APPROACHES EACH ONE OF THE SELECTED SUSTAINABLE GOALS

4.1 Oil and Chemical Pollution

We design and construct vessels that are in full compliance with MARPOL Annex I requirements and in addition are complied with:

- Tank Overfill protection
- Double Hull protection of all oily tanks
- Rapid response Damage Assessment Program
- Integrated Oily bilge collected systems
- Collecting Trays and Deck coamings
- IGC code vessels compliant
- Closed gauging systems in the cargo tanks

4.2 Waste streams

We built vessels that comply with applicable requirements of MARPOL annex IV and in addition are compliant with:

- Sewage treatment plant
- Sewage Management Plan

We built vessels in compliance with MARPOL ANNEX V. In addition, vessels are to comply with the following additional requirements:

- Dedicated arrangements are to be provided for storage of garbage
- Special equipment are installed for grinding or comminuting food wastes so that to be capable of passing through a screen with openings no greater than 25 mm.

4.3 Coastal and Marine Ecosystems

Latsco Marine Management Inc. aims to prevent the transporting of harmful aquatic organisms and pathogens via water ballast discharges and reducing the potential adverse effects of introducing organotin compounds to the sea environment by applying anti-fouling systems of vessels. For this purpose all of its vessels are:

4.3.1 Ballast water

Built in compliance with the D-2 performance standards of the International Convention for the control and Management of Ship's Ballast water and sediments, 2004 (BWM Convention), as amended, as well as the relevant IMO Guidelines. Also, the Ballast water systems installed on LMM vessels are in full compliance with Classification Societies' guidelines and USCG extra requirements.

In addition to having an installed BWMS, all vessels maintain a Ballast Water Record Book on board and manage their ballast water in accordance with a Ballast Water Management Plan approved by the respective Classification Society. This approved Ballast Water Management Plan is placed onboard for the guidance of the crew. This plan is developed in accordance with IMO Resolution MEPC.127 (53), "*Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4)*" and MEPC 306(73), "*Amendments to the Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4)*".

Biological testing by sampling, during the Ballast Water Management System (BWMS) commissioning, is performed to confirm that the BWMS installed on vessels meets the D-2 biological performance standard. The biological compliance test is carried out and a report

is submitted in accordance with IMO BWM.2/Circ.70 – *Guidance for the commissioning testing of ballast water management systems* (as may be revised). A Recognized Organization Service Provider is assigned to conduct the sampling test; as per process followed the samples are collected and analyzed for which a subsequent report indicating the results is provided to the owner. Upon satisfactory review by the attending Surveyor of the Recognized Organization, an endorsement of the IBWMC (or Statement of Voluntary Compliance) indicating the completion of the biological commissioning testing is to be requested.

The purpose of commissioning testing is to validate the installation of a Ballast Water Management System (BWMS) by demonstrating that its mechanical, physical, chemical, and biological processes are working properly. Commissioning testing is not intended to validate the design of the type approved BWMS that are approved by the Administration.

4.3.2 Antifouling Systems

LMM vessels are compliant with the relevant requirements of IMO Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, (AFS Convention) as amended. Anti-fouling systems for hulls or external parts or surfaces are Type Approved and are not to bear organotin compounds which act as biocides. Small quantities of organotin compounds (such as mono- and di-substituted organotin compounds) are allowed as a chemical catalyst. The levels of these compounds are not to provide a biocidal effect and are not present above 2,500 milligram (mg) total tin per kilogram (kg) of dry paint.

4.3.3 Biofouling Management Plan

Vessels are provided with a biofouling management plan and a Biofouling Record Book onboard. This biofouling management plan is required to be approved by the respective Classification Society in accordance with IMO Resolution MEPC.207 (62).

4.3.4 Underwater Radiated Noise

LMM vessels implement mitigation measures and quieting technologies to reduce underwater radiated noise. Subsequent evidence and documentation demonstrating that the selected mitigating measures or technologies have been successfully applied during the vessel design are submitted accordingly for review.

Some of these potential mitigating measures and quieting technologies as also have been identified and accepted by the marine industry towards contribution to the reduction of underwater radiated noise are included, without being limited to, in Table 3 hereafter.

