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# Partnership



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## Hand in hand to build a new ecosystem for international shipping industry

There are two key points to build a community of common destiny, one is cooperation, the other is innovation. The fundamental of cooperation is keeping the minority and seeking the majority, it is a foundation to build a community of common destiny for shipping industry, while innovation is a fundamental driving force to build a community of common destiny.

**CCS**  
CHINA CLASSIFICATION SOCIETY  
中国船级社

## The sixth issue in 2016

(The 24<sup>th</sup> issue in total)

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## Vice Minister of MOT He Jianzhong Visited CCS Athens Branch to Investigate & Survey and Gave Instruction

On October 28, 2016, He Jianzhong, Vice Minister of Transport, visited CCS Athens Branch. General Manager of CCS Athens Branch Chen Jiping reported on the establishment, history and business development of CCS Athens Branch. After listening and inspection, Vice Minister He also inquired about the work and life of each employee in CCS Greece and expressed his kind care and concern.



## The Seventh China Tanker Safety Forum Held in Dalian

On November 8, 2016, the China Tanker Safety Forum (2016) with the theme of “safety, sharing, innovation and development” was held in Dalian. More than 160 representatives from overseas energy companies, oil terminals, oil companies, shipyards, universities, financial institutions and the media gathered in the forum, and actively exchanged and discussed about the current situation of new oil industry, the latest development of industry, best practices of tanker safety and other topics.

Cheng ping, the General Safety Director of MOT made a keynote speech. She pointed out that safety is the precondition of tanker survival. To ensure the safety of oil transportation, enterprises need to implement the main responsibility, government departments need to provide good service and effective supervision, and parties need to work together to

promote mutual cooperation. Sun Licheng, president of CCS delivered a keynote speech entitled innovation, development and cooperation to provide new power for tanker safety. He pointed out that under the new situation where tanker safety is not optimistic, in response to the increasingly complex situation, the relevant parties need to further deepen cooperation, constantly improve the level of collaborative innovation, enrich the content of collaborative innovation. In addition, Ding Nong, the Deputy General manager of COSCO shipping Group Co. Limited, Sun Yuqing, President of Dalian Maritime University also made keynote speeches. Industry experts, scholars, enterprises leaders made speeches from respective angles.

Approved by the Ministry of transport, Chinese Tanker Safety Forum, which was founded in 2010, has been successfully held for seven sessions. Jointly organized by CCS, China Ocean Shipping Group Co. Ltd., and China Petrochemical Corp, and co-sponsored by COSCO energy transport Limited by Share Ltd / Dalian COSCO Oil Transportation Company Limited, China International United Petroleum & Chemical Co. Ltd., “China Ship Survey” magazine, the forum aims at strengthening the safety of China's offshore oil transport and preventing marine environment pollution, promoting China's participation in international shipping safety standards, and ensuring national energy transport security.



## CCS President Sun Licheng Delivered a Speech at the Third International Ship Finance Forum of China Import and Export Bank

On October 28, 2016, the “3<sup>rd</sup> China EXIM International Ship Finance Forum” was held at the Diaoyutai State Guesthouse in Beijing. CCS President Sun Licheng delivered a speech entitled “Technical Reform and Development Direction of China's Shipbuilding Industry”. He mentioned that the national policies released in recent years have not only played a guiding role in strengthening the administration of the shipbuilding industry and addressing the problem of overcapacity, but also clearly steered the technical direction and key development fields of China's shipbuilding industry. While talking about CCS' cooperation with financial institutions, he said that CCS is willing to cement its strategic cooperation with EIBC and other financial institutions, provide technical support and anti-risk service for financial instruments being used and innovated, strengthen its linkage with ship financing institutions, shipbuilders and shipping companies, deliver competitive, marketable and profitable projects, and establish a more mature cooperation mechanism, in joint efforts to support



the development of China's shipbuilding industry and its supporting industries, promote the healthy development and create a bright future of China's ship industry.

## CCS President Sun Licheng Took Part in 2016 Tripartite

On October 13 2016, the Tripartite was held in Tokyo, Japan. As the chairman of International Association of Classification Societies (IACS), Sun Licheng, president of China Classification Society (CCS) delivered a welcome speech to the meeting, and on behalf of IACS thanked the supports from shipping and shipbuilding rendered to IACS, and put forward the focus of IACS for the future, and expressed the IACS' hope to cooperate with the industry in the technical field .

Sun Licheng presided over the explanation and discussion in the third session “Convention and Rule development”, including the IMO Convention and the rules, IACS resolution, strategy and work status of ISO/TC8, implementation of polar rule, PSPC review etc.

In the two-days' meeting, nearly a hundred representatives from International Shipping Association (ICS), the International Dry Bulk Shipowners Association (INTERCARGO), the International Association

of Independent Tanker Owners (INTERTANKO), Baltic Association (BIMCO), IACS, Asia's ship industry associations and etc., discussed and exchanged on topics of common concern. With an open attitude, the representatives of the parties fully expressed their views and experience, and actively explored the improvement of the international maritime organization, the relevant requirements of the implementation and revision of the model codes and standards and the development of new technologies and challenges. Finally, the participants reached an agreement to carry out operation in many fields such as the optimization of tripartite mode, improving IMO accident investigation database, fuel data collection, cyber security, ballast water management for implementation of the Convention and others, and to promote technological innovation and improve the development of new technology. The next Tripartite will be held in China in 2017.

## CCS President Visited the Industry in Hongkong

On October 20, 2016, CCS President Sun Licheng visited Zheng Meishi, the Director of Hong Kong Special Administrative Region Marine Department. The two sides reviewed the friendly mutual cooperation over many years, and highly affirmed the cooperation achievements. Sun Licheng informed Zheng Meishi CCS' scale of business development, global service quality performance, scientific research in recent years, and gave a high degree of praise to professional management and efficiency of Hongkong Marine Department. Zheng Meishi said Hongkong Marine Department would pay more concern to registered ship quality in the future, and introduced the idea on reform of the ship inspection system operated in Hongkong waters. The two sides also made constructive talks on further expanding bilateral cooperation.

