

# ClassNK

MAGAZINE

*December 2019 - 86<sup>th</sup> Edition*

- ◆ *Ready for IMO 2020?*
- ◆ *CBM's time has come*
- ◆ *Scale and diversity for China*



# The final countdown

Welcome to the 86<sup>th</sup> edition of the ClassNK Magazine



With commencement of the official global enforcement of the SOx regulation imminent, the maritime industry is making its final preparations for smooth compliance. ClassNK has also had its hands full developing various guidelines to assist key players along the road. For example, in recent months we released our “Guidance for onboard use of Compliant Fuel Oil with SOx regulation from 2020”, “Booklet for ship crew members: Precau-

tions concerning change-over to 0.50% sulfur compliant fuel oils” and “Guidelines for Ships Using Low-Flashpoint Fuels (Methyl/Ethyl Alcohol/LPG)”. To address the many inquiries we receive about the regulation and to further reinforce our contribution to the situation, we have included a FAQ section related to the sulfur cap within this edition of ClassNK Magazine.

Further, environmental regulations continue to tighten and as the IMO has announced its goal to eliminate GHG emissions completely within this century, technology using wind power for auxiliary propulsion is attracting attention as one of the underlying technologies for accomplishing this. A special article highlights our initiatives with wind-assisted propulsion systems and the related guidelines we released in September 2019.

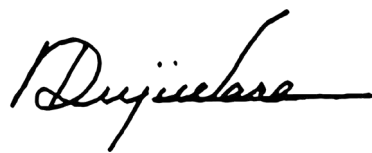
In this edition, we also revisit the ‘autonomous ship’ from the interesting perspective of condition-based maintenance (CBM), which is increasingly seen as a stepping-stone towards the realization of more autonomous vessels. An insightful article explains how ClassNK

recently revised its rules on CBM to set out the conditions for its use in the context of streamlining and delivering greater flexibility in vessel inspections.

In addition, in two special interviews, we explore our strong and longstanding relationships with leading ship owning and shipbuilding partners in China, on this occasion through separate interviews with Winning International Group and Yangzijiang Shipbuilding. To wrap things up, we take a close-up look at the maritime industry of China from the perspective of our local ClassNK management team.

ClassNK is ready to provide first-class support to the maritime industry in the midst of the new regulations and evolving environment.

I hope you enjoy this edition of the ClassNK Magazine.



*Koichi Fujiwara, President & CEO*

# ClassNK



6



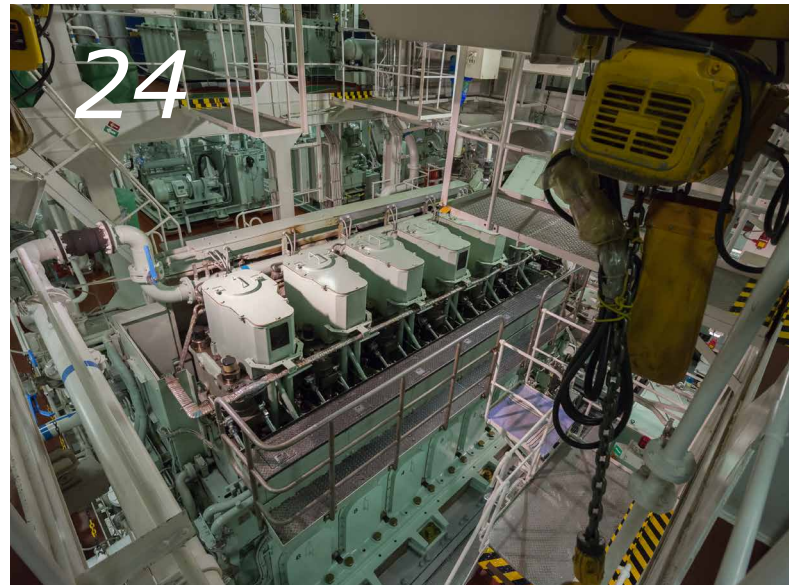
12



20



24



**2 The final countdown**  
Welcome to the 86<sup>th</sup> edition

**4 ClassNK news**  
ClassNK continues to set the industry agenda

**6 Scale and diversity for China**  
- Interview: Fumihiko Higashi, President, ClassNK China  
- General Manager profiles ClassNK China

**12 Working closely with the Winning formula**  
Shipowner interview with Winning International Group

**16 Supporting Yangzijiang to keep quality first**  
Q&A with leading Chinese shipyard

**20 Ready for IMO 2020?**  
ClassNK answers some common questions arising from IMO 2020 sulfur regulations

**22 The wind rises**  
New guidance from ClassNK will contribute to safer wind power installations for ships

**24 CBM's time has come**  
New ClassNK guidelines anticipate greater buy-in for condition-based maintenance

**26 A dormant beauty**  
100 kilometers southwest of Tokyo, Mt. Fuji is internationally known as a symbol of Japan

**ClassNK**

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# ClassNKnews

## Cross-sector cyber initiative

9 September 2019 - ClassNK has established a cross-sectional cyber security project team made up of ship and security experts of the Society in order to accelerate its cyber security service in response to the expanding needs of clients. Senior Executive Vice President Hiroaki Sakashita is leading the team whose objectives include the faster delivery of cyber security class notation for ships, ship/company management system certification and more. Cyber security for ships is entering a practical stage, including the Maritime Safety Committee (MSC) resolution encouraging administrations to ensure that cyber risks are appropriately addressed in existing safety management systems no later than the first annual verification of the company's Document of Compliance after 1 January 2021. Consideration of more high level countermeasures envisaging the future of autonomous ships is also required. To date, ClassNK has continued developing its basic approach and various related guidelines to support the industry with cyber security as shown below.

- ClassNK Cyber Security Approach (February)
- Guidelines for Designing Cyber Security Onboard Ships (February)
- Cyber Security Management System for Ships (March)
- Guidelines for Software Security (June)

## AIP for LPG Reformer

24 September 2019 - ClassNK has granted an Approval in Principle (AIP) to Osaka Gas for its joint project with Daihatsu Diesel on an LPG Reformer for marine engines. This was the first AIP granted in Japan for such equipment. The LPG Reformer is designed to convert LPG into synthetic methane gas equivalent to the kind found in LNG. Mainly composed of propane and butane, LPG is susceptible to knocking (abnormal combustion), making it difficult to use as a fuel for lean burn gas engines and dual fuel engines. In contrast, by converting LPG into synthetic methane gas with the LPG Reformer prior to fueling the engine, the risks of knocking can be restrained, resulting in equivalent operational performance observed when using LNG. Additionally, by using LPG as fuel, the emission of environmentally harmful substances like SOx and NOx can be significantly reduced compared to when using conventional heavy oil fuels, allowing for compliance to the 2020 IMO SOx regulation and more by using marine engines themselves. When using LPG as fuel, the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF code) applies. However, the current IGF code does not address specific regulations for alternative fuels other than LNG. Accordingly, ClassNK released Guidelines for Ships Using Low-Flashpoint Fuels (Methyl / Ethyl Alcohol / LPG) in June 2019.

## Call for BWMS installation planning

26 September 2019 - An analysis from ClassNK of the retrofitting status of ballast water management systems (BWMS) on its registered ships has confirmed that installation deadlines based on the Ballast Water Management Convention (BWM Convention) are highly concentrated in the year 2022. The new examination, concluded in September 2019, has led the Society to recommend that owners of existing ships consider installing systems well in advance of 2022, to avoid possible scheduling difficulties. As of the end of August 2019, 7,124 of the 9,097 ships registered with ClassNK are obligated to install BWMS in accordance with the BWM Convention. Of this number, 2,606 ships have completed installation, leaving 4,518 ships that still require attention. Although the number of ships without BWMS decreased by 882 within one year, the installation deadline for these ships remains largely concentrated in 2022.

## Crew guidance for fuel switching

01 October 2019 - ClassNK has released a new 'Booklet for ship crew members: Precautions concerning change-over to 0.50% sulfur compliant fuel oils' to address the IMO fuel oil sulfur limit regulations on board ships in force from 1 January 2020. The precautions outline potential risks for ship crew members responsible for operations in the change-over from conventional fuel oils to compliant fuel oils and measures to mitigate the risks. The booklet provides ship crew members onboard who bunker and use compliant fuel oils with information focusing on the compatibility and cold flow properties of such fuels, as well as associated risks and measures to mitigate them. The booklet can be viewed on the ClassNK website ([www.classnk.com](http://www.classnk.com)) under "Products & Services" > "Statutory Services" > "SOx/PM regulations". An additional booklet addressing risks related to low viscosity, Cat-fines, ignition/combustion quality, and the measures to mitigate them will be issued in due course.

## ClassNK grants AIP related to Wind Challenger Project

03 October 2019 - ClassNK has granted an Approval in Principle (AIP) based on its 'Guidelines for Wind-Assisted Propulsion Systems for Ships' and related regulations for the basic design of a hard sail system which converts wind energy to propulsive force with a telescopic hard sail. The solution is a fundamental technology of the Wind Challenger Project, spearheaded by Mitsui O.S.K. Lines, Ltd. (MOL) and Oshima Shipbuilding Co., Ltd. Upon receiving the application from MOL and Oshi-

ma Shipbuilding, ClassNK reviewed the basic design of the hard sail system in line with relevant international conventions, ClassNK rules, and the above-mentioned guidelines. Following its successful completion, ClassNK granted an AIP for the basic design of the hard sail system, which marks the world's first AIP based on the guidelines.

For more details of the Wind Challenger project, see [p22-23](#).

## Remote Surveys benefit from ICT

04 October 2019 - ClassNK has released Guidelines for Remote Surveys using ICT (Information and Communication Technology). The Society has examined the types of surveys that can be applied, the types and amounts of information required for remote surveys, and the requirements for the use of ICT, ensuring reliability equivalent to conventional witness surveys with transparency in the application of remote surveys. ClassNK aims to implement more rational and sophisticated surveys using various digital technologies such as IOT, ICT, big data, AI, digital twins, condition monitoring/evaluation and robotics.

