

# LIGHTHOUSE

A Monthly Technical Magazine

Private Circulation Only

## R.I. INSTITUTE OF NAUTICAL SCIENCES

TVR Nagar, Arupukottai Road, Madurai - 625 022.

Published by Marine Engineers and Navigators Association (MARENA)

VOYAGE - 19

AUGUST 2023

CALL - 8

## WORLD'S 1ST GREEN METHANOL-POWERED CONTAINERSHIP DOCKS IN EGYPT

 Madan Kanagaraj - GME.,

The world's first containership powered by green methanol has reached East Port Said, Egypt, its third bunkering stop on its maiden journey from Ulsan, South Korea to Copenhagen, Denmark.

The 2,100 TEU feeder was built by South Korea's Hyundai Mipo Dockyard and delivered in July.

The 172-meter long ship runs on MAN Energy Solutions' G50 or G95 dual-fuel engine

made a stop in Singapore on July 27, where it received another batch of green methanol via Hong Lam Marine's tanker MT Agility.

The operation marked the world's first ship-to-containership methanol bunkering operation, serving also as a breakthrough for Singapore in its multi-fuel journey, as it was the city-state's first methanol bunkering operation.

The ship is set to receive a new batch of fuel in Egypt and, finally Rotterdam, before reaching Copenhagen where it will be christened in September.

The ship's godmother will be the president of the European Commission Ursula von der Leyen.

The two bunkering operations will include ship-to-ship bunkering operations enabling the vessel to make the entire maiden voyage from Ulsan to Copenhagen fuelled by green methanol.

Maersk currently has 25 dual-fuel vessels on order ranging from 2,000 TEU container capacity to 16,000 TEU. The firm expects that the full fleet of green fuel-powered vessels will be delivered and operational by 2027.



The ship, owned by industry major Maersk, arrived at the port on Tuesday, August 15, the Suez Canal Economic Zone (SCZONE) said.

Maersk also shared footage of the vessel transiting the Suez Canal, the world's fastest maritime crossing.

capable of running on green methanol or conventional fuel.

Maersk has secured green methanol for the ship's full maiden voyage from OCI Global, a Dutch-based green methanol producer.

The ship received its inaugural fueling at the Port of Ulsan, South Korea on July 16, and

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### LIGHTHOUSE

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R.L. Institute of Nautical Sciences, Madurai.

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To meet the 2040 target of net-zero greenhouse gas emissions in time, the shipowner aims to transport a minimum of 25% of ocean cargo using green fuels by 2030, compared to a 2020 baseline.

The arrival of the vessel to Egypt coincides with a major expansion at the East Port Said, which is affiliated to SCZONE, including the integration between the port and the industrial zone in East Port Said.

Specifically, Egypt is investing strenuous efforts to turn SCZONE into a clean energy production and green fuels hub.

Egypt has abundant wind and solar resources which can be used to produce green hydrogen and hydrogen-based green fuels such as e-methanol and ammonia. Due to its strategic geographical

position, the country also has market conditions to become a global powerhouse in green energy, and the Egyptian Government is trying to tap into this potential.

Most recently, Egypt made a step towards 'establishing the countrys first green methanol production project' which will include investments of about \$450 million and produce 40,000 tons of green methanol per year.

The joint development agreement for this project was signed on 14 May by Egypt's Alexandria National Refining and Petrochemicals Company (ANRPC) and Norwegian renewable energy solutions provider Scatec in collaboration with the Egyptian Bioethanol Company.

*Courtesy: world maritime news*

## SUPPORTING THE ENERGY TRANSITION WITH SUSTAINABLE SHIPS



**Vinay Kumar - GME.,**

Damen, with its ambition to become the world's most sustainable shipbuilder has invested considerable time over the last years investigating the potential to reduce the emissions of its products. To this end, the shipbuilder has been working together with industry partners to achieve the most significant and effective results. Damen's offshore vessel portfolio has featured heavily in these efforts.

The CSOV 8720 – an exercise in efficiency Over the past twelve months, this work has borne fruit and the first

of a series next generation vessels is being prepared for the market. The Damen Commissioning Service Operations Vessel (CSOV) 8720 is designed to support wind farm installation in northwest European waters. As such, it fulfils a key role in the energy transition.