On the same day, Sun Licheng also visited Deng Renjie, Deputy General Manager of China Merchants Group. The two sides pleasantly reviewed the friendly cooperation over the years. Sun Licheng praised the great achievements that China Merchants Group has made in recent

years. Sun introduced the latest development of CCS to Deng Renjie, and thanked for the support and help of China Merchants Group over the years. Sun Licheng also introduced the special arrangements for technical services and quality control of CCS in the new shipbuilding project of China Merchants VLOC, and said CCS will spare no effort to provide the best service for China Merchants group. Deng Renjie welcomed President Sun Licheng's visit, and expressed his pleasure in the good development of CCS. Deng introduced the Merchants Group's development in recent years, and thanked for the support and help provided by CCS over the years. The two sides also discussed further deepening the strategic cooperation.

In Hong Kong, Sun Licheng also visited Mr. Zhu Jianhui, president of COSCO (Hongkong) group company, and thanked the support and help granted by COSCO (Hongkong) Group Company in CCS' development in Southeast Asia. The two sides also had constructive communication on further deepening bilateral cooperation in the future.

## CCS Show in 2016 International Petroleum Equipment Exhibition in Abu Dhabi

On November 7, 2016, the International Petroleum Equipment Exhibition (ADIPEC) opened in Abu Dhabi, the capital of the United Arab Emirates. As one of the world's top three oil exhibitions, the exhibition has gathered more than 2 thousand exhibitors, including 24 national exhibition halls, 17 international oil companies and 15 national oil company exhibitors. It is a large event in the Middle East and the international oil industry.

Mr. Mo Jianhui, vice president of CCS led a delegation to participate in the exhibition. In the exhibition, CCS demonstrated the latest marine service products and service capability to the industry, and promoted the latest development of the ECA technology services. At the same time, Mo's delegation also visited the Abu Dhabi offshore oil company (ADMA), the Middle East, COSL petroleum technology development company, Sinopec East offshore drilling company and other important clients, and paid return



visit to the A&T company, the owner of "FPSO CYRUS", the conversion survey of which was conducted by CCS.

## CCS Held the Opening Ceremony of the Copenhagen Office and Maritime Seminar in Denmark



On November 1, 2016, China Classification Society (CCS) Copenhagen office opening ceremony and maritime seminar was held in Copenhagen, Denmark. Ms. Zhang Shujing, Commercial Counsellor of Chinese Embassy in Denmark, Mr. Bjark Wiehe Botcher, maritime counsellor of Denmark's Chinese embassy, Mr. Nordseth Andreas, the director of the Danish Maritime Bureau, as well as representatives from the Chinese import and export bank, ICBC leasing, leasing bank, Danish Shipowners Association, Danish Maritime Industry Association, the Baltic and International Maritime Council, Danish investment the Council, Copenhagen Investment Promotion Bureau, Maersk Group,

Hafnia, MAN and the local Chinese-funded institutions participated in the opening ceremony and the seminar.

Sun Feng, vice president of CCS attended the opening ceremony. He reviewed the achievements in the development of CCS' 60 years in his speech, and said that establishing offices in Copenhagen is to come closer to the customers in the Danish area in order to provide better and more convenient technical support and services, meanwhile, CCS will play the role of bridge and link, and will be committed to promoting the exchanges and cooperation between the two countries in Maritime affairs. Ms. Zhang Jingshu, the counsellor of Chinese Embassy in Denmark said that Chinese embassy in Denmark will support the CCS' work in Denmark as it has always been doing in the past, and hope Copenhagen office give full play to the advantage of technical service, continue to grow, and contribute to Sea Transportation Safety and environmental protection between Denmark and China. The delegates at the meeting also spoke at the opening ceremony, they expressed the warm congratulations to establishment of CCS Copenhagen office, agreed that the establishment of the office in Copenhagen is a new milepost of CCS' globalization development, and expressed that in the future sincere cooperation and common development will be strengthened, and unremitting efforts will be made to realize the common goals and vision of maritime safety and environmental protection.

## CCS Participated in Marintec Indonesia 2016

On November 23 to 25, 2016, Marintec Indonesia 2016 was held in Jakarta International Expo. As the largest exhibitor from China, CCS delivers the latest rules development, LNG Carrier technology, value-added service, software information platform and explains the technical issues mostly concerned by local customers. Meanwhile, CCS introduced her great achievements during the past 60 years, and technical services provided by CCS in Indonesia, which has expanded CCS technical influence in Indonesia.

As the most significant maritime exhibition in Indonesia, the exhibition attracts more than 100 exhibitors from 17 countries and areas around the world, including Indonesian government sectors, INSA, IPERINDO, main local shipping companies, shipyards and product manufacturers and classification societies.



## CCS Participated in DEC 2016

On November 24 to 25, 2016, the Deepwater Energy Conference 2016 which was jointly sponsored by the People's Government of Hainan Province and China National Offshore Oil Corporation was held in Haikou. The experts of CCS participated in the conference, and delivered a speech entitled "the air gap forecast of deep water semi-submersible drilling platform and the analysis of wave attack".

In recent years, CCS has made great progress on the technical service of deep water oil and gas, has accomplished "Hai Yang Shi You 981", "third-party and statutory survey for deep-sea oil and gas field development project Li Wan 3-1", "classification and statutory survey for deep-water drilling unit COSL Prospector", "classification and statutory survey for drilling unit Hai Yang Shi You 983", "independent analysis for LH6-1/2 tension leg platform" and a series of deep water project's technical services one after another; actively cooperated with relevant state ministries and commissions to undertake national scientific research project, undertook and participated "innovation special for the 7<sup>th</sup> generation ultra deep water drilling platform (ship)", "safety standard research for reef medium floating structure", "development for subsea control system and the key equipment" and other 50 research projects of Ministry of Industry and Information Technology (MIIT), promoted the strategy of national deep water development; actively formulated the industry standards, issued the regulations and standard more than 30 in the fields of maritime mobile facilities, offshore floating device and offshore fixed facilities, provided



strong technical support for the health and sustainable development of offshore engineering industry; the recent key scientific research project of CCS "the development of China marine environment conditions database and the analysis method research of extreme sea conditions" laid a solid foundation for the design of China offshore engineering environment conditions; the Guidance for Subsea Production System Certification defined relevant requirements for the design, construction and installation of the deep water subsea equipment, and pointed out the direction for the development of domestic subsea production system. With continuous development of the maritime power construction, it can be expected that CCS will play a more and more important role in the field of the safety technology of deep water development.