## ClassNK has role Getting to Zero

10 October 2019 -ClassNK is participating in the Getting to Zero Coalition, an international corporate coalition that promotes the de-carbonization of the maritime industry. The Getting to Zero Coalition is an alliance that aims to have commercially viable zero emission vessels powered by zero emission fuels operating along international trade routes by 2030 in order to accomplish the IMO's goal of reducing GHG emissions from international shipping in half by 2050 compared to 2008. ClassNK's initiatives towards the reduction of GHG emissions will further strengthen through participation in the Coalition. For more information, see [www.globalmaritimeforum.org/getting-to-zero-coalition](http://www.globalmaritimeforum.org/getting-to-zero-coalition)

## ONE data shared via IoS-OP

18 October 2019 - Kawasaki Kisen Kaisha, Ltd. ("K" LINE), Mitsui O.S.K Lines, Ltd. (MOL), and Nippon Yusen Kabushiki Kaisha (NYK) have begun sharing operational data acquired from the monitoring system installed in container ships under Ocean Network Express Pte. Ltd. (ONE) charter, through the IoS-Open Platform (IoS-OP) promoted by Ship Data Center Ltd. (ShipDC). As "K" LINE, MOL, and NYK manage data using different frameworks, the IoS-OP's automatic conversion function was used to provide standard names in line with ISO19848 from ShipDC, simplifying analysis and management of ONE's integrated operational fleet data. ONE aims to use this data to improve the accuracy of performance evaluations of individual vessel and machinery, and to achieve safer and more efficient vessel operations. Data sharing will significantly increase the volume of ship operational data distributed through IoS-OP, and further accelerate data collection, distribution, and utilization through IoS-OP within the maritime industry.

## IHM Guidelines V4.00

29 October 2019 - ClassNK has released Guidelines for the Inventory of Hazardous Materials (Ver.4.00). Adopted in 2009, hopes are once again high that The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) will soon enter into force, as 13 countries making up 30% of the merchant fleet have now acceded to its provisions. Entry into force of requires the development and maintenance of an Inventory of Hazardous Materials (IHM), which identifies the location and approximate quantities of hazardous materials onboard all ships over 500GT. Ahead of the HKC's entry into force, EU ship recycling regulations will require all existing ships sailing under the flag of EU Member States as well as ships flying the flag of a third country and calling at an EU port or anchorage to have an IHM from 31 December 2020. The Guidelines for the Inventory of Hazardous Materials (Ver.4.00) are available to download free of charge via ClassNK's website [www.classnk.com](http://www.classnk.com) "My Page" service.



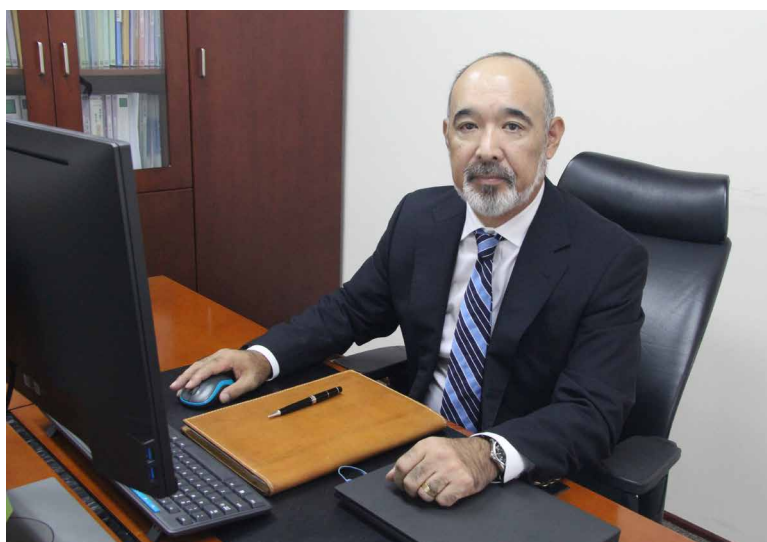
# Scale and diversity for China

**Interview: Fumihiko Higashi, President of ClassNK China**

*Please introduce yourself, giving a brief summary of your career with ClassNK, with special focus on your involvement in the Chinese market.*

Since April 2018, I (Fumihiko Higashi) have been President of ClassNK China. I have a background in Mechanical Engineering and have been with ClassNK for almost 30 years. Compared to some of my colleagues, I may have had a unique career being devoted to the business promotion of ClassNK. I started in the Machinery Department and was in charge of plan approval. After accumulating 10 years of experience in plan approval and field surveys, I was transferred to the Business Department, where I spent almost 15 years in total. I also have five years of experience working in Singapore heading the marketing in Southeast Asia and Oceania region.

To develop better relationships with clients and demonstrate ClassNK's competence, the coverage of the business department has involved everything from day-to-day communication to strategy control and solution proposals to meet client needs.



During that period, ClassNK's involvement in the Chinese market accelerated greatly and therefore I can't count how many times I have visited China. Following my long career in the business department, I led the department as General Manager from 2014 until I became President of ClassNK China.

***We have seen significant growth in the scale and diversity of Chinese shipbuilding over the last decade.***

***How has ClassNK's organization in Mainland China developed over that period in terms of staff deployed and services offered?***

As the number of ships is growing, the number of our staff has been growing as well. Compared to 10 years ago, the number of staff has increased several times up to nearly 240 employees. By having more manpower, we strengthen our ability to meet client needs and to do this we founded our



Strategic Planning Division to introduce new services welcomed by our clients. Also, we operate a dedicated Training Center to educate and train maritime industry players in the Chinese market.

***How many Chinese-owned vessels in Mainland China does ClassNK have on its register?***

As of July this year, we have 569 ships, or 16 Million gt registered under our class. Thanks to our Chinese clients, the numbers are growing every year. The number of newbuildings in Mainland China this year is 58 ships with 2.35 Million gt, which is also growing annually.

***How has ClassNK's involvement in China changed over the last 10 years?***

Previously, we were focusing on growing business based on existing tonnage, but that has changed over time, with ClassNK putting efforts in balancing out amounts with newbuildings. This was achieved by continuously providing our clients with high quality technical services and obtaining their trust. We will continue providing our best service to maintain good relationships with our clients.

***How has your expertise/experience been of most use during your role in China?***

I think Chinese people are very up-to-date and grasp trends quickly.

In the maritime industry, due to the strengthening environmental regulations, many new technologies and ideas are being developed. Therefore, I need to always be one step ahead of the trends when communicating with Chinese clients. I don't think people can stay updated with the latest trends when they only communicate with the people inside their company. This is where my long experience in the business department helps. During my days there I met many industry players, including more than a few top executives. Building a strong bond and connecting with clients allows me to absorb so many "hot topics" that you can't find in a newspaper. Therefore, I think I am the right fit for my current position as President of China and wish to continue my tenure here for many years to come.

***As the Head of ClassNK China, what is your goal?***

Providing customers with the highest quality, first-class service is our goal. In order to achieve it, we will make better use of the technical and service advantages of our staff in NK China, visit and listen to our customers including the government department (MSA), to further strengthen and improve our survey and audit quality, make proper judgements and give clear explanations to clients. Nowadays, the world is undergoing rapid development in information technology. The use of big data, the promotion

of autonomous surface ships technology and the further reduction of GHG, especially the reduction of CO2 emissions for reducing NOx and SOx, have become a common challenge for everyone. The duty of our class is to ensure the safety of ships and life at sea and protect the marine environment. We have established a very good communication platform with the industry. Through timely delivery of the latest IMO guidelines, ClassNK technical information and circulars, PSC bulletins, up-to-date industry developments, regular and irregular organization of technical academy and seminars, as well as regular and irregular visits to our customers, we continue to improve our level of quality and technical service and steadily improve the performance of NK in China. Of course, we cannot control the market, but my predecessors successfully guided us towards achieving continuous growth under various circumstances through the last decade in China. So, I will also try to maintain our growth and lead a successful business for the next generation.

***Tell us about your favorite hobbies, sports, or foods.***

I've been enjoying the world's finest Chinese dishes here in Shanghai, but I honestly sometimes feel like flying back to Japan for Wagyu (Japanese beef) BBQ. Regarding Chinese traditions, I used to play Mahjong in Japan. Recently I love visiting old port towns around Shanghai.

请做下自我介绍，概述下您在NK的职业生涯，重点介绍下您在中国市场的工作情况。

2018年4月起，我（東史彦）担任日本船级社（中国）有限公司（ClassNK中国区）总裁。我有机械工程的专业背景，入职ClassNK已近30年。与我的一些同事相比，我的职业生涯可能比较独特，一直致力于ClassNK的业务推广。起初，我入职的是轮机部，负责审图业务。在积累了十年的审图和现场检验经验后，我被调到了营业部，在那里我总共待了近十五年。我还有五年在新加坡工作的经验，担任东南亚和大洋洲地区市场开发的负责人。

为了更好地开发与客户的关系并证明ClassNK的实力，营业部工作从日常客户交流逐步延展到战略控制和提供满足客户需求的解决方案。

在此期间，ClassNK也加快了涉足中国市场的脚步，我已经记不清访问中国多少次了。在营业部工作了很长一段时间后，2014年起我被任命为营业部部长，直到我成为ClassNK中国区总裁。

过去十年，中国造船的规模和多样性都有了显著的发展。在此期间，ClassNK在中国内地的组织机构在人员配置和服务方面有何发展？

随着船舶数量的增长，我们的员工数量也在不断增加。与十年前相比，我们的员工人数翻了几倍，现有近240名在职员工。通过人力资源的增加，我们强化了自身能力以满足客户需求。为此，我们成立了战略发展部，向我们客户推介新业务，广受客户欢迎。此外，我们还开设了培训中心，为中国市场的航运业人士提供教育和培训服务。

在中国内地有多少艘中国船东的船舶入级ClassNK？

截至今年7月，中国内地船东共有569艘船舶，一千六百万总吨入级ClassNK。感谢我们的中国客户，这个数字每年还在攀升。今年中国内地的新造船数量是58艘船舶，共两百三十五万总吨，这一数字也是逐年递增。

过去十年，ClassNK在中国的业务发生了怎样的变化？

以前，我们的重点是在现有吨位的基础上发展业务，但随着时间的推移，这种情况发生了变化，我们把更多的精力花在新造船上平衡船舶总量。通过不断为客户提供高质量的技术服务并赢取他们的信任，此举获得了成功。我们将继续提供最好的服务，与我们的客户保持良好的合作关系。

