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HKJB & HKIMT Activities

Unmanned Technologies in Shipping Industry Symposium

The so called “unmanned” ships existed in the shipping industry for many years. Are they truly unmanned? The answer is certainly not! These ships are called “unmanned ships” because they do not require engineering officers to take watch during the day.

For the purpose of forming a regulatory scoping exercise, “Maritime Autonomous Surface Ship (MASS)” or “unmanned surface vessel (USV)” in the symposium papers had been defined by the International Maritime Organization (IMO). A MASS ship is one which, to a varying degree, can operate independently of human interaction. In IMO Maritime Safety Committee (MSC) 99th session (16-25 May 2018), the degrees of autonomous ships were:

Degree 1: Ship with automated process and decision support;
Degree 2: Remotely controlled ship with seafarers on board;
Degree 3: Remotely controlled ship without seafarers on board;
Degree 4: Fully autonomous ship.

A corresponding group was established on MASS to test the framework of the scoping exercise and reported back to the 100th MSC Session in 3-7 December 2018.

Guangdong being one of the major manufacturing provinces in China with comprehensive maritime supporting facilities, industry and research and development centers which is at the forefront on communication technologies of the country, is tasked to coordinate the development on the control and communication of USV. In order to promote, exchange and enhance the cooperation of unmanned technology in the shipbuilding industry and to build an ecological circle for the R&D and application in the region, the Guangdong Society of Naval Architecture and Marine Engineering joint hands with The Alliance of Guangzhou Intelligent Unmanned Ship Research and Production Technology Centre to organise for the first time a "Symposium on Intelligent Unmanned Technology in the Shipbuilding Industry 2019" in Guangzhou on 27thJune 2019.

Hong Kong Delegates & General Secretary of GDSNAME, Ms. Li Dong Ming

This symposium was held at the conference hall of Guangzhou Sino Hotel. There were 26 supporting organizations with over 80 participants. Three delegates namely Alan Tsang, Matthew Shu and Simon Chen representing HKIMT, HKJB of RINA & IMarEST and HKIE MMNC Division of HKIE attended the event.

There were 10 papers presented and the contents were mainly focused on: (a) development and application of unmanned ship technology; (b) manufacturing and industrial Internet Technology Development and their applications.

In the paper presented by Mr. Yuan Ming-ze, Deputy Director of Shengyang Branch of The Institute of Automation introduced the background of USV development and the components that are pertinent to become an USV. And these key components included the navigation, remote control and communication systems. He explained that the main benefits of USV compared with manned ships are: (a) save manpower resources; (b) reduce the chances of maloperation; (c) enhance the accuracy of movement control; (d) optimize navigation route; and (e) reduce fuel consumption. These benefits of USV were already specified by CCS in their Intelligent Ship Regulations (2015).

He then went on to explain 6 models of USV developed by their institute. These USVs were deployed on specific tasks such as hydrographic measurement, under water search and exploration, environment monitoring, patrol and rescue and fire-fighting etc.

Dr. Wang Yuan-yuan from Zhuhai Yunhang Intelligent Technology Co. Ltd. presented a paper on the “Research, Development and Application of Ship Autonomous Navigation”. He introduced his company’s first-generation product - Smart Navigation. This system has realised the integration of radar, AIS and visual perception information by electronic means instead of relying on the interpretation and judgement of seafarers on the information. The integrated information would be able to provide an accurate, stereoscopic navigational vision for the operators. This system is suitable for use in complicated waterways and can solve the low visibility problems in foggy or night navigation. Human interventions to the system are kept to the minimum. The use of the system can greatly reduce human errors on the operations of ships thereby enhancing safety.

At present, his company is focusing on the research on ship remote controlled system through the use of 4G / 5G communication system from shore. A project of 13M / 1 TEU unmanned surface vessel is now under development to Degree 2 autonomous ship requirements by his company.

Another notable paper was presented by Mr. Zheng Rui-chong, General Manager of Guangzhou Marine Equipment Company. His paper explained the unmanned control system based on 5G application.

It appeared that many of the current autonomous ship developments in Guangdong are still at the Degree 1 level. By laying a solid foundation at this level, the industry would be able to avoid biting off more than it could chew when developing autonomous ships in the next levels!

(Reported by Simon Chen, Alan Tsang)

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Joint HKSOA/JSMEA Seminar- on machineries and equipment

A Joint HKSOA/JSMEA technical seminar was held in Kowloon Shangri-la Hotel, Grand Ballroom from 1:00 p.m.to 6:00 p.m. on 9 July 2019. Nineteen Japanese ship machinery and equipment manufacturers participated in this seminar.

The seminar presented the latest technologies on ship machineries and equipment such as main propulsion and auxiliary dual fuel engines, green gas engines, hydraulic power units (HPU), ultra-low sulphur fuel oil (ULSFO) filters, fresh water coolers, propeller boss cap fins (PBCF), ballast water management systems, power supply systems, high performance and fuel-efficient antifouling hull coatings, smart sounding scale for marine gas oil (MGO) supports, newly designed turbo chargers, grab buckets and bulk handling machineries etc.