Design Considerations		**Machinery Noise Considerations**	**Additional Technologies Considerations**	**Operational and Maintenance Considerations**
Propellers	*Hull Design*			
High Skew Propeller Propeller Boss Cap Fin (PBCF)	Wake conditioning devices	Reduction of onboard machinery noise • Mounting engines on resilient mounts • Use of vibration isolation mounts for reciprocating machinery	Air Lubrication Systems *(Bubble drag reduction)* *(Air layer drag reduction)* *(Partial cavity drag reduction)* Wind Assisted Propulsion *(Flettner Rotors)*	Propeller cleaning and/or polishing Underwater hull surface cleaning

Table 3: *Underwater Radiated Noise Mitigation Measures*

4.4 Air Emissions

LMM aims at reducing the potential adverse effects on the air environment by ozone-depleting substances, NOX, SOX, and cargo vapour emission, as well as shipboard incinerators

4.4.1 Ozone-Depleting Substances

LMM Vessels comply with the applicable requirements of MARPOL Annex VI, Regulation 12. In addition, vessels comply with the following additional requirements:

4.4.1.1 Refrigerant Systems

The use of halogenated substances, including hydrochlorofluorocarbons (HCFCs), as refrigerant is prohibited.

Refrigerants are to comply with the following:

i) Global Warming Potential (GWP) ≤ 2000

ii) Ozone Depleting Potential (ODP) = 0

Refrigerant systems onboard LMM vessels are arranged with appropriate means for isolation of sections and components to allow for system maintenance without releasing any substantial quantity of the refrigerant.

Unavoidable minimal release associated with recovery is controlled with the provision of recovery units that are installed for the evacuation of the system.

There is a relevant target adopted based on which the annual refrigerant leakage shall not be more than 10% of the total refrigerant charge of each system and recorder identified in the refrigerant system management plan.

An appropriate leak detection system is provided to continuously monitor spaces into which the refrigerant could leak. Furthermore, an alarm is installed in a manned location that is activated when the refrigerant concentration exceeds a predetermined limit (for example, 25 ppm for ammonia or 300 ppm for halogenated fluorocarbons). Corrective action to repair a refrigerant leak is taken as soon as practicable after the activation of the alarm.

4.4.1.2 Refrigerant Systems Management Plan

A refrigerant systems management plan is placed onboard Company vessels that is used as operating guidance by the shipboard personnel. This plan is to give clear guidance to the crew about the refrigerant systems and includes, as a minimum:

i) Vessel name;

ii) Simplified diagrams and component description of all refrigerant systems;

iii) Procedures detailing the means to control the loss, leakage, venting, and disposal of refrigerants;

iv) Methods and means of recording in mass (kilograms) refrigerant inventory. The recorded data shall include, as a minimum, the following:

- Supply of refrigerant onboard
- Discharge of refrigerant to the atmosphere due to leaks or system maintenance
- Recovered refrigerant including its storage location
- Refrigerant disposal to land-based reception facilities

4.4.2 Nitrogen Oxides (NOX) and Sulphur Oxides (SOX) Emissions

4.4.2.1 NOX Emissions

Marine diesel engines (other than those used solely for emergencies, installed in lifeboats, and solely dedicated to the exploration, exploitation, and associated offshore processing of seabed mineral resources) are in compliance with the applicable requirements of MARPOL Annex VI, Regulations 13.

4.4.2.2 SOX Emissions

The sulfur content of any fuel oil used on board vessels is to comply with the applicable requirements of MARPOL Annex VI, Regulation 14.

The fuel oil's availability and quality are to comply with the applicable requirements of MARPOL Annex VI, Regulation 18.

4.4.2.3 NOX and SOX Exhaust Gas Cleaning Systems

When exhaust gas cleaning systems are used onboard Company vessels with the aim to meet the requirements of IMO MARPOL Annex VI Regulations 13 and 14, the following are to be complied with:

i) The systems are at least as effective in emission reduction as required by the pertinent MARPOL Regulations.

ii) The systems comply with the applicable IMO Guidelines.

iii) The systems are to comply the minimum requirements prescribed in 1/9.11 of the Recognized Organizations' *Guide for Exhaust Emission Abatement*.

4.5 Energy Efficiency and De-carbonization Strategy

One sustainability action of heightened importance that LMM has adopted, relates to the adoption of "affordable and clean energy". Part of the strategy that LMM implements for the decade from 2020 to 2030 aims towards the promotion of the use of more energy efficient and less polluting equipment and engines. This strategy is materialized through the following activities.

4.5.1 Energy Efficiency Design Index (EEDI)

From a total 29 Vessels, the 22 of them are complied with the applicable requirements of MARPOL Annex VI, Regulations 19, 20 and 21.