在中国任职期间您会如何运用您的专业知识/经验来领导ClassNK中国区业务？

我认为中国人非常与时俱进，能很快掌握市场动向。在航运业，由于环保法规的不断完善，很多新的技术和想法正在开发中，所以在与中国客户的交流中，我需要始终领先一步于市场潮流。我认为当人们只与公司内部的人员交流时，他们是无法跟上最新的市场潮流的。这正是我长年累月在营业部获取的工作经验行之有效的地方。那段日子里，我遇到了许多业内人士，包括不少公司高管。与这些客户建立了紧密关系，让我获取到了不少报纸上找不到的“热点话题”。因此，我认为我是非常适合中国区总裁这个职位的，并且我希望能在将来的几年里在这里继续我的任期。

作为ClassNK中国区的负责人，您的目标是什么？

为客户提供最优质、一流的服务是我们的目标。为了实现这一目标，我们将更好地利用我们NK中国区员工的技术和服务优势，拜访我们的客



户包括政府部门（海事局），倾听他们的诉求和建议，进一步加强和改善我们的检验和审核质量，做出正确的判断和对客户给出明确的解释。当今世界是一个信息技术飞速发展的时代。大数据运用，推广海上自主水面船舶技术，进一步减少温室气体排放，特别是在减少NO<sub>x</sub>和SO<sub>x</sub>的基础上进一步减少二氧化碳排放，已经成为我们每个人共同面临的挑战。我们船级社的职责是确保海上船舶和生命安全以及保护海洋环境。我们与业界建立了良好的沟通平台。通过及时发送给客户最新的IMO指导文件、ClassNK技术信息和通函、PSC通告和最新的行业发展报告，定期和不定期地组织技术培训和研讨会，以及定期和不定期地拜访我们的客户，我们将继续提高我们的服务质量和技术水平，稳步提高NK在中国的业绩。当然，我们无法控制市场，但我的前任们在过去十年里无论如何境遇都能成功引领NK中国区持续健康发展。所以，我也会努力保持增长，并把这个成果顺利传递到我的下一任手中。

告诉我们你的个人喜好，比如兴趣、运动或食物。

我一直在上海享受着世界上最好的中国料理，但说实话，我有时也希望能飞回日本品尝些和牛烧肉。关于中国的传统，我过去常在日本打麻将。近期我比较热衷于参观上海周边的水乡古镇。





**General Manager profiles ClassNK China**

日本船级社总经理简介



**Name:** WeiXiang Shi

**Title:** General Manager of Strategic Planning Division

**Tenure in ClassNK:** 24 years

**Department's Mission:** We're dedicated to providing the highest quality, first-class service through active mobilization of all available resources while taking our customers' urgent needs into consideration, while also offering careful analysis and research of industry information and trends in cooperation with our customers for our long-term strategic partnerships to meet challenges and shape the future.

**Hobby:** Jogging, reading & traveling

**姓名:** 施卫祥

**职位:** 战略发展部总经理

**服务年限:** 24年

**部门任务:** 积极调动一切可利用的资源, 急客户所急, 想客户所想, 为客户提供最优质、一流的服务。与此同时, 认真分析研判业界信息与动态, 与客户结成长期合作战略伙伴, 一起共同应对挑战, 赢得未来。

**爱好:** 慢跑、阅读和旅行



**Name:** ZhengHua Yang

**Title:** General Manager of Training Center

**Tenure in ClassNK:** 25 years

**Department's Mission:** We are committed to providing internal training and skills enhancement training for our staff and providing customers with technical services by periodically holding ClassNK Seminars and Academy sessions throughout China every year and offering customized training for shipping companies.

**Hobby:** Reading, Go (Board Game Weiqi)

**姓名:** 杨正华

**职位:** 培训中心总经理

**服务年限:** 25年

**部门任务:**

**对内:** 做好员工的培训, 再培训工作;

**对外:** 为客户提供服务, 每年在全国范围定期召开ClassNK研讨会, 研修班; 为船公司提供一些特定的培训

**爱好:** 看书, 围棋



**Name:** Masaru Takisawa

**Title:** General Manager of Plan Approval Center

**Tenure in ClassNK:** 17 years (5 years at ClassNK China)

**Department's Mission:** Plan approval work for new shipbuilding projects and existing ships in China.

**Hobby:** Traveling abroad with family. I especially like to visit Disneyland. I've been to every Disneyland in the world. I also enjoy tennis, golf and Mahjong!

**名称:** 龙泽大

**职位:** 审图中心总经理

**服务年限:** 17年(5年就职于日本船级社中国有限公司)

**部门使命信息:** 从事中国境内的新造船以及修船项目的图纸审核工作

**爱好:** 喜欢和家庭成员一起去国外旅游, 特别喜欢去迪士尼乐园, 已经去过世界上所有的迪士尼乐园。另外, 也喜欢打网球, 高尔夫以及麻将!



Name: KongQun Zhang

名稱: 张孔群

Title: General Manager of Dalian Office

職位: 大连事务所 所长

服務年限: 22年

Tenure in ClassNK: 22 years

Jurisdiction of office: Area including Anshan, Dalian, Dandong, Jinzhou, Yingkou, Huludao, Qinhuangdao, Tianjin, Beijing, Shanhaiguan, Jingtang, Caofeidian and Huanghua.

办公室管辖权: 大连、营口、丹东、葫芦岛、锦州、山海关、秦皇岛、天津、北京、津唐港、曹妃甸、黄骅

Hobby: Reading, hiking

愛好: 读书, 徒步旅行



Name: YuDong Luo

名稱: 罗煜东

Title: General Manager of Guangzhou Office

職位: 广州分公司总经理

服務年限: 22.5 年

Tenure in ClassNK: 22.5 years

Jurisdiction of the office: Areas including Sanya, Basuo, Haikou, Beihai, Qinzhou, Fangchenggang, Nanning, Zhanjiang, Maoming, Yangjiang, Guangzhou, Huangpu, Shenzhen, Huizhou, Shanwei, Shantou, Xiamen, Zhangzhou, Quanzhou, Putian, Fuzhou, Mawei, Luoyuan and Ningde.

办公室管辖权: 范围包括三亚, 八所, 海口, 北海, 钦州, 防城港, 南宁, 湛江, 茂名, 阳江, 广州, 黄埔, 深圳, 惠州, 汕尾, 汕头, 厦门, 漳州, 泉州, 莆田, 福州, 马尾, 罗源和宁德

Hobby: Observing the regulations of society and the economy through historical events.

愛好: 透过历史事件观察社会及经济的规律。



Name: XiangWei Chen

Title: General Manager of Qingdao Office

Tenure in ClassNK: 23 years

Jurisdiction of the office: Areas including Qingdao, Yantai, Weihai, Rizhao, Longkou, Penglai, Lanshan, Laizhou, Shidao and Lianyungang.

Hobby: Music, reading, traveling

名稱：陈湘伟

職位：青岛分公司总经理

服務年限：23年

办公室管辖权：青岛，烟台，威海，日照，龙口，蓬莱，岚山，莱州，石岛，连云港

愛好：音乐，读书，旅游



Name: Masaki Sato

Title: General Manager of Shanghai Office (Survey Branch)

Tenure in ClassNK: 21 years

Jurisdiction of the office: Area incl. Chengdu, Chongqing, Jiangyin, Nanjing, Shanghai, Wuhan, Yangzhou, Zhangjiangang, Zhenjiang, Nantong, Yancheng and Zhoushan (Qushan islands and Shensi islands).

Hobby: Snowboarding

姓名：佐藤正树

職位：上海分公司总经理

服務年限：21年

办公室管辖权：管辖区域包括成都，重庆，江阴，南京，上海，武汉，扬州，张家港，镇江，南通，盐城和舟山（衢山岛和嵎泗岛）。

愛好：滑雪



Name: RuiJun Xue

Title: General Manager of Zhoushan Office

Tenure in ClassNK: 21 years

Jurisdiction of the office: Areas including Ningbo, Wenzhou, Zhoushan (excluding Qushan islands and Shensi islands).

Hobby: Sports such as football, basketball & golf

名稱：薛瑞俊

職位：日本船级社（中国）有限公司舟山分公司总经理

服務年限：21年

办公室管辖区域：浙江省（除了大瞿群岛和嵎泗群岛）

愛好：喜欢运动，诸如足球、篮球、高尔夫



# Working closely with the Winning formula

## Shipowner interview with Winning International Group's Mr. Sun Xiushun

*Please offer an overview of the Winning fleet of ships, including vessel numbers and types, owned vs managed its historical evolution, current newbuilding program under delivery and future intentions.*

Winning fleet and its transport capacity have seen a geometric growth through the development of the past decade. The number of self-owned oceangoing vessels has reached 35 with total transport capacity of 6.06 million tonnage. Meanwhile, the maritime logistics barge fleet of Winning has owned up to a hundred working ships and facilities with nearly 2000 excellent crews, providing Winning with a global all-region, all-weather shipping and logistics operation capacity.

***What are the objectives and expected outcomes of the Winning large vessel strategy?***

The development of the Winning large vessel shipbuilding project aims to provide customers with more economical shipping services and reduction of carbon emission in response to the international community's call for climate change.

***Winning is the pioneering company for bauxite transportation from Guinea. Tell us about the project.***

We are honored to provide economical and convenient logistics and shipping services for export of Guinean bauxite to China and become a leading company in this transport route. Since the first shipment of 180 thousand tons of bauxite arriving at the port of Yantai Shandong in China



*Mr. Sun Xiushun, Founder and President, Winning International Group*

from Guinea in November 2015, we have already transported nearly 120 million tons of bauxite to China on this transport route and more than 220 thousand tons of general cargo from China to Guinea and West Africa. At present, almost half of the annual import of bauxite to China is shipped by Winning fleet. The needs for expansion of the Winning shipping business led us to open up this two-way logistics and transportation giant channel for bauxite and general cargoes spanned across Asia and Africa through the Pacific Ocean, Indian Ocean and Atlantic Ocean with a distance of up to 11,400 nautical miles. We are committed to meeting the needs of Chinese bauxite users for a stable, safe and high-quality supply of bauxite resources during this process.