## CCS Issued H151-5MW Type Approval Certificate to Haizhuang Windpower

Recently, on CWP 2016, CCS and CSIC (Chongqing) Haizhuang Windpower Equipment Co., Ltd. held an awarding ceremony of "Haizhuang Windpower H151-5MW type approval certificate", CCS vice president Mo Jianhui and the leaders and experts from CSIC, the wind field owners and key suppliers attended the ceremony. Haizhuang Windpower expressed their appreciation to CCS for its support and

cooperation, and hoped that the two parties can strengthen cooperation in more fields.

The H151-5MW offshore wind power unit is a 5MW offshore wind power generator which has the biggest rotor diameter and independently developed by Haizhuang Windpower. Under the same wind speed conditions, the power generation capacity can increase significantly.

## CCS Classed Ship “SHI JIANG” and “YU PENG” Were Included in the Significant Ships 2016 of Royal Naval Architect



Recently, the first ship of 2100 series PCTC ro-ro ship “SHI JIANG”, the construction survey of which was carried out by CCS and multi-purpose teaching practice ship “YU PENG” of Dalian Maritime University were included in the Significant Ships 2016 of the Royal Naval Architect.

“SHI JIANG” is a new generation of 2100 PCTC ro-ro ship which is designed and built independently by our country, it has full independent domestic intellectual property. From design to construction, it always implements the concept of “safety, environmental protection and green energy, and has the most difficult construction in the same type ro-ro ship, which set a good example for the construction of global small and medium-sized ro-ro ships, and can well meet the requirements of the current logistics network. The total length of the ship is 141.20 meters, molded breadth is 24.40 meters, its draft is 6.57 meters. The ship has 9 floor loading deck, the total loading area is about 18,000

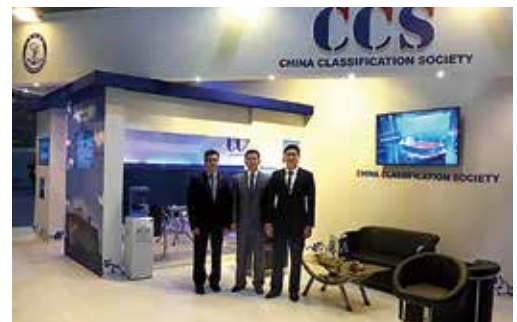
square meters, the standard car loading number is 2,100. It has double stern door, lift deck and active ramp, and has a strong optimal ability to adapt to goods; equipped with frequency conversion electrical side thruster and many equipment with leading technology, in line with the requirements of some key performance indicators such as energy saving, green environmental protection, etc.

“YU PENG” is the first second generation modern and multi-purpose teaching practice ship in China, which is built according to CCS standard and design, the construction survey was carried out by CCS. This ship was included into Significant Ships 2016 of Royal Naval Architect successfully. “YU PENG” is 30,000 dwt, the total length is 199.8 meters, the molded breadth is 27.8 meters, the molded depth is 15.5 meters, the designed draft is 10.3 meters, the service ship speed is 17.5 knots. This ship is mainly oriented to the development of maritime education and ship science and technology in the future, designed and built for the training of shipping talents. This ship gathered modern ship design, manufacturing, equipment technology, it has advanced design and well-equipped, used a lot of equipment which have the most advanced intelligent, efficient and environmental protection in the world, many equipment were used for the first time.

The inclusion of the two ships in the Significant Ships 2016 of Royal Naval Architect is the achievement which showcase CCS comprehensive service to the development of China shipping industry, it is the witness of CCS building high quality ships together with the relevant units.

## CCS Participated in IRANIMEX 2016

Recently, CCS participated in the 18<sup>th</sup> Iran International Maritime & Offshore Technologies Exhibition (IRANIMEX 2016) which was held in Kish Island. CCS booth attracted local shipping companies of Iran, platform owners and potential customers from shipping industry, CCS has established a close contact to Iranian shipping and offshore engineering companies.



## CCS Participated in Seatrade Asia Pacific Cruise Conference 2016



On October 12 to 13, 2016, CCS participated in Seatrade Asia Pacific Cruise Conference 2016 in Shanghai. The conference is sponsored by the People's Government of Shanghai Baoshan District and Shanghai University of Engineering Science. In the conference, CCS participated as the guest speaker in the forum of "specially tailored cruise for China, construction, design, maintenance & technical service", and introduced the Regulation for Cruise which has been published by CCS recently, attracting participants' attention. The experts who are from the government, the world's leading cruise lines, cruise design units and shipyard discussed the opportunities and challenges for cruise industry, and put forward some suggestions for the future of the industry.

In recent years, Chinese cruise industry has experienced fast development, China has become the most dynamic and potential cruise market. To this end, the industry is actively cultivating the local cruise industry chain. CCS also established a cruise team, which will play a part in the cruise industry.

## CCS Participated in Shiptec China 2016

On October 25, 2016, the 12<sup>th</sup> Shiptec China 2016 was held in Dalian International Conference Center, CCS attended this exhibition. In the exhibition, CCS and Dalian Shipbuilding Industry Co., Ltd jointly held HCSR VLCC upgraded ship and CCS ship type approval certificate ceremony, CCS issued VLCC upgraded ship AIP approval certificate to Dalian Shipbuilding Industry.

Meanwhile, CCS Dalian branch signed the Cooperation Plan 2017 with China Export & Credit Insurance Corporation Liaoning Branch, signed the Cooperation Framework Agreement with Ahead Ocean Technology (Dalian) Co., Ltd and Dalian Intech Holding Co., Ltd.

CCS also introduced CCS solutions regarding recent maritime hot issues, including: solutions for the regulation of SO<sub>x</sub> and NO<sub>x</sub> emission control, solutions for ballast water management convention, and introduced the latest achievements on Regulations for Cruise



ship and intelligent ships. CCS' successful approval by the EU regarding RCD certification authorization was also publicized in the exhibition.

## CCS Made Progress in its Cooperation With North American Owners

On October 12, 2016, the naming ceremony of 300,000t VLCC “Gener8 Miltiades” which was built by Shanghai Waigaoqiao Shipbuilding Co., Ltd. for American shipping company Gener 8 Maritime was held at Waigaoqiao No.2 terminal. “Gener8 Miltiades” is the sixth 300,000t VLCC built by Waigaoqiao shipyard for Gener8 Maritime. The successful delivery of all six 300,000t VLCC is the indication that CCS has made new progress with north American owners in the field of newbuilding classification survey.