In alignment with this role, the vessel features an efficient propulsion system that never uses more power than is necessary. With its hybrid-electric system, the vessel has no need for a running backup diesel generator. Another feature is the advanced

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switching in the electric distribution system which can rapidly detect faults and take corrective actions. Taken together, these characteristics contribute to a reduction in fuel consumption – and therefore emissions—in the region of 5 – 10%.

Prepared for the future  
With the CSOV 8720, Damen is also preparing for the future. The vessel's hybrid system, for instance, is ready for expansion. With this, if offshore charging becomes a possibility, the CSOV can be quickly adapted to sail fully electric and zero emissions for extended periods of time. Potential future availability of alternative fuels has



also played a role in Damen's development of the vessel. The offshore wind industry is investigating the possibility of producing clean hydrogen at wind farms. When this moment arrives, the CSOV will be well positioned to take advantage.

Continual sustainable evolution  
In the first phase of this development, Damen is supporting its client in preparing the vessel to sail on hydrogen 13% of the time, with a commensurate reduction in CO<sub>2</sub> emissions. With ongoing evolution of the design, it is the intention to work towards 100% hydrogen capability in the future.

Similarly, Damen is also preparing the CSOV to use methanol as a fuel.

All tanks, cofferdams, fuel handling spaces and hazardous zones are already included. Damen is installing the vessel with a engines that can be converted to run on methanol once the market is there, which is expected within the coming decade.

Supporting the transition to help its clients prepare for this transition, Damen is providing general arrangement plans that detail the path to a straightforward conversion. In the initial phases of using methanol as a fuel, Damen anticipates that the vessel's emissions will be reduced in the region of 85%. In time, with the

expected increase in production of clean methanol, there is the potential for this to reach zero emissions.

Zero emissions offshore support  
In another step towards zero emissions offshore operations, the division is currently developing a fully electric version of its Service Operations Vessel (SOV). This follows on from Damen's successful deliveries of a fully electric harbour tug and several electric ferries.

To make this efficient propulsion solution a reality for larger ships, Damen is working with UK-based MJR Power and Automation towards the development of an offshore charging system. A number of

offshore wind energy companies have expressed interest in the concept, which would be a considerable boost in efficiency with the direct harnessing of wind generated energy on location.

The bigger picture Damen's offshore wind division is also in the preliminary stages of the development of a lifecycle sustainability assessment. In the coming years, the aim is to use this to calculate the carbon footprint of the division's product over the entire lifecycle. The assessment will take into consideration every aspect of construction and operation, including the production of materials, the emissions created by employees getting to the work location, the recycling at the end of life and everything in between.

Damen Shipyards Group – Oceans of Possibilities  
Damen Shipyards Group has been in operation for over ninety years and offers maritime solutions worldwide, through design, construction, conversion and repair of ships and ship components. By integrating systems we create innovative, high quality platforms, which provide our customers with maximum added value.

Our core values are fellowship, craftsmanship, entrepreneurship and stewardship. Our goal is to become the world's most sustainable shipbuilder, via digitalisation, standardisation and serial construction of our vessels.

Damen operates 35 shipyards and 20 other companies in 20 countries, supported by a worldwide sales and service network. Damen Shipyards Group offers direct employment to more than 12,000 people.

*Source : [Offshore-Energy.biz](https://www.offshore-energy.biz)*

# WORLD'S LARGEST SAIC ANJI'S LNG-FUELLED CAR CARRIER HITS THE WATER



Shikha - GP Rating

Jiangnan Shipbuilding, a subsidiary of China State Shipbuilding Corporation, has launched a 7,600 CEU liquefied natural gas (LNG) dual-fuel vehicle carrier being built for SAIC Anji Logistics, a subsidiary of China's automobile manufacturer SAIC Motor.

Shanghai Ship Research and Design Institute.

The vessel features a total length of 199.9 meters, a moulded width of 38 meters, a moulded depth of 15.5 meters, a structural draft of 10.2 meters, and a service speed of 19 knots. It is classed by the China

efficiency of the vessel or process, contributing to reduced operational costs and environmental impact.

These advancements are complemented by a comprehensive LNG containment and gas supply infrastructure, alongside a state-of-the-art ro-ro equipment system.