***Tell us about SMB-Winning Consortium?***

The SMB-Winning Consortium is a successful model for Winning to

achieve crossover development from the traditional shipping field into new fields such as mining, railway and even agriculture. The SMB Winning Consortium is an association comprised by four enterprises, Winning International Group in Singapore, China Hongqiao Group Limited subordinated to Shandong Weiqiao Pioneering Group Company Limited, Yantai Port Group Co., Ltd. and UMS of Guinea. The SMB-Winning Consortium registered for establishment of companies in Guinea such as Société Minières de Boké, SMB Winning Africa Port WAP and Winning Consortium Railway Guinea-Sau, which separately undertake the mining, the construction and operation of ports and construction of railways. After more than four years of production, the SMB-Winning Consortium has made remarkable achievements in bauxite projects in Boké, Guinea for mutual benefit between the consortium and Guinea and the reliable and stable supply of bauxite for Chinese enterprises.

**Earlier this year, we saw a Winning Group VLOC carrying 300,000 tons of bauxite from Guinea to China as part of the wider strategy to develop China's aluminium industry. What special measures are protecting**

**A) vessel safety (including stability, tank surfaces, maintenance) and the marine environment as part of this program?**

Winning International Group has owned powerful ship management companies both in Qingdao China and Guinea. The company has many experienced oceangoing captains and chief engineers who are responsible for guiding the vessel to carry out efficient high-quality maintenance according to the ship maintenance plan approved by the class society and supervising the vessel for daily operation in strict compliance with the requirements of international conventions such as SOLAS, MARPOL, STCW, etc. to guarantee the vessel maintains good working conditions at any given time. Our fleet is sailed not only in the route to Guinea, but also frequently in the round voyage with international ports in Brazil, Australia, Indonesia and even the United States. According to the results of PSC inspection, RIGHTSHIP inspection and flag state inspection, Winning fleet is a safe and compliant fleet operating in full compliance with international conventions, where we not only use low sulfur fuel oil according to the requirements of different navigation areas, exchange and discharge ballast water according to the regulations, but also maintain oily water separators and sewage treatment units in very good working condition onboard. All the operations are in accordance with the relevant conventions and thus effectively protect the marine environment.

**B) vessel loading in Guinea and unloading activities in China?**

Most of the Winning fleet ships carry out bauxite transportation with loading in Guinea and unloading in China.

In Guinea, the port captain of Boké Port Control Center is responsible for carefully checking the stowage plan and loading sequence of each vessel to make sure the stability and strength of Capesize bulk carriers meet the requirements at all times so as to ensure the safety of the vessel. The center is also equipped with advanced navigation equipment such as a collision avoidance radar, electronic chart, VHF AIS, which can provide 24-hour monitoring on the entire loading anchorage and the waterway used by tugboats and barges to safely coordinate the navigation and loading of vessels. The control center will also forward weather forecast and navigational warnings to Capesize bulk carriers, tugboats and floating cranes every day to ensure the safety of the vessels. The tugboats and floating cranes of our cargo transfer fleet also use low sulphur fuel oil meeting the requirements of the convention, while the local garbage and sludge oil companies in Guinea regularly recycle the garbage and waste oil of tugboats and floating cranes. The port state, flag state and classification society will also conduct periodical inspections on tugboats and floating cranes. In addition, we will dispatch speedboats and working ships to patrol in the anchorage and waterway every day to prevent accidents and marine environment pollution. In the dry season, we will conduct water spraying and dust reduction treatment to the cargoes, and install dust covers for SHILOADERS on the loading platform to do our best to eliminate dust pollution. We have also built our own ship repair base in the loading port of Guinea equipped with large floating docks and berths so that our tugboats, barges and floating cranes can conduct periodical in-dock inspection and maintenance as required by the convention even if they are operating in the remote areas of Guinea, West Africa. In the loading port of Boké in Guinea, we have hired world-recognized inspection companies such as SGS and CCIC to test the cargoes and ensure that the cargoes are suitable for the safe

carriage of the vessel. The records of safe transoceanic transportation for more than four years have fully proved the safety of our cargoes. The concept of safety and environment protection has been deeply rooted in the hearts of our employees in Guinea, which provides a powerful guarantee for our safe and green operation.

**Please give an overview of your relationship with ClassNK. When did Winning International Group first use ClassNK services, and for what/which vessels? Where has ClassNK helped Winning International Group by their services and will you make greater use of these services from ClassNK?**

Winning International Group has had deep long-term relationships with ClassNK dating back to 20 October 2011 when we welcomed MV WINNING CONFIDENCE into our fleet in Yantai and started our business with NK. There is no doubt that the safe and efficient operation of the large vessel fleet under Winning International Group cannot be achieved without the strong support offered by ClassNK. With the growth of our fleet, we will purchase more vessels in the future retaining their original register of NK class with simultaneous expansion of our business with NK.

ClassNK has been proactive in terms of investing in digitalisation, big data, CBM, cyber security, etc. What is Winning Group's involvement in this part of ClassNK services, or its expectation of future engagement?

Along with the penetration and popularization of innovative technologies such as digitalisation, big data, CBM, and cyber security in the traditional shipping industry, Winning International Group is also actively concerned about the development of maritime scientific technology and the requirements of the international maritime community on environmental protection and participates in applying these technologies to shipping operation and management.

请提供下韦立船队船舶概况，包括船舶数量、船型、自有船舶及管理的船舶船队历史演变进程，目前准备交付的新造船项目及未来新造船项目意向。

经过10年左右时间的发展，韦立的船队和运力实现了几何数量级的增长，截止2019年，自有远洋运输船舶数量达到35艘，运力达到606万吨；同时，韦立的海上物流过驳船队也拥有近百艘各类作业船只和设备，近两千人的优秀船员队伍——让韦立具备了全球性、全地域和全天候的航运和物流作业能力。

韦立大型船舶战略的目标和预期结果是什么？

韦立发展大船新造船项目的目的是为了为客户提供更加经济的海运服务，降低碳排放，响应国际社会对于气象变化的呼求。

韦立是几内亚铝土矿出口运输的先驱公司，请向我们简单介绍下几内亚铝土矿项目的情况。

我们很荣幸地能够为几内亚出口到中国的铝土矿提供经济和便捷的物流和航运服务，并成为这条航线上的领先企业。从2015年11月首船18万吨铝土矿从几内亚运抵中国山东烟台港以来，时至今日，我们已经从这条航线上向中国运输了近1.2亿吨铝土矿，从中国向几内亚和西非地区运输了22万多吨件杂货。目前，中国每年进



口的铝土矿，几乎一半的货量，都是由韦立船队承运的。开辟这条横跨亚非，途经太平洋、印度洋和大西洋，距离长达11400海里的铝土矿和件杂货双向物流和运输大通道，先是韦立航运业务版图扩张的需要，在这个过程中，我们致力于满足中国铝土矿用户对于稳定、安全和高品位的铝土矿资源供应的需求。

可否给我们介绍下赢联盟的情况？

“赢联盟”是韦立从传统航运领域进入到矿业和铁路甚至是农业等新领域，实现跨界发展的一个成功范本。“几内亚赢联盟”（SMB WINNING CONSORTIUM）是由新加坡韦立国际集团（WINNING INTERNATIONAL GROUP）、中国山东魏桥创业集团旗下的中国宏桥集团、烟台港集团

和几内亚UMS四家企业组成的联合体。赢联盟按照几内亚共和国法律，在几内亚注册成立了赢联盟博凯矿业公司（Société Minières de Boké, SMB）、赢联盟非洲港口公司（Winning Africa Port, WAP）以及赢联盟几内亚铁路公司（Winning Consortium Railway Guinea-Sau）等公司，这些几内亚企业分别承担矿山开采、港口建设运营和铁路建设等工作。投产4年多以来，赢联盟在几内亚博凯铝矾土矿项目取得了骄人的业绩，实现了赢联盟与几内亚的互利共赢，让中国企业的铝土矿供应获得了可靠和稳定的保障。

今年早些时候，我们看到，作为中国铝产业整体发展战略的一部分，一艘韦立集团的VLOC装载有30万吨铝土矿从几内亚运往中国。

作为该项目的一部分，想了解下你们采取了哪些特别的措施来保护船舶安全（包括稳性，舱体表面，维护保养）和海洋环境？

韦立国际集团在中国青岛和几内亚都有实力雄厚的自有船舶管理公司，公司配备多名经验丰富的远洋船长和轮机长，负责指导船舶按照船级社认可的船舶维修保养计划，对船舶进行切实有效高质量的维护保养，监督船舶严格遵守 SOLAS、MARPOL、STCW 等国际公约的要求进行日常操作，随时保证船舶处于良好的工作状态。我们的船队不仅航行在几内亚航线，同样经常往返于巴西、澳大利亚、印度尼西亚乃至美国的国际性港口。通过每年的港口国 PSC 检查、RIGHTSHIP 检查以及船旗国检查的结果来看，韦立船队是完全按照国际公约操作的、有安全保障的合规船舶，我们不仅根据航区不同使用规定的低硫油，按照规定更换和排放压载水，而且船上均安装有工作良好的油水分离器、生活污水处理器等设备，一切按照有关公约来操作，从而有效地保护了海洋环境。

想了解下你们采取了哪些特别的措施来保护船舶在几内亚进行装货作业和在中国进行卸货作业？

韦立船队的大部分船只执行铝土矿运输任务，在几内亚装港，在中国卸港。在几内亚，韦立博凯港调度中心的港口船长会认真检查每条船的配载图

以及装货顺序，确保好望角型散货轮稳性和船舶强度在任何时候都符合要求，从而保证船舶安全。调度中心还配备有避碰雷达、电子海图、VHF、AIS 等先进的航海设备，可以对整个装货锚地以及拖轮和驳船使用的河道进行 24 小时不间断的监控，协调船舶航行安全和装货安全。调度中心每天也会对好望角型散货轮以及拖轮浮吊转发天气预报和航行警告，确保船舶安全。我们的物流过驳船队的拖轮浮吊同样使用符合公约要求的低硫油，同时，几内亚当地的垃圾和油污公司来定期回收拖轮浮吊的垃圾和废油。港口国、船旗国以及船级社等也会对拖轮和浮吊进行定期检查。除此之外，我司还会派出快艇和工作船每天在锚地及河道内进行巡逻，防止发生污染海洋环境的事故。在旱季我们会对货物进行喷水降尘处理，为装货平台的 SHIPLoader 加装防尘罩，尽最大努力杜绝粉尘污染。在几内亚装港我们还专门修建了自有的修船基地，船厂装备有大型浮坞和船台，这样我们的拖轮、驳船以及浮吊哪怕是在遥远的西非几内亚作业，都可以按公约要求定期进坞检查维护。在几内亚博凯装港，我们聘请了 SGS 以及 CCIC 等世界公认的著名的检验公司负责对货物进行化验，保证货物适合船舶安全运输。这 4 年多的跨洋安全运输记录，充分证明了我们货物的安全性。通过定期培训，安全和保护环境的概念早已经在几内亚员工中深入人心，从而为我们的安全和绿色作业提供了有力保障。