The turnout of shipowners, ship managers, technical superintendents and suppliers were impressive. Richard Dias, Rakesh Sethi & Albert Lo from HKJB attended this seminar. We all benefited from the presentations and learnt a lot about the latest developments in the marine engineering field.

(Reported by Ir. Albert LO)

Installation of Exhaust Gas Cleaning (EGC) Units in Yiu Lian Dockyards (Shekou)

On 27 July 2019 (Saturday), a Technical Visit was jointly organized by the HKJB and HKIMT to Yiu Lian Dockyards (Shekou) Limited (友聯船廠(蛇口) 有限公司) of the China Merchants Group to see the installation of Exhaust Gas Cleaning (EGC) Units on ships to reduce the emission of sulphur oxides from the exhaust gases to less than 0.5% m/m (mass by mass).

The visit was coordinated by Mr. Ricky Lai of HKJB and led by the past Chairmen Mr. Louis K S Szeto and Mr. M C Chan of the HKJB and HKIMT respectively.

On that day, Mr YEUNG Ngan-mo, Manager – Tug Services Department of Yiu Lian Dockyards Limited met us at the Shenzhen Bay Control Point at 09:30. Bus transport was provided by the company to take us to the dockyard. It took us an hour to get there and we arrived the yard at around 10:30. Our visit began as usual in the conference room.

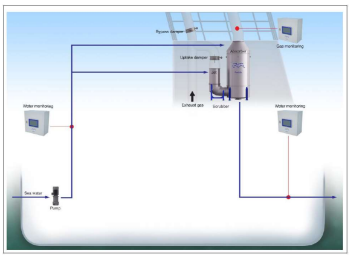
An explanation was given to us as to why such a system is needed on a ship. Regulation 14 of Annex VI of MARPOL by IMO required that by 1 January 2020, the upper limit of 0.5% m/m sulphur fuel should be used on board ships to reduce the harmful effect of sulphur oxides emanated from ship to the environment. Flag administrations are permitted to give shipowners two options to fulfill the requirement: (a) burning only fuel with sulphur content of 0.5% m/m or (b) installation of exhaust gas cleaning systems (EGC) to reduce the sulphur content in the gas emission to less than 0.5% m/m. The EGC system is a system that falls under option (b). The visit enabled us to have an in-depth understanding to the installations and physical operation of the systems on ships.

HKJB & HKIMT Delegates

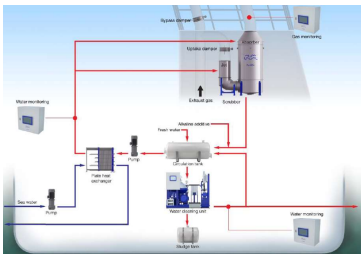
Scrubber

The core component of the EGC system is the scrubber which is used to clean SOx out of the exhaust gas. The scrubber if installed properly can remove 98% of SOx in the exhaust gas. There are three common ways to install an EGC system: (a) open, (b) closed and (c) mixed. These various systems are installed to cater for the varying sulphur content of the fuel oil and the discharging criteria of the scrubbing water into different parts of the world.

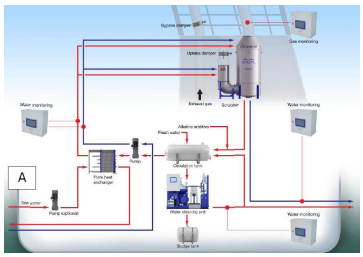
In an open EGC system, the alkalinity in seawater is used to neutralize the sulphuric acid formed after SOx dissolved in water. This system is suitable for use in many parts of the world where the sea water alkalinity is high. For a closed EGC system, sea water is only used to cool the scrubbing water. Fresh water is used for scrubbing and is dosed with alkaline solutions to neutralize the sulphuric acid in the exhaust that is scrubbed out by the scrubbing water. The alkalinity of the scrubbing water is monitored and kept in the closed loop. This system is most suitable for use in lakes and in protected parts of the sea where the discharge of harmful substances is prohibited. Mixed EGC system is a system that can operate either in an open mode and/or in a closed mode. This system can be used at sea, river estuaries and in protected parts of the sea where the alkalinity of the sea water is low and/or the discharge of harmful substances is prohibited.