The ship was ordered back in 2022 as part of a deal for two units. The vessels were described at the time as the world's largest dual-fuel car carriers. CSSC and SAIC Motor signed a shipbuilding agreement in Shanghai on 17 January 2022.

The launching comes exactly one year since Jiangnan Shipbuilding started. This type of ship was developed and designed by

Classification Society (CCS) and DNV.

The ships feature WinGD X-DF main engine and iCER system, a technology used in the context of LNG carriers and LNG-powered ships where cryogenic energy recovery is crucial. This system captures and utilizes the cold energy generated during the vaporization of LNG, which is normally released into the atmosphere as waste. By harnessing this energy, the iCER system enhances the overall energy

With 13 cargo decks including four movable decks, the vessels are also equipped with a C-type double-ear liquid tank with a capacity of 4,000 cubic meters, which meets the needs of 19,000 nautical miles at an economical speed.

Complying with international environmental regulations, the ship type represents a new generation of post-Panamax car carriers.

*Courtesy:  
world maritime news*

# TUTICORIN PORT VISIT

Madan K & Vinay Kumar T - GME.,

## ABOUT



## CHIDAMBARANAR PORT:

V.O. Chidambaranar Port Authority is a port in [Thoothukudi, Tamil Nadu](#), and is one of the 13 major ports in [India](#). It was declared to be a major port on 11<sup>th</sup> July 1974. It is the second largest port in Tamil Nadu and the third largest container terminal in India. V.O. Chidambaranar Port is an artificial port. This is the third international port in Tamil Nadu and it is the second all-weather port. V.O. Chidambaranar Port traffic handling has crossed 10 million tons from 1<sup>st</sup> April to 13<sup>th</sup> September 2008, registering a growth rate of 12.08 per cent, surpassing the corresponding previous year handling of 8.96 million tons. It has services to the USA, China, Europe, [Sri Lanka](#) and Mediterranean countries. The Station Commander, Coast Guard Station Thoothukudi is located at V.O. Chidambaranar Port Authority, Tamil Nadu under the operational and administrative control of the Commander, Coast Guard Region (East), Chennai. The Coast Guard Station V.O. Chidambaranar Port Authority was commissioned on 25<sup>th</sup> April 1991 by Vice Admiral SW Lakhar, NM, VSM, the then Director General Coast Guard. The Station Commander is responsible for Coast Guard operations in this area of jurisdiction in Gulf of Mannar.

**About Visit:** The visit to V.O. Chidambaranar Port started on 27<sup>th</sup> July, 2023 at 09:00 hrs from R. L. Institute of Nautical Sciences. There was a bus containing total of 22 students under the guidance of a

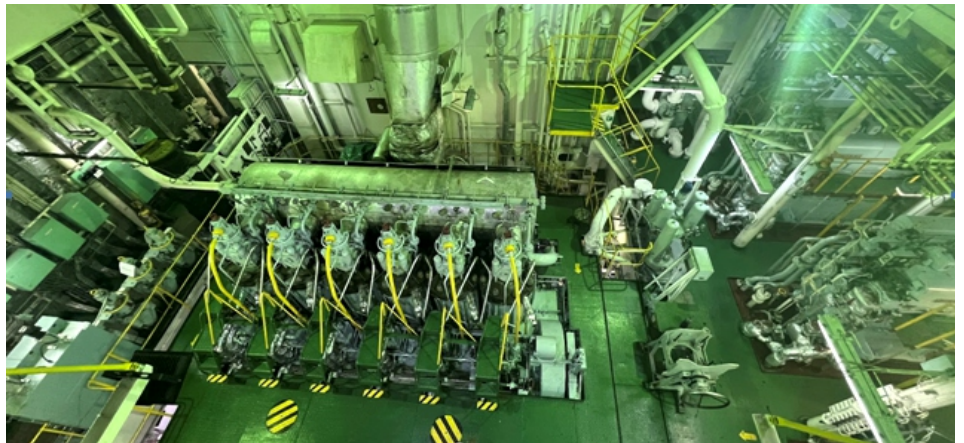
faculty member Mr. Veera kumar.P and OIC Mr. Porchezian.A. The bus reached V.O. Chidambaranar Port around 11:30 hrs. Then students visited the port museum from 11:30 hrs. to 12:00 hrs.