请概述一下贵公司和 ClassNK 的合作关系。韦立国际集团首次使用 ClassNK 服务是什么时候和用于哪条船舶？ClassNK 通过自己的服务，在哪些方面帮助了韦立国际集团？您认为韦立国际集团会继续使用 ClassNK 的服务，并扩大合作吗？

一直以来，韦立国际集团和 ClassNK 有着长久和深厚的合作关系，这样的关系可以追溯到 2011 年 10 月 20 日，当时我们在烟台迎接 WINNING CONFIDENCE 加入船队，从而开始了和 NK 的业务合作。毋庸置疑的是，没有 ClassNK 的大力支持，韦立国际集团旗下的大型船队，无法实现安全和高效的运营。随着韦立船队的发展，未来我们会购置更多的船舶，同时保留它们原本的 NK 船级，我们与 ClassNK 的合作关系也会随之得到扩展。

ClassNK 一直积极致力于数字化、大数据、CBM、网络安全等方面的投资。韦立集团在 ClassNK 这些服务中哪方面有合作参与或者未来有否参与的预期？

随着数字化、大数据、CBM、网络安全这些颠覆性技术在传统的航运行业中的渗透和普及，韦立国际集团也十分积极地关注海事科技发展，以及国际海事界对于环保的要求，通过将把这些技术运用到航运的运营、管理和操作而积极参与其中。

# Supporting Yangzijiang to keep quality first

## Q&A with Mr. Song Shuming of leading Chinese shipyard

***Yangzijiang has been rapidly grown the big player. Can you outline the group and its shipyards?***

Founded in 1956, Yangzijiang Shipbuilding Group Ltd is a private enterprise group with shipbuilding as our core business, and shipping and finance as supplementary business. It also established offices in Singapore in 2007. The group's main activities relate to its ownership of three shipbuilding bases, with annual shipbuilding capacity at around 7 million deadweight tons: Jiangsu New Yangzi Shipbuilding Co., Ltd, Jiangsu Yangzi Xinfu Shipbuilding Co., Ltd. and Jiangsu Yangzi-Mitsui Shipbuilding Co., Ltd. Main products include container carriers, bulk carriers, oil and chemical tankers, LNG, LPG carriers, etc.

Jiangsu New Yangzi Shipbuilding Co., Ltd started production in 2007 with a focus on medium and small size vessels, such as 1,800 TEU, 2,700 TEU, 3,800 TEU container carriers, 64,000 dwt, 82,000 dwt bulk carriers, 83,500 DWT multi-purpose vessels for oil/bulk cargo carriers, and 27,500 m<sup>3</sup> LNG carriers. Jiangsu Yangzi Xinfu Shipbuilding Co., Ltd started production in 2012 with a focus on larger vessels, including 400,000 dwt ore carriers, 208,000 dwt, 180,000 dwt bulk carriers and 100,000 TEU, 118,000 TEU container carriers. The Group's production base is enjoying smooth operation and currently working near full capacity.

The shipping market is still in downturn and owners are hesitant to place orders. We had a batch of new orders in the first three quar-



*Mr. Song Shuming, General Manager, Yangzijiang Shipbuilding*

ters of the year, but orders did not meet expectation for 2019. However, in addition impetus created by the clarification of the plans in response to IMO 2020 SOx emission rules, inquiries for newbuilding quotations are increasing and, hopefully, orders under discussion will be realized soon.

***Yangzijiang looks the most successful private shipbuilding company in China. What is the key for this success?***

Shipbuilding is a traditional manufacturing industry, and so only by improving management step by step in a down-to-earth spirit can we achieve success. Yangzijiang shipbuilding group has been reconstituted, retaining the framework of a state-owned company organized to achieve the flexibility of a private enterprise. On this basis, we achieve rapid decision-making to

stay one step ahead in the market, speed up research and quickly seize opportunities. Our competitive advantage derives from the combination of a strong capital base, lean management and a cost control strategy that has continuously improved over a 20-year period.

However, the competitive environment of shipbuilding in China, Japan and South Korea means that we are still transforming from a period of rapid growth to a mature and stable period. We will continue to strive to build our core competitiveness.

***Yangzijiang has established YAMIC partnering with Mitsui E&S Shipbuilding and Mitsui Co. Ltd. Tell us your expectation from this partnership with Japanese based companies?***

We have established a YAMIC joint venture with our Japanese part-



ners for mid-term and long-term development plans for the core shipbuilding business of Yangzijiang Shipbuilding Group to target higher value markets. We expect to integrate the technology research and quality management standards of Mitsui E&S Shipbuilding with the comprehensive resources of Yangzijiang. Through a combination of Japanese technology and quality, Chinese speed and manufacturing competitiveness, we will strive to become the world's No. 1 shipyard building medium-size gas carriers, tankers and bulk carriers.

***Yangzijiang has led LNG fueled ships. How do you analyze the future of this market?***

A growing number of countries are replacing oil and coal with clean energy sources such as liquefied natural gas. Increased demand for LNG, project developments worldwide, and especially the series of "coal reduction and gas increase" measures proposed through state policy in China driving Yangtze River Route plans for medium-sized and small LNG carrier trades are driving our plans for large gas carriers, medium-sized and small carriers of LNG, LEG, LPG. In product and market positioning terms, Yangzi Mitsui Shipbuilding is expected to be the most competitive shipyard in medium-sized gas carriers.

***Please give an overview of your relationship with ClassNK. When did Yangzijiang Shipbuilding first use ClassNK services, and for what/which vessels? How did the relationship evolve by vessel type/number and service required?***

In the early 1990s, Yangzijiang Shipyard cooperated with ClassNK on an open-hatch barge construction project for Japanese owners, subsequently establishing a much closer partnership covering the construction of a 208,000-dwt bulk carrier. The quality of NK services became steadily more comprehensive as the number and complexity of ships

under construction increased. Currently, we are mainly cooperating with NK on container carriers and bulk carriers. We look forward to more cooperation opportunities in new ship types such as gas carriers in the future.

***Where has ClassNK helped Yangzijiang Shipbuilding by their services? Will you make greater use of these services from ClassNK?***

ClassNK has provided extensive support and assistance in developing and optimizing ship types and aspects of shipyard production process, and on quality improvement. The ClassNK brand and its support on technology have an impact in the Japanese market, with its emphasis on quality and service first. We believe more Japanese owners may choose to place orders from Yangzijiang in the future because of support from NK.

***ClassNK has been proactive in terms of investing in digitalization, big data, cyber security, 3D scanning technology for interior inspections, etc. What is the yard's involvement in this part of ClassNK services, or its expectation of future engagement?***

We are now in discussion with NK for cooperation on big data and digitalization. We also hope that NK can introduce and promote Japanese and global advanced technologies and experiences in network security and other automatic intelligent technologies and implement them in actual projects.

***ClassNK has been proactive in developing a suite of design software for shipbuilding. What has your experience been of these products?***

ClassNK's shipbuilding design software has been widely used in the research and design section of our Group. In particular, the newly developed modeling and calculation software for common structural rules saves the time for design and

shortens the design cycle, which provides convenience for the development of new projects. In addition, the NK software for developing an inventory of hazardous materials and other supporting software really helps the design and production of the shipyard.

***The yard has had some success with 82k and 180k DWT Bulk Carriers for delivery to Japanese owners. Can you offer more detail of the current newbuilding schedule and say if and how ClassNK is supporting these projects?***

Yangzijiang Shipbuilding Group has undertaken production of more than one hundred 82,000 dwt bulk carriers since 2015 which have lighter structural weight, larger loading capacity and more fuel saving capabilities at the same speed as similar products through secondary development and optimization. We have received orders for 180,000 and 82,000 dwt bulk carriers from Japanese owners since 2017. The vessels delivered have been uniformly praised the shipowners for quality, on-time delivery and navigational performance. We look forward to cooperating with NK energetically on secondary development and optimization of main products, in order to maintain competitiveness.

***What is the benefit of ClassNK for Yangzijiang Shipbuilding?***

ClassNK is a first-class global classification society with technical advantages and a service spirit of "Quality First, Customer First". Through close cooperation with NK, we believe that our construction and after-sales service quality emulate the standards set by counterparts in Japan. When Japanese owners consider placing orders through Yangzijiang, we believe ClassNK's involvement supports confidence in their choice. We hope that we can provide more competitive high-quality vessels for Japanese owners with the help of NK.