Open



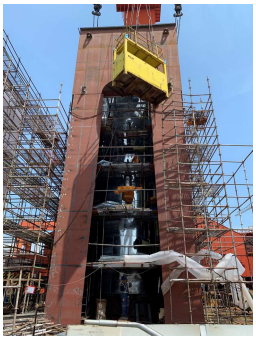
Closed



Mixed

Yiu Lian Dockyard is capable of carrying out the modifications of the ship and the installation of scrubbing system such as Alfa Laval, Yara, PurteQ, CR Ocean etc. on a ship within 7 days. Careful planning is therefore needed to carry out each modification on time. Before starting the installation, the ship's structural drawings are reviewed to find the right space and location to install the system. The placement of the key components such as dampers to divert the exhaust gases to the scrubber, scrubber, cooling and circulating pumps, tanks

(only for closed and mixed systems) and monitoring devices must be well thought through before installation. The scrubber is generally installed close to the funnel. Most of the scrubbing system is pre-fabricated as a module in the yard. When the ship arrived the yard, all preparatory works are carried out immediately. The pre-fabricated module is then installed and the necessary connections made to the unit to complete the installation. In view of their efficiency and demand, the shipyard estimates that they may be able to complete 112 EGC modifications in 2019. Alpha Laval PureSOx and PurteQ EGC systems are popular among shipowners. We saw many built-up module sections for these systems in the yard.



PurteQ

Alpha Laval PureSOx

It was certainly a mind broadening experience for all those who participated in this visit. We were very grateful to Mr. Yeung and Yiu Lian Dockyard staff for their time and effort in explaining and taking us around in the yard. After a buffet lunch at the yard, we departed at 14:30 for Hong Kong. The event was a great success!

(Reported by Mr. Y.K. Lee, Leslie and Mr. K.H. Lai, Rickie)

Technical Visit and Sporting Event with GDSNAME

A technical visit and a sporting event were organized with the Guangdong Society of Naval Architecture and Marine Engineering (GDSNAME) in Guangzhou on 3 August 2019.

HKJB, HKIMT and HKIE – MMNC joint together to form a team to visit the Yuanhang Propellers Manufacturing Co. Ltd. (遠航螺旋槳製造工廠) and the China State Shipbuilding Cooperation Heavy Equipment Co. Ltd (中船重型裝備有限公司). The team played a game of football at the CSSC training center after these visits.

The chairmen from HKJB and HKIMT, Mr. Eric Lee and Mr. Metthew Shu and the past chairman of HKIE – MMNC, Mr. M. Y. Chan led the team to the visit. We took the 07:50 High Speed Rail at Kowloon West and arrived Guangzhou South Station at 09:30. We were then taken by bus to Yuanhang Propellers Manufacturing Co. Ltd.

The propeller factory was established in 1993. After years of development in its manufacturing hardware and processes, it has become one of the top propeller manufacturers in China. Propellers have complex curvature. The manufacturing of these propellers requires complicated casting technology and the difficulty level escalates with size. After casting, the propeller has to be grinded, polished and heat treated by skill craftsmen. To ensure the product quality and the dynamic balance of a giant propeller, the curvature of blades is required to be made to great precision. The casting has to be X-ray checked to ensure that there are no air holes inside the casted propeller which may otherwise weaken its metallurgical structure and may break upon use. All these processes are carried out with the help of precision tools and the experiences of a skillful work force. After years of research and development, the company is at the leading edge of controllable pitch propeller blade and hub production in China.

In 2008, the company had succeeded in delivering an ABS Class Product which is 8 meters in diameter and 30 tons in weight and in July 2012, the company managed to manufactured a propeller of 8.4 meters diameter and weight up to 40 tons with KR CLASS recognition. Now, the production capacity has reached 60 tons for a single propeller.

The visit to Yuanhang was a mind broadening experience. We were able to see from scratch how a propeller was made and turned into its final shape. Without going through this process, we were not able to imagine the hard work and time taken to the production of a propeller. We were all very grateful and thankful to Yuanhang's management for giving us such wonderful opportunity!

After lunch, we went to China State Shipbuilding Corporation Ltd. (CSSC) to see the assembly line of the tunnel boring machines.

CSSC is located in Dagang Base, Dagang Town, Nansha District, Guangzhou City. It is a state-owned industry and is also one of China's military industrial supplier. This base is specialized in the research and development, design and manufacturing of "underground space construction equipment".

As a national brand of underground space construction equipment, CSSC is determined to carry out their own research and development. They have successively designed and developed a series of "China Ship Shield" products developed from the proprietary technologies with South China University of Technology, China Shipbuilding Power Research Institute and Shanghai Jiaotong University. The company has 11 utility model patents and owned the "China Ship

Shield", "China Ship Jacking" brands. The company has a production capacity of 45 sets of shield machine per annum. Their products have been used in the underground constructions in Beijing, Shanghai, Guangzhou, Shenzhen, Foshan, Nanning, Nanchang, Chengdu, Fuzhou and other large to medium-sized cities today. They are also sold internationally to places like, United States, Russia, Singapore, India, Iran and Taiwan etc.

The visit to CSSC was a mind bogging experience. We knew what had been used to burrow tunnels beneath our city but we did not know what they look like at a close distance and how they were made. Now we knew!

Immediately after the visit, we went to the football field of the CSSC Training Centre close by and had a friendly football match with the GDSNAME team. After 180 minutes, scoring 3 goals, the exhausted and satisfied team sat down and enjoyed together a dinner hosted by GDSNAME.