All Company Vessels meet or exceed the requirements of the applicable EEDI Phase and have a Ship Energy Efficiency Plan (SEEMP), accredited by ABS as the applicable verifier, which meets the requirements of IMO Resolution MEPC.282 (70) – *2016 Guidelines for the Development of a Ship Energy Efficiency Management Plan (SEEMP)*. Purpose of this vessel specific plan is to provide with standard procedures and practices on best energy management along with providing with ship-specific method to collect, aggregate, and report ship data with regards to the annual fuel oil consumption, distance travelled, distance underway and other data required as necessary.

For seven out of 29 vessels that have been built prior to the date that the Energy Efficiency Design Index came into force i.e. January 2013 we have calculated the respective index for existing vessels under the name EEXI (gCO2/ton-mile) and we compare it with the reference EEXI that the IMO will implement soon. Under this study we'll see the percentage of deviation and we shall apply either operational or other type of technologies as those referred hereunder so that our vessel to be in compliance prior to 2023, which is the estimated date that new measures for the existing vessels will be applied.

4.5.2 Energy Efficiency Technologies (EET)

All 29 Vessels of LMM have implemented at least one of the innovative technologies under categories I, or II as defined in IMO MEPC.1/Circ.815 – *2013 Guidance on treatment of*

innovative energy efficiency technologies for calculation and verification of the attained EEDI.

The innovative technologies categories with representative examples are shown in Table 4.

i) *Category I:* Technologies that directly influence and shift the ship speed-power curve. This category covers energy-saving devices such as pre-propeller fins, ducts, post-swirl stators, rudder fins, and combinations of them along with low-friction coatings and hull/propeller/rudder optimization efforts that directly impact ship hydrodynamic performance.

ii) Category II: The commonly known "5th term" technologies that reduce propulsion power, at a Vref but do not generate electricity. This category covers wind assisted propulsion system installations (e.g., rotors, sails) and systems such as hull air lubrication. LMM has decided as a strategy that vessels that are going to be built from now on will be considered for installing equipment of category II along with a LOW or ZERO CARBON FUEL depending on the case as follows:

- LNG/CNG
- LPG
- Ethane
- Methanol
- Ammonia
- Hydrogen

iii) *Category III:* The commonly known "4th term" technologies that generate electricity (Waste Heat Recovery Systems, solar panels).

Improved Hydrodynamic Performance	**Reduction of Main Engine Power**		**Reduction of Auxiliary Power**	
Category I	*Category II-1*	*Category II-2*	*Category III-1*	*Category III-2*
Low friction coating Propeller ducts, flow regulating fins, rudder bulb Hull form optimization High efficiency rudder Propeller design optimization	Air Lubrication Systems *(Bubble drag reduction)* *(Air layer drag reduction)* *(Partial cavity drag reduction)*	Wind Assisted Propulsion *(Flettner Rotors)*	Waste Heat Recovery System *(Exhaust gas heat recovery and conversion to electric power)*	Exhaust gas economizers for AUX. Engines and Shaft generator

Table 4: Innovative Energy Efficiency Technologies

4.6 Efficiency and Performance Monitoring

This Subsection contains requirements aimed towards the promotion of the use of efficiency monitoring and performance monitoring functions. Function categories Asset Efficiency Monitoring (AEM), and Operational Performance Monitoring (OPM), refer to equipment, software, services, or a combination thereof, installed or implemented to collect, transmit, manage, analyze, and report data for enhanced awareness, operational assistance, and decision-making support.

4.6.1 Asset Efficiency Monitoring (AEM)

LMM monitors such hull / propeller efficiency, through an automatic data collection system namely KYMA PERFORMANCE and has made contracts with the makers of main engines and auxiliary engines in order to measure the efficiency of the main / auxiliary energy consumers.

The objective of AEM is to monitor the asset's efficiency and to identify the contributors to efficiency degradation with the aim to improve the overall maintenance, operation, and servicing activities.

In this respect, Company monitors:

i) Efficiency monitoring of main fuel consumers such as main engine(s), auxiliary engines, auxiliary boilers and incinerator(s) to improve engine tune-up, overhaul, and maintenance.

ii) Efficiency monitoring of other onboard energy consumers, such as cargo handling equipment and containment system.

iii) Efficiency monitoring of ship hull, propeller, and rudder roughness to optimize dry-docking and hull cleaning activities.

