



eMARINA

The quarterly newsletter of
The Hong Kong Joint Branch of The Royal Institution of Naval Architects
and The Institute of Marine Engineering, Science and Technology,
and The Hong Kong Institute of Marine Technology
皇家造船師學會暨輪機工程及海事科技學會香港聯合分會
及香港海事科技學會季刊

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HKJB & HKIMT Activities

Joint Technical Visit to Zhuhai Yunzhou Intelligence Technology Co. Ltd. (珠海雲洲智慧科技股份有限公司) and Heung Shan TechPort (香山海洋科技港)

On 9 September 2023 (Saturday), a joint technical visit was organized by the HKIMT and HKJB to Zhuhai Yunzhou Intelligence Technology Co. Ltd. (hereafter known as Yunzhou) and Heung Shan TechPort.

Twenty-two participants from HKIMT and HKJB joined this activity. The visit was aimed to explore the advancement of artificial intelligence (AI) technologies in the maritime sector - in particular to their application in unmanned ships. We received a warm welcome by Mr. Pinestone Shi (Director of Corporate Development Department of Yunzhou) and Mr. Jason Liu (Sales Director of OceanAlpha). Mr. Shi gave us a short presentation of their history, their business areas and products.

It was followed by a short-guided tour of the Heung Shan TechPort, the exhibition hall and the showrooms of the company. It was quite unfortunate that there was a heavy rainstorm in Zhuhai during that day. An operational demonstration of their unmanned surface vessels (USVs) was not possible. In lieu of the demonstration, Mr. Liu gave us a presentation on their products and their involvement with Hong Kong instead.





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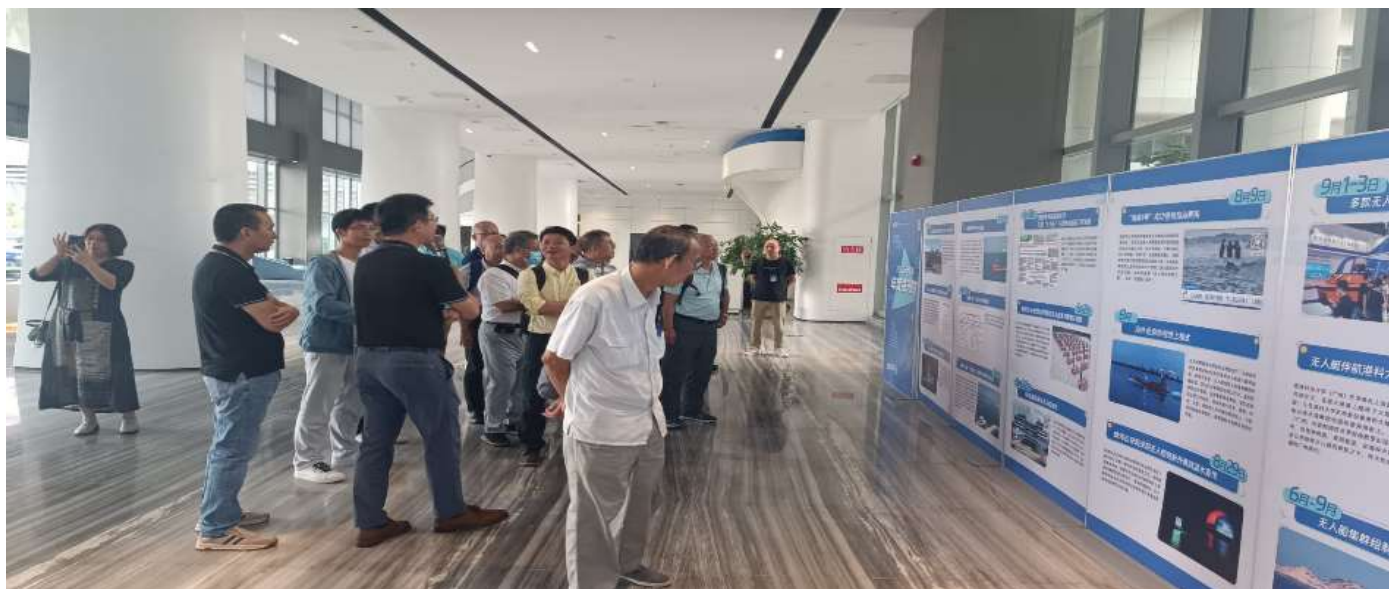
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Guided tour in the exhibition hall of Yunzhou

Yunzhou was established in 2010. It is an enterprise in China pioneered on the research, development, and production of USVs. As a leading investor in Heung Shan TechPort, Yunzhou showcased their cutting-edge technology and innovative solutions in USVs. During the visit, participants had given the opportunity to tour Yunzhou's exhibition hall and showrooms, where a full range of intelligent USVs and their applications were on display.

Yunzhou's has many types of USVs with built in AI for different types of applications - in particular on environmental protection. Their USVs are deployed in Plover Cove reservoir in Hong Kong for water sampling, inspection, water quality analysis and algae growth prediction etc.

USVs can also help in saving people's lives in water. A special type of USVs from the company known as "Dolphin 1" can be sent to rescue conscious swimmers in distress and bring them back to safety. Another type of life-saving USV is known as "Shui Shang Fei". It can be used to transport injured or disabled persons over water. Both types of USVs have a lot of applications. They may be deployed to flooded areas and in marine disasters where many people need help at the same time! In the 2021 "Henan" and 2020 "Jiangxi" flooding disasters, the company had deployed a large number of these vessels for the rescue of people trapped and drifting in water.