We were very grateful to GDSNAME for their efforts in lining up the visits, the game and the meals. It was indeed a fulfilling and very enjoyable day for us all! We took the high-speed train from Guangzhou South Station to Kowloon West Station and arrived safely at around 23:00.

(Reported by Leslie Lee and C. H. Kwan)

ISC Meeting for PAAMES/AMEC 2020 and Visits

An International Standing Committee (ISC) meeting was held on 16th September, 2019 at the Ambassador Hotel in St. Petersburg, Russia to discuss and coordinate the Pan Asian Association of Maritime Engineering Societies (PAAMES) meeting and the Advanced Maritime Engineering Conference (AMEC) which is to be held in St. Petersburg 2020.

PAAMES meeting and AMEC are organized in turn by PAAMES member societies. The 9th coming PAAMES meeting and AMEC 2020 happened to fall in the hands of the Russian Science and Technology Society of Shipbuilders of the Russian Federation. In order to discuss and finalize the details of the meeting and

Hong Kong Delegates together with Russia, UK and Japan


Hong Kong delegates in the ISC meeting

conference in 2020, 8 member societies from different regions and a total of 20 participants attended this meeting. HKIMT was represented by the Chairman, Mr. Matthew Shu, Honorary Secretary Dr. KS Fung, Council Member Mr. Alan Tsang and Co-opted Council Member Mr. Simon Chen.

The ISC meeting kicked off at 9:00am in the Ambassador Hotel by Prof. Kirill Rozhdestvensky, Vice-Rector of State Marine Technical University (SMTU). After the participating members gave a short introduction about themselves, members started to discuss and comment on the various aspects of the AMEC in 2020 which included matters such as conference arrangement, promotion, contribution of papers and on how to attract the participation of young engineers in the field etc.

In view of the number of papers that may be submitted to the conference, it was suggested to use the same practice as in previously AMEC conferences that member societies should be responsible for the collection and the initial scrutiny of the papers submitted from their regions. Dr. Fung of HKIMT informed the Committee that papers from non-PAAMES member societies should also be welcome. These papers should be sent to the nearby PAAMES member societies for reviewing before giving recommendations for submission to the organizer. A list and a summary of the papers so collected together with their recommendations should then be forwarded to the PAAMES International Programme Committee for their final considerations.

After the ISC meeting, a boat trip along the rivers and canals of St. Petersburg was hosted by the organizer in the evening. All delegates were invited to this wonderful tour. While enjoying the local delicacies on boat during dinner time, the participants continued to exchange their subjects of interest among themselves under such a relaxing atmosphere.

SMTU

MROX

The HKIMT representatives also took the opportunity to attend the International Conference on Marine Robotics in Ocean Exploration (MROX) which was organised by St. Petersburg SMTU and the Science & Technology Society of Shipbuilders of the Russian Federation about the same time. The opening ceremony of this conference was held in the Assembly Hall at SMTU on 17th Sep. 2019. Prof. G.A. Turichin, Rector of SMTU and Prof. V.L. Alexandra, President of NTOS and Admiral V.V. Chirkov, Principal Adviser of the president of the United Shipbuilding Corporation were there to inaugurate the opening of the conference.

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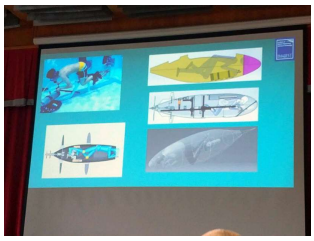
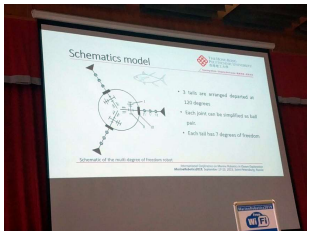
There were a total 51 papers presented in the first two days of MROX. 39 of them were from Russia, 7 from China, 2 from Hong Kong, 2 from India and 1 from UK.





Mr. Frank Mungo from UK IMarEST gave a very interesting presentation on Human Powered Submarine Racing - Hands on Learning with Some Amazing Results. The university students from different countries were invited to team-up and were asked to design and build within their team a single person powered submarine. These submarines were to be tested in a race in the swimming pool to determine which country had a winning design. The teams were given a free hand to come up with their own designs and build them. Many of these submarines were installed with very creative propulsion machineries and mechanisms. One surprising result came out, all the participants had become a skillful scuba diver at the end of the competition.

Another paper was about a Design of a Novel Underwater Robot and was presented by Li Jian-an, a student from the Hong Kong Polytechnic University. The paper proposed to design an omnidirectional underwater robot that is propelled by a biomechanical prolusion mechanism. The robot had a rigid head made of polymer. The battery, communication module and control unit were installed inside it. It had three flexible tails woven from inter-twinning silicone tubes and stainless-steel tubes. A caudal fin was fitted at the end of each fail. From the design, the tails could be controlled and moved separately in synchronous or asynchronous modes by using the biomechanical prolusion mechanism. As a result, the robot could perform a variety of motions, including diving, rising and turning even on its own axis.