4.6.2 Operational Performance Monitoring (OPM)

LMM has developed and established a modern OPERATIONAL PERFORMANCE & MONITORING Center in her premises; purpose of such center establishment is to collect, analyze and produce reports related with sustainability goals and targets; dashboards; and, performance metrics concerning vessel operations including regulatory compliance.

OPM targets applicable operational parameters and the ability to operate the onboard systems and vessel with the aim to improve the overall performance under the current vessel efficiency level. LMM OPM functions cover for:

i) Weather routing with the aim to enhance safe and efficient navigation;

ii) Voyage planning and operational monitoring and reporting;

iii) Environmental compliance monitoring and regulatory reporting, including among others Emission Monitoring, MRV, IMO DCS, ECA and fuel switching, BWM, SEEMP / EEOI, noise and vibration monitoring, etc.; and,

iv) Vessel and power plant operational performance monitoring

4.7 Ship Recycling

LMM Vessels have and maintain an Inventory of Hazardous Materials (IHM) in accordance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (Ship Recycling Convention); and, Regulation (EU) No 1257/2013 of the European Parliament and of the Council on Ship Recycling (EU SRR). All the vessels of LMM will be certified as per EU requirements by the end of 2020, for which a respective plan has been developed, monitored and implemented as per schedule set.

4.8 Investment in energy infrastructure & clean-energy technology

In line with Company's Vision for embracing innovation and new technologies and Company's strategic direction towards a sustainable shipping, LMM participates in a number of innovative programs and projects relating to the promotion of investments in energy infrastructure and the adoption of clean-energy technologies in collaboration with reputable industry stakeholders, as applicable.

A. Low Sulphur Fuels

LMM in collaboration with DIADIKASIA A.E. and the BV and LR Classification Societies, as far as fuel analysis services is concerned, participated in the project "Low-Sulphur Fuels" of the General Secretariat for Research & Technology.

The main objectives of the project are:

- The selection and quality evaluation of new reduced sulfur fuels;

- Analysis of the new selected fuels of reduced Sulphur content by specialized laboratories on a monthly basis for a two-year period based on ISO 8217 and PAS 23263 standards;
- Comparative study of the performance of the new reduced sulfur fuels with regards to conventional fuels used during 2019; and,
- Elaboration of a techno-economic study to be submitted for adoption to the shipping industry with regards to the adoption of technologies that contribute to the reduction of emissions.

B. Eco-Marine Project

LMM in collaboration with DIADIKASIA A.E. and the research center "COSSMOS" of DNV GL Classification Society, as far as data analysis is concerned, participated in the project "Eco-Marine Project" of the General Secretariat for Research & Technology.

This project aims to the development of an integrated CO2 emission mapping system taking into account parameters of ship type, operational activity and operational conditions in accordance with IMO and EU guidelines. The ultimate goal of this project is to provide the tool that will enable a comprehensive overview of the volume and type of emissions of gaseous pollutants into the atmosphere from shipping, with the aim to conclude on solutions concerning the measures and strategies to be adopted in order to reduce CO2 emissions and other atmospheric pollutants of shipping

C. Decarbonising Long Distance Shipping (Horizon 2020): Project Poseidon

LMM as the project coordinator of a consortium of eight (8) well-experienced partners from various EU member states that represent all segments of marine industry has participated in the development of the joint project "Poseidon". This consortium consists of HHI Shipyard, Anemoi Marine Technologies Limited, Silverstream Technologies (UK) Ltd., ABS Classification Society, WE Tech Solutions, DBC EUROPE, and, SIEMENS INDUSTRY SOFTWARE BV.

"Poseidon" project, in line with IMO targets set for de-carbonization of international shipping, aims to the design and development of a new type Aframax vessel that reduces both Energy Efficiency Design Index (EEDI) and carbon intensity at least by 40%, compared with respective type of vessels build in 2013.

To achieve this goal the evaluation of the combination of several innovative and sustainable solutions will take place in order same to be incorporated in this new type Aframax vessel, such as:

- Novel Hull design;
- Dual low-carbon fuel engine (LNG-Diesel);
- Dual zero-carbon fuel engine (NH3-Diesel);
- Hull air lubricated system;
- Wind Flettner rotors system;
- Shaft generator combined with a battery pack.

In line with the solutions selected, a prototype ship model (i.e. the 'Poseidon") of this new type Aframax vessel will be demonstrated and validated in terms of environmental performance and cost effectiveness.