## CCS Yangtze River Regional Committee Conference 2016 was Held in Chongqing



CCS Yangtze River Regional Committee Conference 2016 and CCS 60<sup>th</sup> anniversary meeting was held in Chongqing on October 25, 2016, the main purpose of this conference is: review the development of CCS and the industry over the past 60 years, explore constantly the potential of shipping industry and shipping engineering in this area based on the strategic target of marine power construction, the “Belt and Road” and

“construction of Yangtze River economic belt”, integrate the resources, actively deal with the serious challenges, firmly grasp the development opportunities, put in practice the “internationalization, modernization, socialization and good service” of CCS, perform the duty of country, promote scientific development of Yangtze River shipping, shipbuilding and related manufacturing industry, make achievements and establish the brand.

In the conference, the committee members lectured about their work and had discussions in view of the current international and domestic situation and industry hotspots and difficulties. Discussions were also made on “Yangtze River economic belt construction” and the implementation of other national strategy, the promotion of river-sea direct container transportation from Yangtze River upstream to Yangshan port, the Three Gorges ship lift, ship type research for the Three Gorges new channel, the promotion of LNG and new energy application and green ship development, the promotion of the industry’s transformation and upgrading, the water traffic safety guarantee, the development of cooperation and communication of the industry, etc.

## 2100 Series Ro-Ro Ship “SHI JIANG”

This ship was selected into Significant Ships 2016 of the Royal Institution of Naval Architects successfully. The ship was surveyed by CCS during construction, and classed with CCS.

This ship is a new generation of 2100 PCTC ro-ro ship which was designed and built independently by our country. It has fully independent domestic intellectual property rights. From design to construction, it always implements the concept of “safety, environmental protection, green and energy saving, with relatively large difficulty in construction among the same type of small and medium-sized ro-ro ships. It has set a good example for the construction of small and medium-sized ro-ro ships globally, and can well meet the requirements of current Internet of things.

The length overall of the ship is 141.20 meters, moulded breadth is 24.40 meters, its draft is 6.57 meters. The ship has 9 levels of loading deck and the total loading area is about 18,000 square meters.



The standard car loading number is 2,100. It is provided with double stern doors, lift deck and active ramp, and has a strong optimal goods ability; due to the provision of frequency conversion electrical side thruster and many equipment with leading technology, it is perfectly in line with the requirements of some key performance indicators such as energy saving, green environmental protection, etc.

## Bulk Carrier “TS ECHO”



This ship is a 38,500 DWT bulk carrier which was built by Shanhaiguan Shipbuilding Industry Co., Ltd. for Dalian Taijia. The length overall of this ship is 182.00 meters, the moulded breadth is 30 meters, the moulded depth is 14.80 meters, 24,124 GT, 12,855 NT, 7,044 kW in main engine, it is of unrestricted service. This ship is

provided with 5 cargo holds. The deck between cargo holds is provided with 4 cranes, which can carry dry bulk cargo, steel coil, packaged goods and some dangerous goods. Folding pillars are provided on the both sides of the main deck, which is suitable for carrying logs, packaged woods and wood products. The main arrangement is: steel, double skin and double bottom, single deck, forecastle and deck mast room, no bulbous bow, single engine, single screw and single rudder, and ballast water treatment system is installed.

The plan approval and construction survey was carried out by CCS, and it obtained the following class notation:

★CSA Bulk Carrier, Double Side Skin; CSR; BC-A(Holds Nos. 2&4 may be Empty); COMPASS (D,F); Grab( 20 ); PSPC(B); Loading Computer (S,I,G); ESP; In-Water Survey; BWMP

★CSM; AUT-0; CMS; SCM; BWMS; EEDI (I)

## Aluminum Alloy High-Speed Catamaran Passenger Ship “XUN LONG 7”

This ship is the aluminum alloy high-speed catamaran passenger ship which was built by Zhuhai Pulandi Ship Engineering Co., Ltd. for Xunlong Shipping Co., Ltd. The length overall is 42.3 meters, moulded breadth is 10 meters, moulded depth is 3.40 meters, 443 GT, 149 NT, 2 MTU16V2000M72 main engines, total power is 2880kW, 2 MJP hydraulic propellers, the ship speed is 33 knots, coastal service restriction, the designed significant wave height is 4 meters, the wind resistance is level 7, and used for the carriage of the passengers in the Pearl River and Hong Kong and Macao regions.

This ship is provided with 2 levels of cabins, with a total of 296 seats. The common cabin room is set in the main deck room, the business class room and 2 VIP rooms are set in the second deck room. At the stern of the second deck, there



are baggage storage areas for passengers. This ship adopts longitudinal framing, and the ship deck relative to baseline trim by stern 1°. It is provided with 6 watertight transverse bulkheads, and each block is equipped with one MTU main engine and a set of MJP hydraulic propulsion system.

The plan approval and construction survey was carried out by CCS, and it obtained the following class notation:

- ★ CSA Catamaran HSC; Passenger A; Coastal Service Restriction; Pearl River Area
- Hong Kong&Macao;
- ★ CSM

## LNG Carrier “ZHONG NENG FU SHI”



This ship is the first ship of six 174,000 cubic meters LNG ships ordered for construction in Hudong-Zhonghua Shipbuilding (Group) Co., Ltd., by APLNG project; also, it is the 11th LNG carrier built by Hudong-Zhonghua Shipbuilding.

It is the largest LNG ship built by China. The construction survey was carried out by CCS.

The length overall of the ship is 290 meters, moulded breadth is 45.6 meters, moulded depth is 11.7 meters, scantling draft is 12.7 meters, ship speed is 19.5 knots; this ship adopts 5 in-line main generators, which is the world's first dual fuel electric propulsion large LNG ship which can match oil and gas technology automatically according to the liquid cargo tank evaporation, and can match oil and gas flexibly under any different conditions and loads; it has good suitability and economy. At the same time, this ship adopts new double skeg linear design, has good speed performance, and lower energy consumption; it adopts biaxial propulsion and has very strong endurance ability.

## Chemical/Oil Tanker “XIN SHEN TONG 199”

This 4,500 DWT chemical/oil tanker is built by Zhejiang Hongxin Shipbuilding Co., Ltd. for Guangzhou Victory Shipping Co., Ltd. The length overall is 96.60 meters, moulded breadth is 15.20 meters, moulded depth is 7.00 meters, 2,992 GT, 1,675 NT, 735kW in main engine, and the design ship speed is over 11kn. The ship is of greater coastal service.