On 18th Sep. 2019. all overseas participants were invited to an evening cocktail reception. It was a great opportunity for all to continue their unfinished discussions during their good times together.

HK, Russia, India, Myanmar delegates

Nuclear-powered Icebreaker

On 19th Sept. 2019, SMTU organised a visit to HEBA NEVA - the biggest marine show in Russia at the southern area of St. Petersburg quite near to the airport. There were worldwide exhibitors, including Turkey, Korea and China. The exhibitors came from different sectors of the marine industry, including shipyard, naval architecture design firm, navigation training module, marine equipment/parts manufacturers etc. One of the biggest exhibitors was Russian shipbuilding industry. They exhibited a large number of products, including oil platforms, warships, underwater vessels, commercial ships etc. Among all the exhibits, the most eye-catching exhibit was the nuclear-powered icebreaker that could traverse the North Pole.

(Reported by Simon Chen, Alan Tsang)

A Dialogue with the 1st Lady Chief Engineer Certificate of Competency holder in Hong Kong

Joanna Kwok Pui-yan is the first local lady obtaining the 1st Engineer Certificate of Competency in Hong Kong. She was promulgated as the icon for the younger generations to join the maritime industry. Due to her shining achievements, she had also been interviewed by the media as a role model to those who wanted to follow her footsteps. Ironically, the media coverage only emphasized her halo effect and professional achievements but fell short of expectation in sharing the joy, hardship and future to the young persons who might wish to join the maritime career.

The Hong Kong Joint Branch (HKJB) of the Institute of Marine Engineering, Science and Technology (IMarEST) and Royal Institution of Naval Architects (RINA) Council felt that an in-depth understanding is required to supplement what it is like to be a female engineer on board ships. Hence, HKJB entrusted Mr. KF Chick and Mr. Ernest Chan to have a dialogue with her to find out more.

On the evening of 1 August 2019, Ernest was very kind to host a buffet dinner at the Bistro of the Royal Hong Kong Yacht Club in Causeway Bay for the occasion. The dialogue was conducted while we enjoyed the seafood buffet dinner! It was a rainy day. Joanna arrived the Club at around 19:00 hours. After introducing ourselves, we sat down and started to have dinner and the dialogue until we finished around 21:00 hours.

Joanna is a medium height lady with fair complexion. She is a smart, joyful, mature, confident, considerate and forward-looking person. During the dialogue, she spoke eloquently about herself while sipping her glass of Chardonnay. Her reaction is quick and is a person who forms her own views and ideas. The general perception of the public is that marine engineers are muscular looking persons because of the physical nature on their job. However, Joanna does not fall into this category!

Why Joanna chose to study Higher Diploma in Mechanical Engineering?

Joanna was a science student graduated from St. Paul's Convent School. Her School Certificate Examination results were good enough to get her a seat in Form 6 in the school but might not be able to get her into the subjects that she wanted. She then decided to enrolled in the Higher Diploma in Mechanical Engineering (High Dip.) programme under the Hong Kong Institute of Vocational Education (IVE) after she graduated from Form 5.

Why did she choose to take the marine option?

Joanna understood that this High Dip. programme is designed for aviation engineers. The course was originally designed for students entering Hong Kong Aviation Engineering Company Ltd. (HAECO) upon graduation. However, the academic entry requirement of the High Dip. programme and HAECO were different. The High Dip. programme allowed Form 5 student to enroll while HAECO required Form 7 students for recruitment at the time. Joanna found out later that she could not meet the entry requirement of HAECO upon graduation. The Government funded "Sea-going Training Incentive Scheme (SGTIS)" came to her attention. From the published materials and the promotion talks, she realized that the marine engineering profession might be a good opportunity for her. She could tell that the marine engineering field offered a much higher pay cheque and a greater job opportunity than others at the time.

Her parents' reactions to her decision?

Joanna broke the news to her parents after she decided to join the seafaring profession. Their reactions were calm. Apparently, her parents had an open mind! She suspected that her father did some research later and knew what she was after. They probably came to a consensus not to interfere with her decision and let her did what she wanted to do.

Why joined Anglo Eastern?

Joanna was one of the few pioneer female marine engineers who had chosen to join the seafaring profession in the early days of the SGTIS. The SGTIS would subsidize her $4,000 per month as a marine engineering cadet on top of her salary from the company. Shipping companies did not have the experiences to the placement of female crew on ships then. They were not yet ready to take her! There were simply too many uncertainties and foreseeable problems before and after the placement of a female engineer on a ship!

Two shipping companies - Swire Shipping (Agency) Ltd. (Swire) and Anglo-Eastern Ship Management Company Ltd. (Anglo-Eastern) finally decided to give her a chance and offered her an interview separately. Anglo-Eastern decided to take her in after the interview. Nevertheless, Joanna had to wait for nearly a year before she got a job on a bulk carrier.