D. Joint Study on LNG's application for LR2 / Aframax tankers

LMM along with Hyundai Heavy Industries, Shell and ABS Classification society is participating in the development of the "Joint Study on LNG's application for LR2 / Aframax

tankers". In line with the realization that marine LNG is identified to play an important role in the de-carbonization pathway, this Joint Study has the following main objectives:

- To assess the business case of LNG as fuel for potential newbuild LR2 / Aframax vessel, taking into account parameters of carbon footprint, economics and operational factors;
- To refine and optimize the currently available LNG fueled tanker concept design with the aim to further reduce CAPEX; and,
- To reaffirm LNG's role as a de-carbonization pathway in the marine sector.

E. LPGreen Project

LMM along with DNV GL, Hyundai Heavy Industries, Wartsila and DNV GL classification society, has participated in the development of the joint project LPGreen. The LPGreen Philosophy includes in summary the introduction of LPG as fuel, the improvement of cargo handling systems and operation, the overall improvement of energy efficiency and the optimization of hull form and hydrodynamic performance

Purpose of this project is the development of a state-of-the-art LPG Carrier incorporating experience and know-how from all participating parties. The design of this vessel is based on the adoption of innovative technologies and incorporation of the latest advances in hull form optimization, cargo handling systems, engine technology and fueling options, whilst, being compliant with the new IGC Code. The concept vessel is targeted to have a significantly improved environmental footprint as well as better capacity, placing it as a high competitive trading vessel.

It is worthy to note that project results have demonstrated a 6-9% overall efficiency improvement; technical feasibility of LPG as a fuel; up to 30% reduction of fuel expenses; and, up to 30% reduction of loading time.

4.9 Personnel management in a sustainable manner

At LMM, people are valued as Company's greatest asset and fundamental to success; therefore, Company is committed to empowering them to perform at their best. LMM implements a long term strategy for the sustainable management of our personnel, both onboard and ashore, with the aim to assure the good health and well-being of her people in compliance with IMO regulations & industry recognized standards and Maritime Labour Convention. Key areas of this strategy cover for:

a. Prioritizing a health & safe working environment

It is Company's policy to provide and maintain a safe and healthy working environment that encourages all employees, ashore and onboard, to improve and utilize their skills and to become members of efficient teams with the aim to achieve the Company's sustainability strategy.

In this respect, Company conducts its business adhering to all relevant regulations and codes of practice, such as SOLAS, MARPOL and MLC applying for the maritime industry. In addition, Company is ISO 45001 certified, based on which a robust management system has been set in order to identify hazards; establish a proactive approach against risk; endeavoring at all times to prevent accidents affecting human life, the environment and the assets under its care.

b. Supporting the well-being and mental health of Company's personnel

LMM considers that the well-being and mental health of its personnel are essential to Company's business success and prospects for long-term growth and sustainability. Aspects and activities that contribute to the welfare and well-being satisfaction include:

- Provision of health protection, medical care, welfare and social security protection in accordance with MLC 2006 and applicable regulations;

- Maintain a workplace environment and culture that supports physical and mental health and promote 'care-for-people' principles;
- Promote a culture where all health and wellbeing, both physical & mental, issues can be discussed openly through a dedicated support line;
- Building professional resilience as a core competency with the aim to apply stress management and successfully manage stress factors impacting on emotional, cognitive, physiological, behavioral responses to work during the everyday activities;
- Provision of competitive salaries and benefits' scheme above the ones provided by the industry peers;
- Established polices against all forms of discrimination and harassment; and,
- Fair and transparent evaluation based on performance and competency requirements of each position

c. Retaining and advancing the career of Company's personnel

As per Company's principles and in line with its INVEST ON PEOPLE Employment Policy, it is considered that a key to the satisfaction and therefore retention and sustainable management of Company's personnel lies in rewarding, establishment of an open communication, offering of career development opportunities, achieving thus, the build of trust and loyalty.