USVs in Water Quality Monitoring at Plover Cove Reservoir, Hong Kong



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"Dolphin 1" brings people overboard or conscious swimmers in distress back to the shore



"Shui Shang Fei" - lifesaving stretcher



Application of Unmanned vessels in Hydrological Measurement at Hamburg Port

The other application of USVs is on hydrographic and underwater topographic surveys. These surveys are important to the safe operation of harbours and inland waterways. The continuous monitoring of the water depths and the changes in their contours are essential to ensure the safety of vessels using them. Hydrographic survey vessels are generally quite massive and labour intensive. The introduction of remote operated and intelligent USVs with hydrographic surveying capabilities can simplify these operations. On 11 March 2020, the Hamburg

Port Authority had christened an SL40 as "Echo 1" to operate in the Port of Hamburg. It is a 1.65-meter long USV. It can operate up to six hours without emission. It can navigate to areas where conventional vessels cannot go.

USVs are also ideal vehicles in scientific expeditions! Artic and Antarctic are hostile environments and are vulnerable to pollutions. The use of USVs in these areas greatly reduced the human casualties in carrying



USV in Antarctic scientific expeditions

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scientific researches and the pollution in these areas. The latest scientific expedition to the Antarctic had make use of this technology.

USVs are not only useful in the commercial sector. It is also useful in pollution control and security checking! They were deployed in the “Zhuhai” China International Aviation & Aerospace Exhibition in 2023 by the national securities in China to enhance the security of the site during the exhibition.

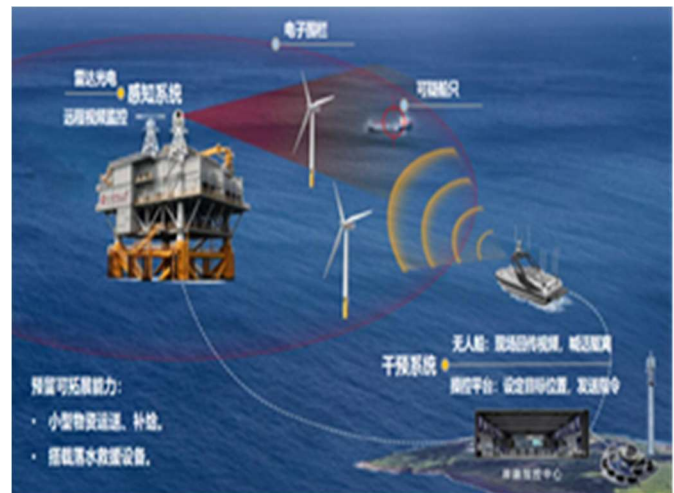
USVs have also found their way into the offshore oil, gas drilling platforms and the wind farms. They serve as the security, operation and maintenance tools for the industry. Intelligent USVs are used to inspect the operational conditions of individual wind mill in the far and inspect damages that may be caused by corrosions and storms while working in the area. Any hostile intrusions that may threaten the operation of the wind farm may also be recorded and detected by these vessels.



USV patrol at Zhuhai air show site



Offshore wind farm operation and inspection by USVs



Ship-shore security system for offshore wind farms and oil and gas platforms



All participants were engaged in the discussions with the experts from Yunzhou in the Q&A session after the tour. Ideas were exchanged about AI developments, challenges, and their prospects and applications of USVs in various sectors of the marine industry.

The visit offered a firsthand experience for learning and viewing unmanned vessels, as well as deepened participants' understanding of the practical applications of AI in the maritime industry. It also



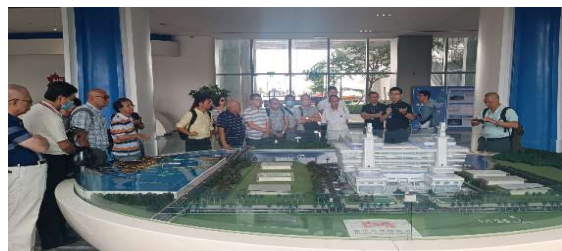
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highlighted the role of innovation and technology in the development of the Guangdong-Hong Kong-Macao Greater Bay Area, which are known for their robust marine technology industry.

Heung Shan TechPort is an important infrastructure project that focuses on the unmanned ship marine equipment industry chain and is equipped with indoor laboratories, test pools, sea trial and test basins, etc. It has become a public technical service platform that helps to integrate the industry, academia, research and application of products. It is also a base to coordinate the scientific and technological innovations in the Greater Bay Area.



Yunzhou was very kind to invite us to lunch in their canteen in the afternoon. We took the opportunity to continue our discussions and exchanging views on the latest development of marine engineering, science and technology. All the participants found this visit to be a valuable and mind broadening experience. The Technical Visit ended with the presentation of mementos to Mr. Shi and Mr. Liu by Chairmen of HKIMT Simon CHEN and HKJB Kaushik ROY respectively.



Presentation of a memento to Mr. Shi (on behalf of Yunzhou) by Chairman of HKIMT Simon CHEN



Presentation of a memento to Mr. Liu (on behalf of Heung Shan TechPort) by Chairman of HKJB Kaushik ROY

After Lunch we visited the Zhuhai Opera House before heading back to Hong Kong. We found the technical visit very fruitful and would like to express our gratitude to Yunzhou and Heung Shan TechPort for their time and hospitality. We are all looking forward to many more of such visits to be organized by HKJB and HKIMT in the near future!



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(Report by Lara SF TSE)

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HKJB & HKIMT Coming Activities

Date	Event
15-21 October 2023	Overseas Technical Visit cum PAAMES Advanced Maritime Engineering Conference 2023 at Kyoto
7 November 2023	Committee Meeting
10 November 2023	2023 Annual Ball
21-22 November 2023	Asian Logistics, Maritime & Aviation Conference
24 November 2023	HKIMT x STEM Marine Vehicle Design and Construction Competition Opening
25 November 2023	Technical Seminar for the Hong Kong Maritime Week (19-25/11/2023)
5-8 December 2023	Marintec China

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