She joined Anglo-Eastern as an engineering cadet. She then worked her way up the engineering officer's hierarchy as Junior Engineer, Fourth Engineer, Third Engineer and Second Engineer. Since then, she had been assigned on bulkers, gear bulks, containers and tankers. The waiting time for each ship was generally longer than that of male engineers. She became a 2nd engineer shortly after getting her 2nd Class Certificate of Competency.

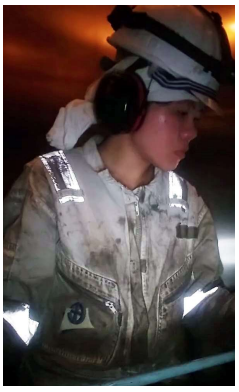
What did she do to pass the 3rd and 2nd Engineer CoC examinations?

Upon fulfilling the required sea service requirements for the Engineer Certificate of Competency (CoC), she stayed in Hong Kong and studied for her CoC examinations. She had to study on her own on those subjects that were not taught in her High Dip. and passed them in the CoC examinations. She obtained her 3rd Engineer CoC and 2nd Engineer CoC in Hong Kong but not without some struggle.

How did she obtain her 1st Engineer Certificate of Competency?

Despite the help from the relevant organizations in Hong Kong, she realized that without a proper tutor, she needs to put extraneous efforts in getting her CoC. She felt that her road to obtain the last CoC would be very difficult if she continued to stay in Hong Kong. She decided to study in South Shield Marine and Technical College of Tyne Side in the United Kingdom for this CoC. She finally passed her 1st Engineer CoC examination this year and became the first female marine engineer in Hong Kong. The road for her to this academic achievement was long! It took her more than 10 years to get to this stage.

What was her life at sea?



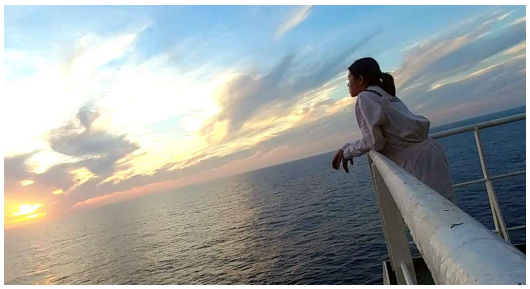
Joanna is a tough lady! Her beginning at sea was no different from other male cadets. Being at the very bottom of the officers' rank, she was required to carry out dirty jobs like cleaning purifier discs with diesel fuel; cleaning air scavenge trunks in diesel engines; overhauling of main and auxiliary engines; maintaining and repairing of motors and pumps; keeping the boilers to heat up enough hot water for the bath, kitchen and pantry; operating ballast system to keep the ship stable, repairing cargo handling gears for loading and discharging cargoes to and from shore; testing of fire detection system; handling of dangerous chemicals and gases; keeping the operating condition of air conditioning systems etc. An engineer was not a person wearing white boiler suites and with clean nails. These images were only in her dreams during her days as a cadet!

A ship is like a miniaturized city. It has an accommodation area and an industrial area (cargo space). It has its own power, air conditioning, water and sewage systems to sustain the working and living environment on the ship. Electricity is produced on the ship by electricity generators. Water is either supplied from shore and/or produced from sea water on board by evapouration plants. Garbage and waste water produced on the ship and the cargo wastes are either treated and/or incinerated before discharging into the sea or ashore. These services are all maintained by the engineers on board!

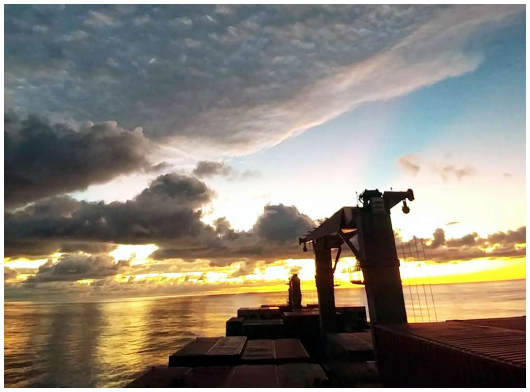
Joanna has an inquisitive mind which is most suitable to become an engineer. Despite her hands and clothes getting dirty during cadet-hood, she did not regret joining the engineering discipline. Now she would not scream to see a cockroach or any other reptilian creatures and she would not mind squashing them with her hands. She has the ambition to learn and the perseverance to carry on as an engineer. On a ship, she was fully engaged. She had to learn and meet new challenges every day when carrying out the duties that comes through her hands.