This ship has single deck, double bottom and double hull, single engine and single screw and single rudder. It is an after engine type chemical/oil tanker. The whole ship is provided with 10 liquid tanks and 2 sewage tanks. Both liquid tank and liquid cargo piping adopt the austenitic stainless steel (316L). The liquid cargo system adopts one tank with one pump, and 12 deep well pumps are provided on the main deck. Because the cargo tank adopts the form of stainless steel, more than 700 different kinds of dangerous chemicals can be loaded on the ship. This ship type has a wide domestic market in the field of ships carrying dangerous chemicals in bulk at present. In addition, this



ship is also provided with deck foam fire extinguishing system and engine room local water-based fire extinguishing system and other fire protection and safety system.

The plan approval and construction survey was carried out by CCS, and it obtained the following class notation:

- ★ CSA Chemical/Oil Tanker; Double Hull; F.P.≤60°C; Type 2; R1; Max.Cargo Density 1025kg/m<sup>3</sup>; Max.Pressure 0.023MPa; Max. Cargo Temperature 65°C; Stainless Steel; Ice Class B; ESP
- ★ CSM

## Semi-submerged Ship “XIANG HE KOU”



The length overall of this ship is 216.70 meters, the moulded breadth is 43 meters, the moulded depth is 13 meters, the design draft is 9.68 meters, the dive

draft is 26 meters, the cruising endurance is 18,000 miles, 48,163.20 DWT, ship speed is 14.0 knots, equipped with 4 main diesel generators with 3689.95kW, the total capacity can reach 14,759.4kW, 6,600V. It is provided with 2 pipe tunnel type thrust with 1,500kW at the bow and stern respectively. This ship is of unrestricted service, can be loaded and transported for large marine equipment (e.g. the large steel structure components, all kinds of platform, offshore jackets, platform block, etc.), large ships and naval ships.

DP2 dynamic positioning system and PR-2 redundant propulsion system are added to the ship on the basis of the original 50,000DWT semi-submerged ship “XIANG YUN KOU”.

## LPG Carrier “CHANG NENG 7”

This ship is a 5300m<sup>3</sup>LPG carrier which was built by Hubei Huahai Heavy Industry for Beijing Cinda Financial Leasing Co., Ltd., the length overall is 109.67 meters, the moulded breadth is 18.20 meters, the moulded depth is 8 meters, 4,796 GT, 1,438 NT, 4191 DWT, the main engine power is 3,310 kW, it is of unrestricted service.

This ship is a full pressure type LPG carrier. There are 2 type C independent liquid cargo tanks of 2650m<sup>3</sup> in the middle of the ship. The tank design pressure is 1.86 MPa. The design temperature is -10~45°C. It is suitable for the loading of Propane, propylene, n-butane, isobutene and mixed LPG, butene, dimethyl ether and other LPG petrochemical products. The main arrangement is: double bottom and double hull, single deck; it is provided with forecastle and poop, and there is an emergency exit

between them; it is provided with a small bulb bow at the bow, with single engine and single screw and single rudder and after engine type.

The plan approval and construction survey was carried out by CCS, and it obtained the following class notation:

★ CSA Liquefied Gas Carrier; Type 2PG; Type C Independent Tank; Max. Vapour Pressure 1.75 MPa; Minimum Cargo Temperature -10 °C; PSPC(B); Ice Class B; Loading Computer (S, I, D)

★ CSM BRC



## Multi-purpose Teaching Practice Cargo Ship “YU PENG”



This ship is the first modern and multi-purpose teaching practice cargo ship of second generation ship in China, which is designed and built according to CCS rules, and surveyed by CCS during

construction. This ship was selected into Significant Ships 2016 of the Royal Institution of Naval Architects successfully.

The length overall of this ship is 199.8 meters, the moulded breadth is 27.8 meters, the moulded depth is 15.5 meters, the design draft is 10.3 meters, 30,000 dwt, the service ship speed is 17.5 knots. This ship is mainly oriented to the development of maritime education and ship science and technology in the future, designed and built for the training of shipping talents. This ship gathered modern ship design, manufacturing, equipment technology; it has advanced design and well-equipped with a lot of equipment which has the most advanced intelligent, efficient and environmental protection in the world, of which much equipment is used for the first time.

# CCS to Present DSIC with AIP Certificate for Its Upgraded VLCC Ship Type

On October 25, 2016, China Classification Society (CCS) issued the AIP (Approval in Principle) Certificate for Upgraded VLCC Ship Type to Dalian Shipbuilding Industry Co., Ltd. on Shiptec China. The ship type is designed and approved basing on Goal Based Standards (GBS) and Harmonised Common Structural Rules (HCSR) issued by IACS.

In recent years, with the increasing attention to safety, energy conservation and environmental protection of ships, IACS and IMO have published revised HCSR and GBS respectively, in which new rules and requirements are given on ship structure and an uptrend can be found in ship Energy Efficiency Design Index (EEDI). In response to the new requirements at the regulatory level and also to customers' new expectations for vessel safety and economy, CCS and DSIC jointly developed a new ship type aiming at meeting the requirements of the latest HCSR and further optimizing energy efficiency, and completed approval of the ship type. This 319,000 DWT VLCC ship type was upgraded and developed basing on the former VLCC ship type of DSIC. On the basis of full verification regarding

structural design and the latest HCSR, the ship structure was optimized.

While meeting the requirements of the new HCSR, the energy saving effect of this ship type has been paid full attention. R & D team of CCS and DSIC conducted a systematic and deep study on the main engine configuration optimization program, and finally optimized the power system configuration on the basis of meeting the existing requirements of the regulatory system, making the ship's EEDI much higher than that of the previous generation of VLCC ship and the designed fuel consumption index reach the international advanced level.

DSIC is the core enterprise of CSIC, and is a leader in the design and construction of oil tanker, chemical tanker and especially VLCC. CCS has also regarded CSIC and DSIC as important strategic partners and core customers. In recent years, the two sides have been cooperating closely in the development of ship type. They have cooperated to carry out joint development and approval of many ship types of advanced technology and high energy efficiency such as large tanker with less ballast water, LNG dual fuel VLCC and sail-assisted VLCC. This joint project of new energy-efficient VLCC, which meets the requirements of the HCSR, is a successful example of cooperation between CCS and CSIC under the newly signed strategic cooperation agreement.