Company's commitment to these, is reflected in its high retention rates and is materialized through the following:

- Implement a robust promotion and career development program;
- Prioritize the coverage of vacancies through internal promotions of both onboard and ashore personnel, providing, thus, with a long-term career prospect;
- Implementation of a dynamic training program for Company's personnel, that is tailored to their specific needs, based on performance appraisal outcomes, as well as, industry updates and trends;
- Invest on professional studies and participation of Company's personnel in industry forums; and,
- Establishment of a robust scheme for internship opportunities through collaboration with universities, many of which have resulted in permanent hires.

d. Investing on Training, Development & Competence Management

As per Company's principles and in line with its sustainability strategy, great emphasis and investment has been placed on the Competency, Training and Professional Development of its personnel both ashore and onboard. Target is to focus on the development & improvement of personnel skills, adopt and demonstrable characteristics that will improve efficiency of job performance across the organization, and enable the Company sustainable development. The Training, Development & Competence Management of LMM covers for:

- Crew evaluation process covering both soft & technical skills
- Invest on the On-Job-Assessment by Company's Superintendents on board
- Evaluation of competence & identification of training needs during witnessing actual operations on board
- Company's values translated in core competencies which will be then fed through to recruitment and evaluation process
- Company's Maritime Training Centre operating since 2015; having obtained RO Accreditation and Flag State Approval; as well as, being equipped with the most up-to-

date hardware and software as far as navigation, cargo and engine simulators is concerned.

Based on the above, it is evident that Company strives to attract highly qualified personnel, respect their aspirations and ensure the continual professional growth for all Company's employees, both on board and ashore. It is LMM belief that Company's long-term success is dependent of the management of its personnel in a sustainable manner through provision of a working environment and benefits that can support their future and by investing on their growth and development.

5 DASHBOARDS USED FOR MONITORING & REPORTING

LMM, in line with the sustainability strategy and emerging activities adopted, is utilizing a number of tools for processing metrics and data reported with the aim to produce relevant dashboards related to sustainability performance with indicators for monitoring and reporting. Data and information extracted from these dashboards are circulated on a frequent basis to the relevant Departments and the Management in order to be reviewed and analyzed and decide on actions to be taken towards achievement of the sustainability goals set.

KPIs for Monthly / Quarterly / Annual Reports		
• EEOI (gr CO_2 / tonne-mile) • SOx Indicator (gr Sox / tonne-mile) • NOx Indicator (gr NOx / tonne-mile) • Particular Matter Emission (gr PM / tonne-mile) • Garbage Production (m^3) • Garbage Incineration Indicator (%) • Garbage Disposal Ashore Indicator (%) • Sludge Incinerated • Sludge Disposed Ashore • Sludge Produced on board • Bilges Disposed through OWS • Bilges Disposed Ashore • Fresh Water Consumption • Vessel performance based on optimum routing selected • Hull performance (Speed / Fuel consumption)	• EU MRV Annual Emissions Report • IMO DCS Annual Emissions Report • Poseidon Principles, Carbon Intensity and Climate Alignment • ESI as per WPSP (Environmental Ship Index as per World Ports Sustainability Program) • CSI (Clean Shipping Index) • Green Marine • Consumption of Chemicals onboard • Scrubber System Parameters (as applicable): pH, PAH, Turbidity, SO_2/CO_2, Caustic Soda Consumption • Selective Catalytic • Reduction System Parameters (as applicable): NOx-In, NOx-Out, Inlet Temperature, Pressure Drop, Urea Consumption • Exhaust Gas Recirculation System Parameters: EGR rate, Oxygen content, %NOx reduction, EGR blower power, Caustic Soda Consumption	• Incidents Performance, incl. pollution • PSC Performance • Vetting Inspections Performance • Defects Status Reports • Outstanding Planned Maintenance Tasks • PMS unscheduled / scheduled jobs indicator • Fleet Utilization Performance (i.e. stoppages, downtime, off-hire, etc.) • OPEX Budgeted VS Actual • Near Miss Report • Stop Work Authority Report • Suppliers' Evaluation Report • Agents' Evaluation Report • Personnel (Ship / Shore) Retention • Training / Evaluations Indicator

Table 5: Metrics used for creation of Dashboards

6 INTERACTION WITH THE INDUSTRY STAKEHOLDERS

In line with Company's Vision and Social Responsibility Policy for treating in a responsible manner the industry concerns and in a continuous interaction with its Stakeholders, LMM appreciates the role and significance that her stakeholders have when it comes to defining and implementing Company's sustainability strategy.

Company's ambition is to embed sustainability into its core business strategy, as well as, into its processes implemented through the various daily activities. In order to achieve that, LMM seeks to understand the most relevant and important sustainability issues concerning its business and services provided in liaison with its stakeholders in order to shape Company's strategy accordingly ensuring, thus, that Company business decision making process is based on their needs and sustainability actions taken are relevant and responsive to their expectations and concerns.