Then we entered harbor at 12:15 hrs. and visited **SEABOSS (IMO 9288332 )** ship which comes under **THENAMARIES COMPANY LTD.**

officials. The bus started from Tuticorin around 14:45 hrs. and reached R. L. Institute of Nautical Sciences at 17:30 hrs.

The visit was meticulously planned and well managed till we returned safely to RLINS. The staff and students were thankful to the



We completed the **Seaboss** ship visit and came out at 13:15 hrs. The visit ended after the lunch and the feedback was received from the

V.O. Chidambaranar Port Authority and R. L. Institute of Nautical Sciences for granting the permission to the visit.

# CAREER AWARENESS IN MARITIME INDUSTRY



*Dr.R.Lakshmiathy, President giving away the memento to the Chief Guest, Prof.Dr.P.Udhayakumar, Secretary, Institution of Engineers (India), Madurai Local Chapter.*

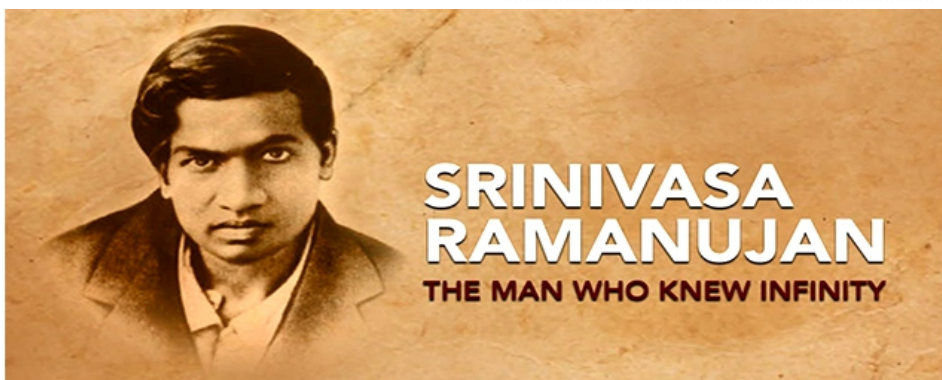
RLINS in Association with “The Institution of Engineers (India)” Madurai Local Chapter conducted a Seminar on Career Awareness in Maritime Industry on 12.08.2023 at RLINS AV Room. The programme started at 10:30 am .Mr Gnana Edison Raj, Principal, RLINS gave the welcome address. Our president Dr.R. Lakshmiathy presided over the function .He narrated his past experience of how he started R.L Institute of Nautical Sciences in Madurai in 1999 with the humble beginning. Of course the

first course he started was B.Sc. Hotel Management in 1984. Mr.D.Nagasubramanian elaborately explained through power point presentation how the sea farers can come out successfully in their career after successfully completing the GME and ETO .He also delineated upon the career progression of GME and ETO cadets on board. Next Mr Chandran Moorthy, PRO demonstrated the career prospects of GME and ETO cadets who can earn lucrative pay package comparing to shore jobs.The Chief Guest Prof.Dr.

P.Udhayakumar, Secretary, Institution of Engineers (India), Madurai Local chapter took the limelight and delivered a wonderful Motivational speech to the cadets. He briefed about the importance of GME and ETO and also compared with the job requirements in IT industries. At the same time he insisted on the importance of core industries where they can get good growth trajectory. At last Dr.M.Kumarasamy, Vice-Principal, RLINS, proposed vote of thanks. The function came to a close with the national anthem.

## THE MAN WHO KNEW INFINITY – SRINIVASA RAMANUJAN

 S.Thiagarajan-Faculty



### Introduction

From 1887 to 1920, The King of Number Theory lived in this earth. He is Srinivasa Ramanujan, born in western Tamil nadu of India. Though he had no proper training or

learning in Mathematics, Numerous Theories in Numbers and its nature, Analysis, and infinite series were derived by him. His theory is a well-resourced contribution to the fundamentals of Numbers in Mathematics.