Since 2012, IACS has released many revisions of HCSR, and among the IACS members CCS took the lead to introduce a structure calculation software according with HCSR. The checking of structural design and structural strength of this ship are carried out on CCS software platform. It is proved that the HCSR structure calculation platform of CCS has stable operation and reliable results, which can fully meet the requirements of ship type development and actual ship structural design and structural strength checking.



# CCS launched ECA technology services

By Du Jiangang

On November 7, 2016, The Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC) opened with a spectacular ceremony in Abu Dhabi, the capital of the United Arab Emirates. At the exhibition, CCS exhibited its latest marine service products and services to the industry, and introduced the newly developed ECA technology services.

In the marine oil and gas industry, the welding structure is widely used in jacket platforms and submarine pipelines, the characteristic of welding processing means the inevitable appearance of discontinuous defects in the joints such as crack, gas pore, slag and lack of fusion, and possible geometric deviation such as bending, twisting, and mismatch. These defects and deformation are extremely sensitive to external loads in service, and are often the root cause of stress concentration and propagation of crack which lead to the ultimate failure of structure. Therefore, the analysis and evaluation of fracture and fatigue of joints with defects, based on the principle of Fitness for Service, can not only be used to optimize the construction process and reduce the possibility of the occurrence of defects and deformation, but also has great significance in production cost reduction and economical and social benefits improvement. Engineering Critical Assessment (ECA) is generated based on the principle of Fitness for Service and fracture mechanics.

## What is the ECA?

Engineering Critical Assessment, abbreviated as ECA, based



Figure 1: The crack

on the principle of Fitness for Service, is used for fracture and fatigue evaluation of structures with welding defects.

In the marine oil industry, the principle of Fitness for Service includes two aspects:

1. When defects are detected, ECA analysis is used to determine whether to replace or repair, or to extend the use ;
2. If the use is extended, ECA analysis is used to make life prediction, determine replacement or repair plan.

## The foundation and specification of ECA

Fracture mechanics is one of the major achievement of Solid Mechanics in the twentieth century, and is also an important theory basis for the strength estimation and life prediction of engineering materials and components. It has formed an academic branch in the world by using fracture mechanics theory for the failure assessment of defect structure and multiple well-known universal engineering critical evaluation standards such as BS7910, SINTAP, and DNV have emerged, BS7910 from Britain is the most frequently used.

**ECA method introduction**

1, Engineering critical assessment process. The commonly used BS7910 assessment flow chart is as follows:

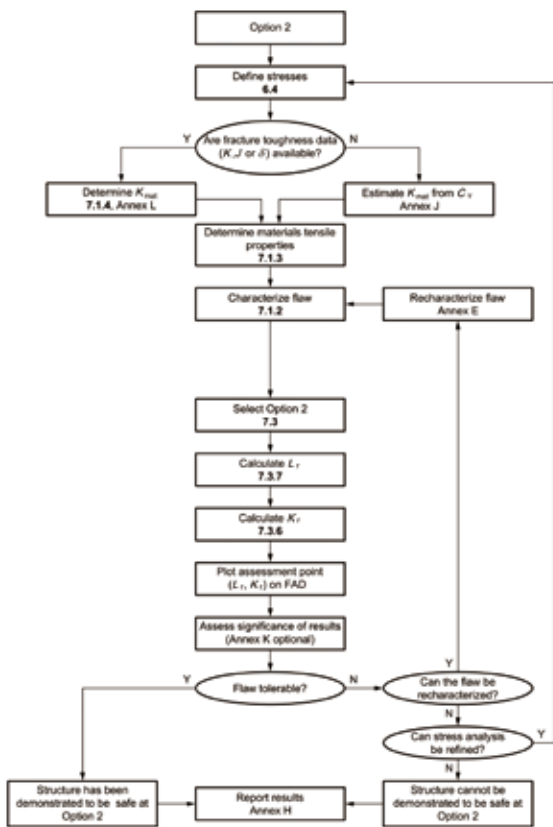


Figure 2:BS7910 assessment flow chart

2, Introduction of engineering critical assessment method

1) to assess the welding parts through fracture toughness CTOD test and residual stress test, to determine the parameters of the toughness and welding residual stress;

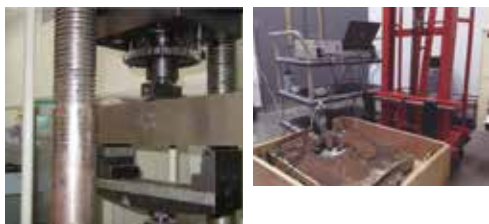


Figure 3:CTOD test and residual stress test

2) Use finite element analysis to determine the stress condition of defect parts;

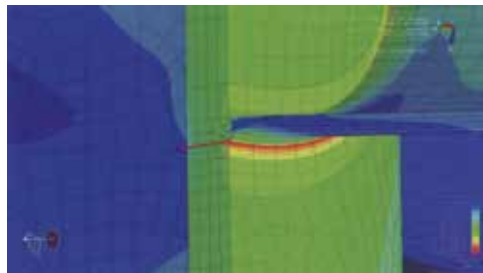


Figure 4: The finite element analysis

3) Assess defects according to the failure assessment diagram, normally use the LEVEL2 failure assessment diagram of BS7910.

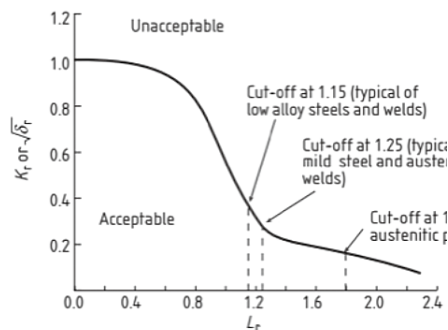


Figure 5: The failure assessment diagram (LEVEL2 stores)

4) Assessment results: Determine whether the defects is within the range acceptable

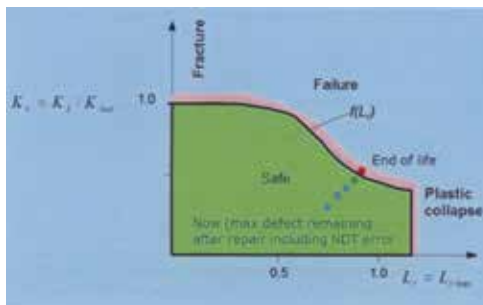


Figure 6: Evaluation Results

**Application of ECA in marine facilities**

Applicable phase: Construction and installation phase, the

service stage;

Application facility: Fixed platform and mobile platform and submarine pipeline



Figure 7: Application Facility

ECA can raise the welding defect acceptance criteria, reduce the repair rate, improve the efficiency of construction of fixed, mobile or underwater pipeline. In addition, the Engineering Critical Assessment can be used to evaluate old or overage fixed platforms to make life prediction, and make maintenance plan in case crack defects are detected.