扬子江船业已经迅速成长为造船业一大巨头，您可否概述一下贵集团和旗下的船厂情况？

扬子江船业始于1956年，是以造船为主业，航运、金融等辅业为补充的民营企业集团，于2007年在新加坡上市。集团旗下主要有新扬子造船、扬子鑫福造船和扬子三井造船三大造船基地，年造船能力约为700万载重吨，主要产品涵盖集装箱船、散货船、油轮、化学品船、LNG气体船等船型。

其中新扬子造船自2007年投产，主要建造各类中小型船，如1800TEU、2700TEU、3800TEU集装箱船及64000DWT、82000DWT散货船，83500DWT液货/散货两用船、27500立方LNG船等产品都出自新扬子造船。扬子鑫福2012年投产，主要以建造各类大型船舶为主，如40万吨矿砂船、208000DWT、180000DWT散货船和10000TEU、11800TEU集装箱船等产品都出自扬子鑫福，目前集团旗下各生产基地运行平稳，生产任务相对饱满。

当前航运市场依然低迷，船东下单意愿不强，前3季度我们有一批新订单生效，但离2019年全年接单目标还有差距。随着船东逐步明确了应

对IMO2020 SOx排放规则的方案，新造船询价也不断增加，希望近期在谈的订单都能生效。

扬子江可以说是中国最成功的民营造船公司。可否透露下成功的秘诀是什么？

造船业属于传统制造业，唯有脚踏实地一步一个脚印的追求管理改进。扬子江船业集团从国企改制而来，具有国企的规范基因和民企的灵活组织。基于国企严谨的管理基因，发挥民企的快速决策，快一步决策，快一步上市，快一步研发，快一步抢占市场先机，经过20多年的持续管理改进，通过实业与资本的结合，通过推行精益管理和成本管控，初步形成了局部市场竞争优势，但从中日韩造船行业的竞争大环境来看，我们还是一家从快速成长期向成熟稳定期转变的船厂，未来还要继续努力打造我们的核心竞争力。

扬子江和Mitsui E&S Shipbuilding和Mitsui Co., Ltd. 合资成立了YAMIC，能否告诉我们您对于同日本公司的这种合作伙伴关系的预期？

围绕扬子江船业集团造船主业走向高端的中长期发展规划，我们与日本伙伴合资成立了扬

子三井造船YAMIC，我们预期将三井E&S造船的技术研发、品质管理标准和扬子江的综合资源相融合，突出日本技术、日本品质和中国速度、中国制造竞争力，打造并发挥领先的设计研发、三井造船的品质标准和扬子江的成本管控三大核心竞争力，致力于成为建造中型气体船、液货船和散货船的世界第一船厂，努力成为客户首选的最具竞争力船厂。通过三井物产等全球营销网络，将我们的高品质产品提供给遍布全球的优质船东。

扬子江进入LNG燃料船市场。您可否分析下该市场未来走向如何？

越来越多的国家将液化天然气等清洁能源作为取代石油和煤炭的主要能源，这推动了LNG等清洁能源的需求增长，特别是中国基于环境大保护国策提出了一系列的“减煤增气”措施，天然气消费量和需求也因此大幅提升，未来还有开通中小型LNG运输船长江航线的规划。同时伴随着全球更多的LNG项目陆续投产，液化天然气的供应也不断增加。由此我们判断航运市场不仅需要大型气体运输船，也需要中小型LNG、LEG、LPG气体运输船，而扬子三井造船的产品和市场定位是在中型气体船型领



域成为客户首选的最具竞争力船厂。

请概述一下贵公司和ClassNK的合作关系。扬子江船业首次使用ClassNK服务是什么时候和用于哪条船舶？这种合作关系随着船型、数量和服务要求的变化是如何演变的？

早在90年代，扬子江船厂为日本船东建造的开体式泥驳项目就与NK开展合作，之后与NK就208KBC的建造建立了更紧密的合作关系，随着建造船型的升级和建造数量的增加，NK提供的服务也在同步提升，如今与NK合作的船型主要是集装箱船型和散货船型，期待今后能在气体船等新的船型产品上有更多合作机会。

ClassNK提供了哪些服务帮助了扬子江船业？贵公司会更充分地利用ClassNK这些服务吗？

NK在船型开发及优化、工厂生产流程优化及质量提升方面为我们提供了作为船级社所能提供的最大帮助。NK的品牌和技术在日本市场有极大优势，强调质量及服务第一，期待在今后会有更多日本船东因为NK对扬子江的支持选择在扬子江下单造船。

ClassNK一直积极致力于数字化、大数据、网络安全、用于舱室内部检查的3D扫描技术等方面的投资。扬子江船业在ClassNK这些服务中哪方面有合作参与或者未来有否参与的预期？

数字化、大数据、网络安全及3D技术或其他自动智能化技术的应用是未来制造业的发展趋势。我们正在同NK探讨大数据、数字化方面的合作。也希望NK能在网络安全及其他自动智能化技术方面介绍并推广日本及全球先进技术及经验，并能落实到具体项目上。

ClassNK一直积极开发一套造船设计软件。贵公司对此类的产品有过什么经验吗？

NK的造船设计软件已经在我集团的研发及设计单位得到广泛应用。特别是NK新开发的对共同规范建模及计算软件，节省了设计工时，缩短了设计周期，为新项目的开发提供了便利。另外NK有关有害物质清单制作的软件和其他辅助软件为船厂的设计及生产提供了帮助。

贵船厂在82k及180k吨位船型项目取得了极大的成功，部分船舶已经交付给日本船东。您可否提供目前贵厂的建造周期

表更多细节，看看ClassNK是否可以给这些项目提供哪些技术上的协助？

2015年至今，扬子江船业批量承接、建造了超过100艘8.2万吨散货船，通过二次开发，优化升级，我们的8.2万吨散货船较同类产品具有结构重量更轻，装载量更大，相同航速燃油更省等特点。2017年起，我们陆续获得来自日本船东的180K及82k订单，目前已交付的船舶产品在品质、纳期及航行表现上获得了船东的一致肯定和鼓励。我们期待与NK联合对有市场生命力的主要产品进行二次开发和优化，始终保持我们主要产品的市场竞争力。

与ClassNK合作对于扬子江船业来说有什么益处？

ClassNK是世界一流船级社，拥有技术优势和质量第一、客户第一的服务精神，通过与NK密切合作，相信我们的建造品质会越来越接近日本同行的品质标准，售后服务也会越来越像日本同行。当日本船东考虑在扬子江下单造船的时候，因为深受日本船东信赖的NK船级社存在，相信船东会更加安心的选择扬子江，我们期望通过NK的帮助，能为更多日本船东提供更有市场竞争力的高品质船舶。

# Ready for IMO 2020?

## Some FAQs

### ClassNK answers some common questions arising from IMO 2020 sulfur regulations

***What are some ways to comply with the 0.50% sulfur cap starting in 2020?***

The three main ways to comply with the regulation are by using fuel oil containing less than 0.50% sulfur (compliant fuel oil), using SOx scrubbers as an equivalent measure, or switching to alternative fuels such as LNG.

Although a major change in equipment is not required, things to consider when using compliant fuel oils include higher fuel costs and the quality of fuel supplied. Regarding the use of scrubbers, although inexpensive HFO can continue to be used, the high startup costs and possible lack of installation space must be taken into consideration. For switching to alternative fuels such as LNG, although they would

also contribute to the reduction of NOx/GHG, the startup costs of fuel supply equipment including gas tanks, and the maintenance status of fuel supply infrastructure for planned navigation routes are important points to consider.

***Tell us about recent trends in compliant fuel oil standards***

Developed in September 2019 as a supplementary document to ISO 8217:2017, a standard specifying the characteristics of marine fuel oil Publicly Available Specification (PAS) 23263 outlines future changes in stability, compatibility, low viscosity, cold flow properties, Cat-fines, and ignition quality as technical considerations when using compliant fuel oil. However, no new specifications were added and no existing standard values were revised from ISO 8217:2017.

***When using compliant fuel oil, what points (properties etc.) should be taken into consideration?***

ClassNK has reviewed the current mitigation measures and implications for the safe use of compliant fuel and identified five properties which are greatly impacted by various blend ratios and require consideration: Compatibility, Low viscosity, Cold flow properties, Cat-fines, and Ignition/Combustion quality.

The explanation of the above five fuel properties and mitigation measures for the safe use of compliant fuel can be found in our “Guidance for onboard use of Compliant Fuel Oil with SOx regulation from 2020” released in March 2019, six months before PAS 23263 was announced.



We also released our “Booklet for ship crew members: Precautions concerning change-over to 0.50% sulfur compliant fuel oils” in September 2019 to provide ship crew members onboard who bunker and use compliant fuel oils with information focusing on the “compatibility” and “cold flow properties” of such fuels as well as associated risks and measures to mitigate such risks.

The guidance and other documents can be downloaded free of charge from the ClassNK website ([www.classnk.com](http://www.classnk.com)).

***What action should be taken if arrangements to use compliant fuel oil cannot be made?***

Regulation 18.2.4 of MARPOL Annex VI requires that the ship notifies its Administration and the competent authority of the port of destination on the inability to obtain compliant fuel oil. The Appendix of the Guidelines for Consistent Implementation of the 0.50% Sulfur Limit (Resolution MEPC.320(74)) include a standard report format (Fuel Oil Non-Availability Report: FONAR) for reporting to the Administration and competent authority of the port of destination.

***What does a PSC (Port State Control) inspection check for in ships using compliant fuel oils?***

Guidelines for inspections at the port of calling have been established by resolution MEPC.321(74). A PSC inspection first verifies onboard bunker delivery notes and corresponding fuel oil samples, IAPP certificates, and whether appropriate operational procedures have been followed in switching to compliant fuel oil. If there are clear grounds for a need to address discrepancies between bunker delivery notes and IAPP certificates, fuel oil samples are analyzed and further inspections are carried out.

***What kinds of penalties are there for not being in compliance with the SOx regulation?***

Penalties in accordance with the domestic laws of each country would apply, as Regulation 11 of MARPOL Annex VI requires action to be taken in accordance with these laws.