Today, the accommodation on the ship for officers are spacious and self-contained with bunk, cabinet, toilet, bath, washing basin, mirror, desk, chairs, sofa and table. Toilet rolls, soap, towels, pillows, bed sheets and blankets are standard items supplied by the company at regular intervals. Gymnasium, recreation, cinema, bars and sometimes swimming pool are standard facilities on a ship. In addition to these standard entertainment facilities, the shipping company would also provide movies to the ship together with their regular supplies. Ship staff could now watch them at their leisure time. Bond store on the ship is tax free. As the ship purchases large quantity of beverages every time from the suppliers, a retail price can normally be obtained. Beverage (non-alcoholic and alcoholic) drinks can now be sold to the staff at a low price when the ship is at sea. Officers have the privilege to have room services like cleaning and making up their beds by dedicated staff and breakfast, lunch and dinner are served in the officers' lounge.

Internet access via satellite is now commonly available on ships. Seafarers can now make use of their laptop computer and mobile phone applications to communicate with their families whenever and wherever they want. The anxiety to sending and receiving letters to and from family and friends when a ship arrived port is greatly reduced.



When Joanna got home sick and missed her parents and friends, she might feel a little melancholy. She would walk on deck to enjoy the sea view and marvel at the symphony of light in the evening and the starry night sky. The tranquility environment at sea helped her recovered. If she was lucky, she might see dolphins, flying fish and whales swimming alongside and at the bow of the ship. Of course, strolling on the deck of tankers and bulk carriers was only possible when cargoes are not carried on their decks and when the sea state is calm. She observed that when travelling along the north Pacific route close to the Aleutian Islands, sea gulls and albatrosses were always seen tirelessly gliding at the back of the ship and performing all kinds of acrobatic deeds on the way. They were certainly a delight to watch! Most of the time, the sea was calm and the weather was clear. One could see a fine line at the horizon where the sky and water met for days.



The quiet environment on the ship is good for studying. Joanna had enrolled in a distance learning course for higher education. For her, distance learning study on the ship is now much easier because she can now find materials and information through the Internet and makes enquiries to her tutor where necessary.

Her life as a marine engineer is not as difficult as others imagine. Modern ships are highly mechanized and tools and hydraulic systems are installed to handle most heavy and difficult maintenance work. The loosening

and lifting of big and heavy nuts and parts are now done by hydraulic jacks and hammers and pneumatic lifting gears most of the time. For smaller mechanical parts, they can be lifted and moved by blocks and tackles. She felt that the difference between her and male is the speed in using these tools. Engineering is all about team work. Engineers often offer a helping hand to each other whenever they see the need to do so. Her gender is not a dominating factor for obtaining help from others.

What were her obstacles, happiness, sadness and embarrassment experiences on ships?

Joanna's first trip on a ship was on a bulk carrier. She enjoyed it very much. Despite her sea sickness at the beginning of the trip at sea, she got over it quickly. The secrets are to breath more fresh air, look at objects at a distance and do not fight the swaying motion. Human beings are born in amniotic fluid in the mother's womb. Babies, therefore, loved to sleep in rocking cradles without motion sickness. A grown-up person can adapt to the sea and without rubbery legs when landed ashore easily if one can regain this basic instinct. Occasionally she might still feel a bit uneasy in rough sea conditions, it was bearable to her now and did not give her too much trouble in carrying out her work.

Her happiest moment on the ship is going ashore after a few weeks at sea or after a long day's work. She was able to see different parts of the world not as a tourist but as an ordinary person in a city. Older ports are closer to town. They are definitely not the bright side of a city that a tourist used to see. Joanna loves to stroll in the streets and markets to see the life of the ordinary people living in these areas. She enjoys watching the life of these ordinary people and likes to chat with them. She feels that she will understand the social life and culture of these people better this way. Bulk carriers are regular visitors to these old ports. New ports are almost always located in places far away from the town centers and they are the normal ports for containers and tankers. Sometimes tankers load and discharge their cargoes out at sea with no land in sight! A pipe is salvaged from the sea or taken from a mooring buoy and connects to the ship's manifold for cargo operations.

The company always assign her to work with Indian crew. She noticed that the Indian family culture is close to the Chinese culture and are even more conservative in some ways. Indian meals were frequently served on the ship. Joanna did not like very hot food but she could still live with it. At times, she had to dilute her curry before taking it.

Joanna did not experience sex discrimination on the ship. As she was the only female on the ship most of the time, she was treated nicely by most of her male colleagues. Being a charming lady herself, especially when she got excited during conversations, she would lift one of her eye brow and her eyes glitters with excitement as she spoke. To some, this might be interpreted as a sign to an affair. Joanna is a sensitive and sensible person. She was able to detect such growing desire from her colleagues. It would be very embarrassing to both sides if she flatly refused the relationship. She would tactfully make it clear that they are only her colleagues and no more. Joanna managed to stay out of trouble so far on the ship.

Joanna's career on ships was not plain sailing. On one particular occasion, she was assigned to look after the incinerator for months on end. She was quite upset by the assignment which deprived her of the opportunities and time to learn other engineering knowledge on the ship. Joanna is a tough lady! She gritted her teeth and continued to carry out her job dutifully. At the same time, she buried herself to study the manuals of the incinerator and learnt the control and problems of these equipment. Now she became an expert on incinerators!