### Project example

1, ECA evaluation analysis of fixed platform in South China Sea

During the installation process of chunk composition by floatover in South China Sea, after floating ship accessed the notch of the jacket, operation failed when four Leg columns were decentralized down which caused the collision among the floating ship, jacket and Leg columns leading to severe damage of jacket and Leg columns.



Figure 8: The damage of jacket and chunk composition

2, ECA evaluation and analysis of crack of embedded spud can tip in a drilling platform

During the underwater survey in 2015, many cracks were detected on the embedded spud can tip of a drilling platform, however it could not be docked in time for repair due to operational requirements, and conclusions and suggestions were given through ECA analysis by evaluating the crack fracture and fatigue.

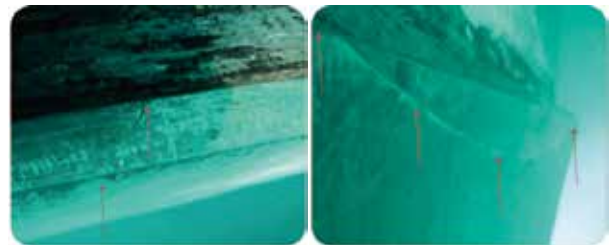


Figure 9: The crack of embedded spud can tip

# CCS Continuously Improves Its Service Ability to Respond to Ship Cyber Risks

**W**ith the continuous development of network, information and communication technology, we have been on the way from the Internet era to the smart era, where the network is penetrating into all areas of society. In recent years, with the improvement of the intelligence level of ships, more and more control systems, communication and navigation systems, information management systems and equipment are continuously connected to the ship network to realize external information interaction. In this context, network security becomes more and more important because of the increasing number of “on-line” ships, which make the risk of network threats to increase.

In response to an urgent need to raise awareness of the cyber risk threat, IMO Maritime Safety Committee adopted at its 96<sup>th</sup> Session, and subsequently released the Interim Guidelines on Maritime Cyber Risk Management (MSC.1 Circ.1526), which recommends solutions to cyber risk. The international maritime community is enhancing the

awareness on this issue.

Combining with the progress of research on intelligent ships in China, China Classification Society (CCS) takes cybersecurity research as an important subject and provides solutions to reduce cyber risk at all stages of the ship's life cycle. Regarding improper operation, integration, maintenance and design of network system, lack of safety awareness and management ability and other risk points (such as: software and system defects, unauthorized access violation, deficient risk control procedures, unprotected network data and flow, remote tool intrusion and spread of malware through mobile storage devices), CCS has provided shipowners, management companies, systems and equipment suppliers with managerial and technical advice on ship network, and has carried out in-depth analysis of network security indicators to present the system security enhancing program in response to network threats.

# CCS Successfully Carried out Survey with UAV

**R**ecently in Shanghai, during intermediate surveys for an oil tanker and a bulk carrier, China Classification Society (CCS) successfully carried out UAV flying inspection to the key structure of the oil hold and cargo hold of the two ships, helping the surveyors know the hull structure situation. Also in the

shipbuilding site, UAV was applied to the hull seam inspection.

In ship surveys, through close-range image capture, UAV scans hull structure automatically or by manual control and achieves defect screening with the help of image recognition technology. As an alternative or supplementary measure to inspect the hull structure

parts that are not easy to reach for surveyors, it has improved the safety of survey and reduced survey costs.

CCS has done researches on the applicability in ship survey, aircraft selection, endurance, lighting, obstacle avoidance, indoor location and image acquisition of UAV, and has carried out secondary development of UAV and its flight control system.

According to the particularity of ship survey scenario, CCS is carrying out R & D work on UAV in autonomous flight, tracking

flight, intelligent image location and defect analysis with 3D laser scanning technique and hull structure 3D model.

In addition, CCS is also conducting research on the application of remote survey technology such as remotely operated vehicle and crawling robot in ship survey by integrating with the revision of IACS's Recommendation No. 42, Guidelines for Use of Remote Inspection Techniques for Surveys.

## CCS Issued the First European Union CE certification for Boat

**N**ovember 6, 2016, at the Ninth China (Xiamen) International Boat Show, China Classification Society (CCS) issued the first yacht CE certificate to Xiamen Hansheng Yacht Building Co., Ltd..

Since CCS Greece company obtained the qualification of the European Union yacht and related products certification in September of this year, CCS "European Union yacht technical standards research" project team has begun to actively promote the certification service. The team completed CE type inspection of Category B for the luxurious leisure competition sailing ship Outbound 46 built by Hansheng Yacht, and issued the first CCS CE certificate for yacht, and thereout opened a new chapter of CCS yacht survey.

As the national technical organization of ship survey, CCS adheres to the service tenet of "safe operation, environmental protection and creating value for customers and society", and makes efforts to promote the progress of yacht rules and standards

and the improvement of manufacturing capacity, successively researches and publishes technical rules and guidelines like Rules for Construction and Classification of Yachts, Guidelines for Survey of Sailing Craft and EU Yacht Certification Rules. CCS has positively promoted the integration of China yacht building with international market while providing statutory and classification services for domestic yacht customers. After more than two years of efforts, CCS won the EU yacht accreditation in September this year, marking CCS is qualified to issue CE certificates for EU-going yachts. With the accreditation of EU yacht certification, CCS will provide to the industry with "one boat two certificates" survey service, that is, after survey by CCS yachts can obtain both the EU yacht certification (CE certificate) and the domestic yacht type inspection certificate, which Will help yacht builders to expand the scope of sales (including domestic and export), save certification time and reduce certification/survey costs.

# CCS and Siemens Jointly Promoted Intelligent Shipbuilding



On October 25, 2016, in Shiptec China 2016, CCS announced that together with Siemens PLM Software the new generation ship engineering calculation software system (COMPASS 3D) has been developed and would be launched soon. This system developed a new solution which applied to ship design and plan approval calculation, integrated ship performance calculation, regulation calculation and structure direct calculation on the basis of 3D model, which will reduce repeated input of a large amount of data in the process of ship design and plan approval and shorten the cycle of design and plan approval, and as a result improve the work efficiency.