LMM stakeholders cover for Customers; Industry Organizations; Regulatory Authorities; Community & Society; Employees; Shareholders; Financial Institutions; Suppliers; etc. The following table provides with the main categories of the LMM Stakeholders and the corresponding engaging activity undertaken in line with Company's strategy towards a Sustainable Shipping.

Stakeholder Category	Stakeholder Parties	LMM Sustainability Engagement Activity
Customers	• Charterers • Cargo Owners • Terminals	• Increase service quality through delivery of sustainable and value adding services • Invest on sustainability performance monitoring & reporting • Applying operational measures that contribute to reduction of emissions • Developing new ships designs fitted with technological equipment, which make significant energy savings • Participate in Joint Industry Projects towards de-carbonization through evaluation of alternative fuels adoption
Industry Organizations	• Classification Societies • Recognized (Security) Organizations • Vetting Companies • Various Industry Bodies (i.e. INTERTANKO, etc.)	• Adoption of and compliance with industry standards & regulations set towards de-carbonization • Participate in joint industry projects for the development of new eco-friendly and state of the art ship designs • Evaluate the benefits and feasibility of alternative fuels adoption • Proactively adopt Sustainability Notation for new build vessels • Adoption of new technologies aiming at lowering Company's global carbon footprint • Participation & contribution in studies and guidance documents developed towards materialization of a sustainable shipping
Regulatory Authorities	• IMO • Flag Administration • Local / Port Authorities	• Active participation in public forums and work groups • Maintaining a proactive approach towards the critical challenge of sustainability in shipping and the compliance with relevant regulatory changes • Adoption of new technologies aiming at lowering Company's global carbon footprint • Applying operational measures that contribute to reduction of emissions • Compliance with local environmental regulations and reporting

Community & Society	• Local Community • Public affected • Academic Institutions • NGOs • Industry Competitors	• Have a positive impact on society by creating strong partnerships with the communities in which operating • Support scholarships of students • Regular financial contributions to various non-profit, social welfare organizations, philanthropic foundations and NGOs, including the John S. Latsis Public Benefit Foundation, the Neraida Floating Museum and the Greek Shipowners' Social Welfare Company 'SYN-ENOSIS' • Implement a structured scheme of recruitment, training and development of Cadet Officers and Trainee Ratings from the academies of the countries that the Manning Agents operate • Open sharing of information and data with industry peers concerning sustainability performance monitoring & reporting
Employees	• Seafarers • Shore Personnel • Site Office Teams • Manning Agents	• Put first the good health and well-being of the people onboard and ashore • Supporting the welfare and well-being of employees • Foster an inclusive work environment both on board and ashore • Establishment of an open and two-way communication system • Maintain a recognizing and rewarding work environment whilst engaging and collaborating with employees to achieve our goals • Offer career development opportunities to our people both onboard and ashore • Investing in training & competency development
Shareholders	• Board of Directors	• Robust Company Governance • Company's direction steering into clean-specific strategy • Annual and ad hoc Meetings with the Board of Directors • Quarterly & Annual circulation of financial results • Effective internal control through budget monitoring & reporting process

Financial Institutions	• Banks • Insurance Companies • Underwriting Agents	• Providing with transparent information about the policies, performance, strategy and outlook of the company in sustainability related matters (i.e. climate, environment, social, governance, etc.) for financing of Company's projects and activities • Aligning with the Poseidon Principles framework and transparently providing with relevant data and information with the aim to ensure that climate considerations are integrated into Company's financing activities international shipping's de-carbonization is promoted accordingly. • for integrating climate considerations into lending decisions to promote international shipping's de-carbonization • Vast financial investment on large new build orders with emphasis on clean energy and de-carbonization
Suppliers	• Makers • Shipyards • Brokers • Agents • Ship Chandlers	• Foster sustainable and responsible long term collaboration and relationships with suppliers • Secured contracts with reputable and high quality suppliers • Maintaining list of approved suppliers for products or services directly affecting Company's sustainability performance • Evaluating the performance of our suppliers and integrate sustainability related matters within this evaluation process, i.e. business ethics, environmental compliance & performance • All fleet vessels built at leading shipyards and featuring the latest technology in shipbuilding • Developing new ship designs in collaboration with shipyards and makers fitted with technological equipment • Participate in Joint Industry Projects towards de-carbonization for determination and evaluation of newbuilding vessel concept design that will support alternative fuels adoption

Table 6: LMM Sustainability Engagement Activities with Stakeholders

LMM believes that the numerous initiatives undertaken by the Shipping Industry towards a sustainable shipping can only be realized through strong global partnerships and cooperation of the various stakeholders. That being said, LMM through the adoption of the above mentioned engagement and interaction activities with its stakeholders, will ensure the better understanding of:

- The impact that Company's activities have and how to best manage them in a sustainable manner;
- The potential risks and opportunities associated with each stakeholder and how these can be effectively managed in a proactive and sustainable way;
- The ongoing effectiveness and impact that Company's sustainability strategy imposes on the different stakeholders and their associated interests.