***What action should be taken if a SOx scrubber malfunctions?***

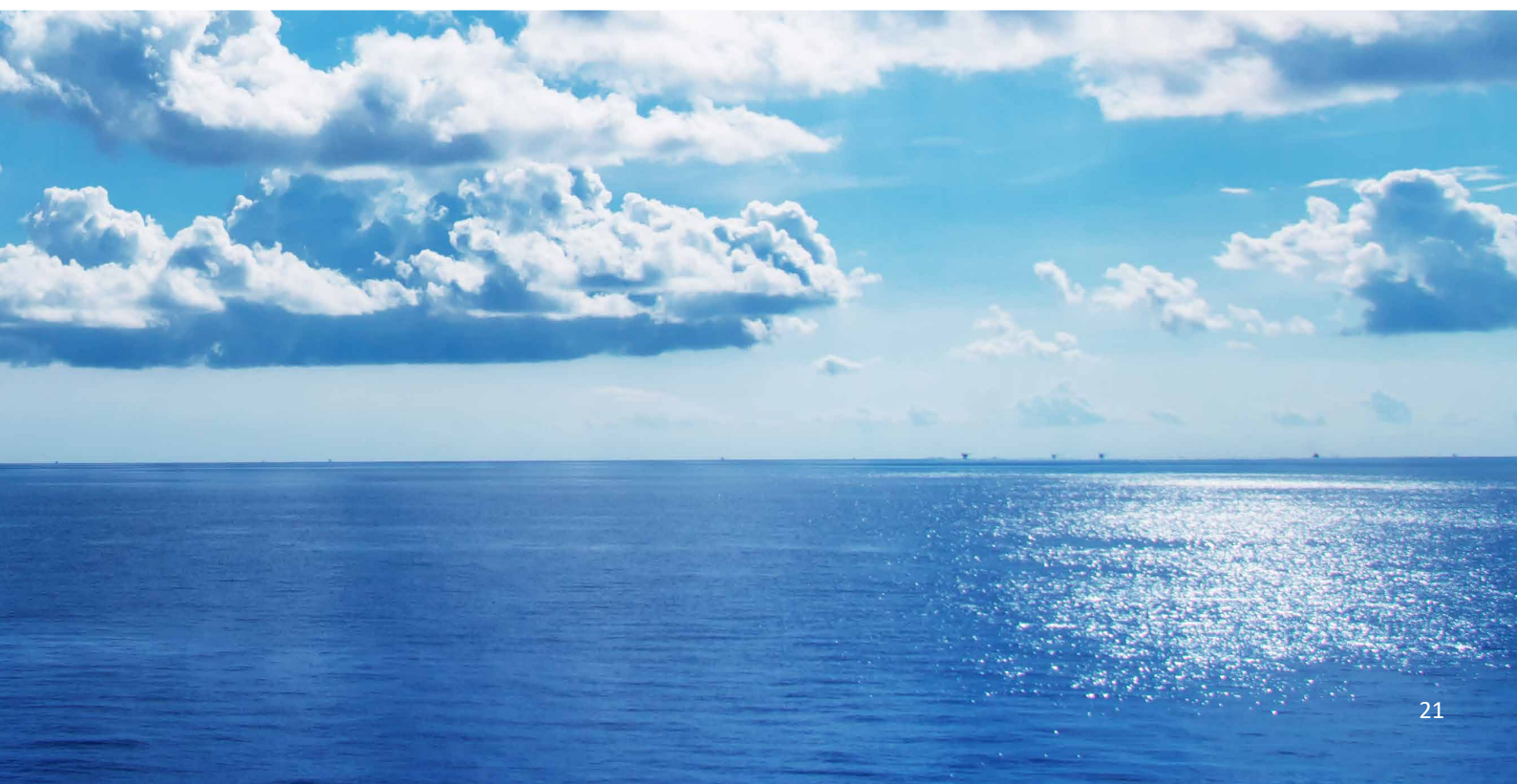
Regulation 18.5.6 of MARPOL Annex VI states that if a defect which sub-

stantially impacts the effectiveness or completeness of the equipment mentioned in the annex is discovered, the ship manager or shipowner must inform its Administration as early as possible.

On the other hand, MEPC Circular (MEPC.1/Circ.883) provides guidance on the measures to take when a SOx scrubber or part of its monitoring equipment malfunctions. The guidance judges a malfunction as a system failure which cannot be fixed within 1 hour (not emissions temporarily exceeding permitted emission amounts due to system response against sudden changes in loads), and recommends reporting such cases to the ship’s Administration and competent authority. Measures are also outlined for conformity when part of the monitoring equipment malfunctions and other related data remains accurate while the scrubber itself continues to operate normally.

***Does the SOx regulation apply to emergency equipment?***

The Unified Interpretations to MARPOL Annex VI (MEPC.1/Circ.795/Rev.4) interpret the SOx regulation to also apply to emergency equipment.



# The wind rises

## New guidance from ClassNK will contribute to safer wind power installations for ships

Wind has been the main source of propulsion for ships through most of history. While transformative in terms of world trade, steam and subsequently diesel are relative latecomers and, in light of society's changing priorities on climate change, it is unsurprising that the availability of zero-emission wind has been revived as a source of propulsive power.

In Japan and worldwide a host of wind-assisted propulsion systems (WAPS) are at various stages of development. Researchers and engineers are actively exploiting the better understanding of physics we have today, as well as advances in technology and a wider variety of materials to work with. This has resulted in an array of creative, new approaches for harnessing wind power.

These developments have, in turn, created a growing need for a systematic framework to assess the design and safety integrity of solutions. ClassNK has drawn on its expertise on ship and engineering design to compile a set of guidelines to minimize potential risks of these installations on hull structure, crew, and surrounding environment.

Formally released in September, ClassNK Guidelines for Wind-Assisted Propulsion Systems for Ships have already been put to good use as part of an evaluation of a hard sail system that forms the basis of the Wind Challenger Project, which

began life as an industry-academia joint research project which has subsequently been spearheaded by Mitsui O.S.K. Lines (MOL) and Nagasaki-based Oshima Shipbuilding Co. Ltd.

Upon receiving the application, ClassNK assessed the basic design against relevant international conventions, its own rules, and its new guidelines. The sail was deemed as fulfilling all the necessary safety requirements, allowing ClassNK to grant an Approval-in-Principal (AIP) for the system.

For MOL and Oshima Shipbuilding, obtaining the AIP marks the completion of the initial design related to the sail structure and controls. It allows the project's participants to begin work on detailed design of a newbuilding vessel equipped with one hard sail which, they say, would cut GHG emissions by 5% on a Japan-Australia voyage, and 8% on Japan-North America west coast voyage. The project's long-term goal is to equip vessels with multiple sails, which in combination with other measures to reduce GHGs would meet IMO's 50% reduction goal by 2050.

More generally, the primary goal of the new ClassNK guidelines is to ensure WAPS are designed, constructed, installed, operated and maintained in a way that allows safe and reliable operation over the course of a vessel's design life, in all operating conditions. Due to the

scale of many WAPS installations, the guidelines also consider their effect on the structure and stability of the ship on which they are being installed.

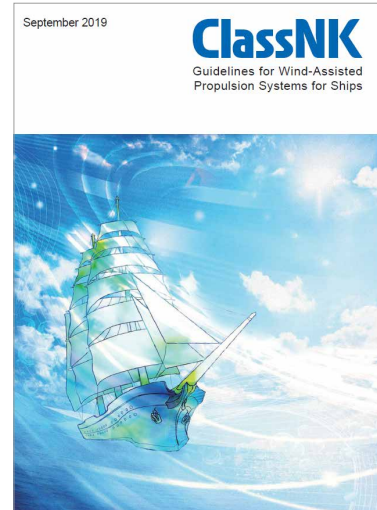
It is critical, for instance, that the WAPS installation should not interfere with vessel manoeuvrability, bridge visibility, radio installations or safety equipment. Likewise, resilience to failure should be verified to ensure reliable operation for extended periods and to prevent scenarios where a failure in single component or part of the installation would compromise vessel safety.

The process for achieving these goals begins with the preparation of a full risk assessment of the WAPS, which encompasses aspects such as the installation's loads, structural design, materials and joints, as well as operation, maintenance tasks and schedule and scope of necessary inspections.

In terms of the loads that WAPS should be able to withstand, the guidelines consider three cases: loads typically experienced by the installation when in-service; when on standby; and when exposed to severe weather or otherwise exceptional conditions.

When assessing aerodynamic loads, attention should be paid both to lift and drag forces. For ships intended for deep-sea operation, standby mode should

*Wind offers an endless source of clean energy and, as sailors everywhere have always known, ships operate in the best environment to harness it*



assume a persistent wind velocity of 51.5 m/s (185.4 km/h). However, to minimize the risk for vessel and crew, the installation must be able to tolerate significantly higher gusts. For this reason, the design wind velocity for in-service mode is 1.4 times the maximum operating speed. It is important too that the vertical distribution of wind velocity is considered, as speeds could vary significantly between the top and bottom of the installation.

While aerodynamic loads are integral to generating propulsive power, the impact of the WAPS installation as an additional structure on the vessel cannot be neglected. As such, it is necessary to consider gravitational and inertial loads; green sea loads (or water on deck, as a result of free surface waves, can cause both local and global structural loads which can compromise structural integrity); impact loads and ice loads where appropriate.

Once the loads have been ascertained, the structural integrity of the WAPS can be verified. The strength of members should be analyzed on the basis of the com-

bined load that they may have to withstand in the severest loading condition. To provide an extra cushion, the guidelines specify a safety factor of 1.25 to cover potential load uncertainty and a factor of 1.2 to cover the risk of corrosion.

For strength members that are subject to compression, the buckling strength should be evaluated to take account of the direction of the compressive stress and shape of members. Likewise, for members exposed to repeated stress, fatigue strength needs to be assessed. Special consideration may be required for evaluating the strength of structures that make use of composite or other unconventional materials.

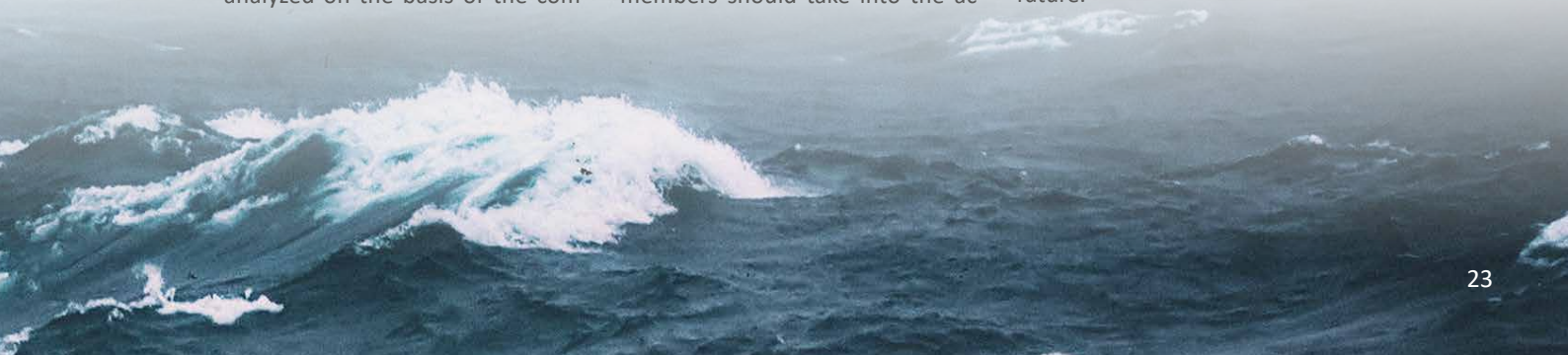
Materials in general comply with the rules for construction of steel ships – this goes for castings, forgings and wire ropes whether used for strength members or components in driving systems. Beyond these fundamentals, the guidelines provide further detail on the thickness and grade requirements for rolled steel used in the strength members. In addition, the arrangement of welded joints in strength members should take into the ac-

count the ease of access for carrying out welding work.