COMPASS 3D has the characteristics of standardization, modularization, integration and intelligence, it has the unified data standard and module design. This system is based on Siemens 3D modeling platform and simulation platform, developed the convenient CAD parametric modeling for ship, automatically generated CAE model which fully meet the requirements of ship finite element structure calculation, making a breakthrough in the long-lasting technical difficulty in the industry.

COMPASS 3D software system will be an important part in the intelligent shipbuilding, and provide basis for China shipbuilding

industry to realize intelligence in the whole life cycle, help the customers to carry out the whole life cycle management from design, plan approval construction to operation management.

CCS vice president and chief engineer Zhu Kai pointed out: “in order to meet the demand for integration of 3D ship design and plan approval, CCS new ship engineering calculation software system aims to provide more advanced, more intelligent and more efficient service for China shipbuilding industry based on advanced technical means. The development of this software has been long awaited by the industry and we chose NX software of Siemens PLM Software due to their good ability on modeling, and excellent performance on CAD/CAE integration technology, Simcenter and other engineering application. Besides, they have good technical support and services. CCS will continue to develop and research in the field of ship intelligence, constantly provide new service product to the industry, promote the development of intelligent shipbuilding in China.”

Mr. Liang Naiming, the senior vice president for Siemens PLM Software global and chief executive for Chinese area said that: “we are very honored to be a strategic partnership with CCS, and jointly promote China shipbuilding industry to become intelligent and digital. Combining

the leading knowledge of CCS and our strong software platform and development ability, we will help China shipbuilding industry to realize standardization, modularization, integration and intelligence of ship's whole life cycle management.”

CSIC Orient Wuxi Software Technology Co., LTD., Huazhong University of Science and Technology CAD Center, China Ship Design & Research Center Co., Ltd., Marine Design & Research Institute of China (MARIC), Wuhan University of Technology and

other units have also joined the research and development of the project.

COMPASS system is the name for CCS engineering calculation software combined, which includes Compass rule, Compass CSR, Compass stability and other subsystems. COMPASS 3D is a new generation of engineering calculation software system launched by COMPASS system.

## CCS Helps the Green Shipping Development of Guizhou Wujiang River

October 19, 2016, at the ceremony of “Guizhou Wujiang River 16 1000-ton LNG Ships Construction Signing and Guizhou Shipowners Club Opening” held by Cinature Holding, Chongqing Chuandong Shipbuilding Industry Co., Ltd. and Guizhou Cinature Shipping Holding Ltd. signed a construction contract of Wujiang River 16 1000-ton LNG Ships. Since Wujiang River is soon going to resume service after more-than-10-year suspension, Guizhou shipping industry is vigorously promoting the development of LNG-powered ships to keep green shipping of Wujiang River with clean energy.

It is reported that Chongqing Chuandong Shipbuilding Industry Co., Ltd. and Guizhou Cinature Shipping Holding Ltd.

cannot cooperate without the plan approval service and market information sharing by China Classification Society Chongqing Branch. General Manager of CCS Chongqing Branch, Mr. Gu Siyuan and Deputy General Manager, Mr. Long Yi were invited to witness the signing ceremony with the leaders of Guizhou Provincial Government and relevant shipowners and shipyards. These vessels will apply for CCS CSAD classification construction inspection, the design of which will meet the requirement of “limits of fuel consumption and CO2 emission for Yangtze River-going ships”.

As an important tributary of the upper reaches of Yangtze River, Wujiang River runs through seven cities and Guian New



Area in Guizhou Province. According to statistics, more than 70% of Guizhou's GDP and more than 70% of fiscal revenue are from Wujiang River. After resumption, Wujiang River will become the logistics "golden waterway" in Guizhou, therefore, using LNG clean energy to protect Wujiang River environment and promote economic development will be of great significance to economic and social construction and ecological civilization development of Guizhou Province. In the 13th Five Year Plan, Guizhou shipping industry will vigorously promote the application of clean energy to boost Wujiang River "green shipping" development.

As a Ministry of Transport Wujiang waters LNG ship application pilot project, Guizhou Cinature Shipping Holding Ltd. built 16 1000-ton LNG multi-purpose container ships together with Chongqing Chuandong Shipbuilding Industry Co., Ltd., which will be put into container liner route from Guizhou (Wujiangdu) to Chongqing (Fuling) next year. At the same time in order to ensure the supply of LNG for ships, Guizhou Cinature will invest in construction of LNG filling stations along river ports in Guizhou. The company plans to invest 300 million yuan to build a total of 70 LNG multi-purpose container ships and put them into the Wujiang route operation, making up a green feeder container fleet

composed of LNG-powered ships and finally realizing Guiyang - Chongqing - Shanghai container liner Intermodal transport.

"After the resumption of Wujiang River shipping, we will open up and operate Guiyang - Chongqing - Shanghai container liner route, which will in the future become a 10,000-ton-per-day regular cargo liner route. Besides, for the safe operation of LNG-powered ships, we will carry out Guizhou inland river LNG ships safety management business, including crew training and ship management, etc.." Introduced by Mr. Liu Taifeng, Vice President of Guizhou Cinature Shipping Holding Limited.

In terms of unit energy consumption and emissions, shipping is relatively an energy-efficient and environment-friendly mode of transportation. However, the shipping industry has a huge volume of transportation, ship emissions cannot be ignored. With the coming resumption of Wujiang River shipping, fuel pollution from ships transportation may become an important source of pollution. "Using gas instead of oil helps to curb shipping pollution problems from the source." CCS experts introduced that using natural gas as ship fuel not only lowers cost, but also reduces 80% of NO<sub>2</sub> emissions, 25% of CO<sub>2</sub> emissions, 100% of SO<sub>2</sub> and PM emissions, comparing to heavy oil.

Industry figures suggested that with a shipping suspension of more than 10 years, Wujiang River almost has no large cargo ship going currently, therefore, it is the best time to encourage the building of clean energy ships and the establishment of green shipping system.

On that day, Guizhou's first shipowners club, Cinature Shipowners Club, was also established in Guiyang. The club will hold regular meetings to discuss the development of LNG-powered vessels and other related issues, providing an industry exchange platform for the development of Wujiang River "green shipping".