Most of the time, she was treated nicely by her colleagues. She was given every opportunity to learn. Thanks to the basic training taught in IVE, she was able to carry out and supervise the repairs and maintenance where hand tools and workshop machineries were used.

Now she passed the 1st Engineer CoC, what is her plan for the future?

Joanna wants to be a Chief Engineer on ships. She has not considering leaving the sea at the moment. She is studying a part time course and is looking forward to take a master degree program afterwards.

She is now helping out in the office of Anglo-Eastern while taking her shore leave. She is waiting for her placement on a ship. She is very grateful to the company for giving her this opportunity. She learnt a lot on how a ship is run ashore and at sea. She understands now why she has to wait so long for her placement. Not all shipowners like to have female engineers on their ships! The company also needs to find a full complement of crew that are known to have good behaviours before considering to place her amongst them. She is very grateful to the effort taken by the company to accommodate her during all these years!

A few words to Joanna.

The courage and efforts of Joanna to enter a profession dominated by male are admired by all who knew her. We are of no exception! She has gone that far. With her dedication, endurance and charm, her future is very bright. The absence of an engineering degree may become a hitch to her future success. We all wish that she can overcome this shortfall and wish her every success in her future.

(Reported by KF Chick and Ernest Chan)

Closing of STEM x Ship Design Competition

Our next generation is the new blood to the maritime industry! There is an urgent need to raise the interests and awareness of the students to the science, technology, engineering and mathematics subjects to keep them on line. During the Hong Kong Maritime Week in 2018, a STEM competition sponsored by The Maritime and Aviation Training Fund was organized by HKIMT and co-organized by AITLE, Microsoft, HKEdCity, HKPU, HKPC and YLMASS for the purpose.

The launching ceremony was on 24 November 2018 at the Hong Kong Maritime Museum. 150 students from 19 primary schools and 19 secondary schools were registered to the competition. Workshops on basic ship design and 3-D printing were organized to help the students understand and prepare for their submissions. The students were required to submit their PowerPoints to introduce the design of their ships and also prepare 3-min videos for presenting their ships designed using Minecraft software in early May 2019. Students were then required to produce models using 3-D printers. A judgement panel was set up on 13 July 2019 in the podium of The Hong Kong Polytechnic University. Students were requested to explain to the judging panel using their 3D models, their ideas and what they had learnt at different stages of their design. The judging panel would decide which designs were awarded with the Minecraft Ship Design and 3-D Printing awards.

Judges and Participants

It was our greatest privilege and honour to have Mr. LAW Lap-keung, Chief Assistant Secretary for Transport and Housing (Transport) to officiate the closing of this meaningful event.

The Minecraft Ship Design Award winners were:

Award	**Primary School**	**Secondary School**
Champion	Tai Po Baptist Public School	Stewards Ma Kam Ming Charitable Foundation Ma Ko Pan Memorial College
1st runner up	Leung Kui Kau Lutheran Primary School	Lutheran School For The Deaf
2nd runner up	SKH Yuen Chen Maun Chen Jubilee Primary School	Buddhist To Chi Fat She Yeung Yat Lam Memorial School
Merit	SHK Wei Lun Primary School	PHC Wing Kwong College
	The Hong Kong Chinese Christian Churches Union Logos Academy (Primary Division)	SKH Bishop Mok Sau Tseng Secondary School
The Best Design	Chi Lin Buddhist Primary School	Lutheran School For The Deaf
The Best Environment Sustainability	Buddhist Lam Bing Yim Memorial School	SKH Bishop Mok Sau Tseng Secondary School
The Best Innovative	Tai Po Baptist Public School	Buddhist To Chi Fat She Yeung Yat Lam Memorial School

Primary School Champion

Secondary School Champion

The 3D Printing Product award winners were:

Award	**Primary School**	**Secondary School**
Champion	Tai Po Baptist Public School	Lutheran School For The Deaf
1st runner up	PLK Fong Wong Kam Chuen Primary School	Newman Catholic College
2nd runner up	SHK Wei Lun Primary School	Sha Tin Methodist College

(Reported by Dr KS Fung)

Primary School Champion

Secondary School Champion

HKJB & HKIMT Coming Activities

Date	Event
24 December 2019	HKJB Committee Meeting
5 November 2019	HKJB Committee Meeting
22 November 2019	HKJB-HKIMT Joint Annual Ball 2019
23 November 2019	Technical Seminar in Marine Engineering and Technology during the Hong Kong Maritime Week
3-6 December 2019	Marintec China 2019 and Technical Visit in Shanghai

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http://www.hkimt.org.hk/publication.html.

Votes of Thanks

The Committee is extremely grateful to those organizations who place their advertisements in eMARINA in supporting its role for the interest of the maritime professionals. Details on advertisement fees are obtainable from the Hon Secretary.

Enquiry

Hon Secretary, Hong Kong Joint Branch of RINA and IMarEST, G.P.O. Box 2516, Central, Hong Kong