### Ramanujan – A Born Genius

The ability of Ramanujan is equal to a modern computer to solve complex problems in Mathematics. His ability may clearly exhibit by the following interesting event happened in his childhood days



At in his childhood days stage, he was a regular visitor to a temple, and as a good observer, he observed various events occurred in the temple. On every day various prasadhams (Devine foods) were distributed to Devotees. The prasadhams were prepared and stored in a large copper vessels for the distribution. One fine day two Archagars (Temple Priests) were distributing two different prasadhams to the devotees after the prayer. One was rice cake and another one was cooked chickpeas. All the Devotees stood in queue and got their divinely prasadam.

Ramanujan also stood in queue and got his prasadam. He just observed the number of Devotees left over behind him and remaining prasadam in the vessels. He narrated to the priests that as per the quantity of foods available in your vessels, Rice cake will not be sufficient for 5 people, and chickpeas will not be sufficient for four people. The devotees around him and priests were laughing and

just ignored him. After some times at last the foods in the vessels were over exactly 4 people could not get chickpeas and 5 people could not get rice cake.

The priests and devotees wondered and they felt Ramanujan was a genius and celebrated born talented mathematician. In this incident the absolute results were predicted by the mathematician by the parameters of the number of people, size of food and vessels which were observed by him regularly. This was his ability in Mathematics! It was a very impressive event happened in Ramanujan's life and it clearly shows his ability in numbers.



### Ramanujan – A Mathematician

Later he became a popular Mathematician. Some of his contributions in mathematics are Ramanujan's sums, “Landau-Ramanujan constant”, Mock theta functions, Ramanujan conjecture, Ramanujan prime, Ramanujan theta function, Ramanujan's master theorem, Ramanujan–Sato series etc.....

### Ramanujan's Sum

Ramanujan's sum actually denoted as  $c_q(n)$  in [number theory](#).

It is a function of two positive integer variables  $q$  and  $n$  defined by the formula,

Ramanujan's Sum:

$$c_q(n) = \sum_{\substack{1 \leq a \leq q \\ (a,q)=1}} e^{2\pi i \frac{a}{q} n}$$

### Reference to Ramanujan's some great works

*Ramanujan, S. (1914). "[Some definite integrals](#)".*

*Messenger Math. 44: 10–18.*

## 77<sup>TH</sup> INDEPENDENCE DAY CELEBRATION AT RLINS



**R.L.Institute of Nautical Sciences celebrated 77<sup>th</sup> Independence Day Celebration on 15<sup>th</sup> August, 2023 at parade ground with verve and exuberance.** Our principal, Mr.Gnana Edison Raj hoisted the tri colour and paid respect. Dr.M.Kumarasamy, Vice-Principal took part in it and paid floral tributes to the national flag. Mr.Porchezian,

OIC was also present. ALL the cadets from G.P Rating, GME and ETO assembled in the parade ground earlier and participated with enthusiasm.

As part of our Prime Minister's motto of bringing patriotism to everywhere "HarGharThiranga", we also hoisted our national flag in the façade of the main building.

# EDUCATIONAL FIELD TRIP TO RLINS



Principal of U.P Matriculation Higher Secondary School, Kovilpatti along with Mr.Gnana Edison Raj, Principal, RLINS, Dr.M.Kumarasamy, Vice-Principal, Mr.ChandranMoorthy, PRO, Faculty members and students .

As part of the Educational Field Trip, U.P Matriculation Higher Secondary School, Kovilpatti visited R.L Institute of Nautical Sciences on 26<sup>th</sup> August, 2023. They visited Ship in Campus, Machine room and Simulation lab and had a gainful experience of how a ship is being operated in reality.



Students of U.P Matriculation Higher Secondary school, Kovilpatti having a glimpse of our Ship in campus.



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Minimum age 17½ Years Maximum age 25Years

**Frequency :** 2 Batches every year-January and July

**Medical fitness :** As per DGS norms.

**Career Path**

- 6 Months Pre-Sea Training Approved by (D.G. Shipping Govt. of India)

- Sail as AB for 12 to 18 Months on board ship get Watch keeping certificate (DG Shipping)

- After 12 Months of training
- After 36 Months of Sea time appear for 2nd mate NCV/MEO Class IV NCV. Then sail as a III officer/IV-Engineer

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(Approved by Directorate General of Shipping, Ministry of Shipping Govt. of India)



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