Company's approach moving onwards is to strengthen furthermore the existing and established partnerships with its stakeholders with the aim to contribute actively and materially into the ongoing sustainable development of shipping. This will be materialized through the adoption of the following activities as incorporated in Company's future strategic plan:

- Enhance Company's sustainability reporting practices through improvement of collective data reporting, processing and monitoring concerning sustainability matters.
- Correlate in a clear manner the Company's KPIs and targets with the sustainability strategy undertaken and measure progress against them.
- Promote and enhance standardization of procedures with regards to quality management; labour management; health & well-being; and, environmental management.
- Further invest into clean-specific strategy and adoption of alternative fuels.
- Adoption of technical and operation related measures with the aim to further reduce emissions and carbon footprint of the Company.
- Work collaboratively with Shipyards, Charterers and Classification Societies towards identifying the optimum combination of measures based on a ship bespoke solution with the aim to devise a sustainable de-carbonization strategy.
- Promote vessel recycling activities through the prohibition of the use of Single Use Plastics onboard fleet vessels.
- Further decrease environmental footprint of office activities through the implementation of energy and resource efficiency practices, waste reduction & management and recycling.
- Encouraging an open reporting culture through activation of a seafarers' helpline for provision of emotional support.
- Further invest on training & competency relating to sustainability awareness and management.
- Promote Safety Culture across the organization investing on Credibility, Action-Orientation, Vision, Accountability, Communication, Collaboration, Feedback and Recognition.

7 APPENDIX 1 - REFERENCES

The following international standards, guidelines, and recommendations were considered during the development of this Paper:

- IMO MARPOL 73/78 Annex I – Regulations for the Prevention of Pollution by Oil
- IMO MARPOL 73/78 Annex II – Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk
- IMO MARPOL 73/78 Annex IV – Regulations for the Prevention of Pollution by Sewage from Ships
- IMO MARPOL 73/78 Annex V – Regulations for the Prevention of Pollution by Garbage from Ships
- IMO MARPOL 73/78 Annex VI – Regulations for the Prevention of Air Pollution from Ships
- Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne Sound Insulation - ISO 717-1: 2013 - International Organization for Standardization. Geneva.
- Anti-Fouling Systems – IMO International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) and associated Conference resolutions
- Ballast Water – International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention), IMO BWM/CONF/36 and associated Guidelines
- Cargo Vapor Emission Control – IMO MSC/Circ. 585 Standard for Vapor Emission Control Systems or USCG Title 46 CFR Part 39 Vapor Control System (See 5C-1-7/21 of the ABS Rules for Building and Classing Marine Vessels)
- Characterization of the Performance of Illuminance Meters and Luminance Meters - ISO/CIE 19476:2014,
- Code on Noise Levels on-Board Ships - IMO Resolution MSC.337 (91) International Maritime Organization. (2012). ((2012). London.
- Diesel Engine Exhaust NOx Content – Technical Code on Control Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code, 2008), IMO Resolution MEPC.177 (58)
- Ergonomics of the Thermal Environment – Instruments for Measuring Physical Quantities - ISO 7726:1998,
- Exhaust Gas Cleaning Systems – IMO Resolution MEPC.170 (57) Guidelines for Exhaust Gas Cleaning Systems
- Garbage Management – IMO MEPC Circular 317 Guidelines for the Development of Garbage Management Plans
- Guide for the Classification Notation Underwater Noise – American Bureau of Shipping
- Guide for Crew Habitability on Ships - American Bureau of Shipping
- Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life – IMO MEPC.1/Circ.833
- Maritime Labour Convention - International Labor Organization, 2006. Geneva

- European Union (EU) MRV Regulation (Regulation (EU) 2015/757 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC)
- Amendments to MARPOL Annex VI on Data collection system for fuel oil consumption of ships, adopted by resolution MEPC.278 (70)