Given that the size of many WAPS may affect vessel behavior, hull structures must be reinforced in line with strength calculations. Vibration and resonance effects may also need to be considered when wind power is used in combination with engines running at full tilt. In addition, any increase in the vessel's maximum speed is another essential factor for consideration.

As well as verifying structural strength, outlining methods for proving structural integrity of strength members and utilizing calculation methods for load amounts, ClassNK has developed class notations for ships whose equipment is designed and installed in accordance with the guidelines.

Wind offers an endless source of clean energy and, as sailors everywhere have always known, ships operate in the best environment to harness it. A return to sail power is therefore far from a step back in technology. For the shipping industry, it could mark the beginning of a much brighter, more sustainable future.





# CBM's time has come

## New ClassNK guidelines anticipate greater buy-in for condition-based maintenance

In principle, condition-based maintenance (CBM) is simple. The idea is to keep a continuous eye on a piece of machinery's condition and schedule maintenance as soon as something shows signs of variation from performance requirements. This stands in contrast to more traditional calendar-based maintenance, in which machinery is inspected for wear and tear after a specified, but often arbitrary, period of time or number of operating hours.

CBM offers a more elegant approach as it allows problems to be caught before they have a chance to develop and cause serious damage. As the saying goes: prevention is better than cure. From a vessel owner's or operator's perspective, it is often more cost-effective than los-

ing revenue due to off-hire after the system has ceased functioning and facing an open-ended repair bill.

In the case of mechanical abnormality, CBM detects problems such as imbalance, misalignment and bearing wear early, while electrical phenomena including insulation breakdown, loose stator windings, rotor slot issues, current/voltage imbalance and harmonic distortion also offer clues of problems ahead.

In practice, however, things are a little more complicated. The sensors used to measure temperature, pressure, or vibration must be accurate, reliable, and durable enough to withstand harsh operating environments, for example. They also need to be small and relatively straight-

forward to fit in difficult to reach locations, while the cabling used for transmitting readings back to a data processing unit will also need to be especially robust.

Another challenge is to interpret the measurements gathered by the sensors to draw meaningful insights about the health of machinery systems. Achieving this not only demands sufficient computing power to crunch the numbers, but more importantly a full understanding of a system's behaviour during normal operation and the changes that occur when something is beginning to go wrong.

Determining appropriate ranges of tolerance and alarm thresholds is complicated by the fact that multiple





variables may be involved and data concerning possible failure modes is relatively scant compared to when everything is running smoothly.

While routine analysis can often be performed onboard, ambiguous results may necessitate data being sent off to shore-based experts for more thorough investigation. Until recent times, this was difficult due to limitations in communications capabilities between ship and shore.

In fact, though the advantages of CBM have been well known and widely accepted, these practical factors have in part or in combination put the brakes on its wider adop-

tion across the commercial shipping fleet. It is remarkable to think that it was in 1994 – some 25 years ago – that ClassNK first brought the concept of CBM into its rulebook. It later provided the option for scheduling class inspections that took account of the results of condition monitoring systems in its rules for steel-hulled vessels. Despite its potential for reducing lifecycle costs, the industry has been slow to embrace the idea.

Technological advances since then, including the arrival of more powerful data analytics, have improved provision of high throughput connectivity at sea, while more robust

and smaller sensors mean the technical barriers to the practical adoption of CBM are shrinking. Combined with a growing appreciation among vessel owners of the role CBM can play in keeping operational costs in check whilst improving vessel reliability and safety, the new technical realities are rekindling interest in the concept. The technology is also increasingly seen as a stepping-stone towards the realisation of more autonomous vessels.

Based on these developments, ClassNK recently revised its rules on CBM to set out the conditions for its use in the context of streamlining and delivering greater flexibility in vessel inspections. The revisions were approved by the ClassNK Technology Committee in July and are scheduled to be implemented from January 2020.

The guidelines will pave the way for more vessel owners to consider adopting CBM and fault prediction as an additional maintenance tool for enhancing vessel availability and reducing lifecycle costs, as well as contributing to a wider industry understanding of the concept and its future outlook.

### About ClassNK CMAXS

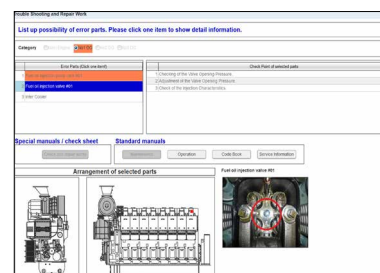
ClassNK CMAXS was developed as a next-generation engine condition monitoring system that implements IoT/M2M technology. It enables early and accurate detection of abnormalities by utilizing the latest algorithms to analyze onboard not only multiple sensor data from main engines, but also big data that includes weather/

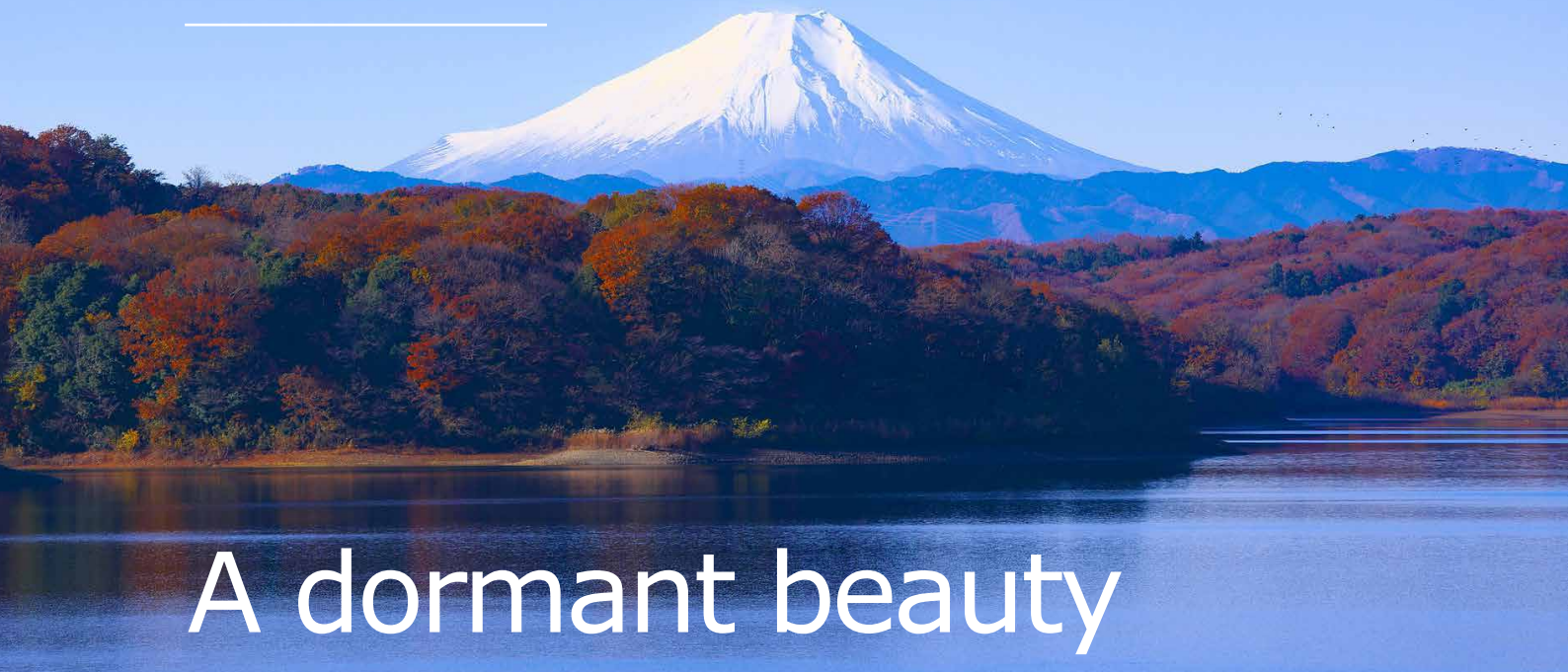
sea navigational data. Highly advanced condition monitoring can also be achieved by reflecting onboard diagnostic results in the performance diagnostics that are analyzed on shore.

Further, CMAXS contributes to the reduction of lifecycle costs, makes onboard machinery maintenance

more efficient, and lessens the burden of crew members.

It is expected that there will be an increase in the number of ships in the future for which classification surveys can be carried out more rationally by implementing CMAXS as CBM comes into widespread use.





# A dormant beauty

Towering high above the clouds approximately 100 kilometers southwest of Tokyo, Mt. Fuji is internationally known as a traditional symbol of Japan. It was registered as a UNESCO World Heritage Cultural Site in 2013 but has long been a popular landmark among both national and international tourists for hundreds of years.

On a clear day, Mt. Fuji is visible all the way from Tokyo, Yokohama, and many other parts of Japan, even those that are geographically located quite far away. Last erupting over 300 years ago in 1708, Mt. Fuji is by definition a dormant volcano. Standing at 3,776 meters in altitude, it is the highest volcano in all of Japan. No major volcanic activity has been observed recently, allowing hikers from all over the world to climb up to the summit every year.

Due to its high altitude and the large amount of snow it receives, the official climbing season lasts only from July to September. Four major routes provide access to the summit and each one has ten main stations for resting overnight or taking shelter along the way. Climbers usually start at the fifth station of each trail, as it is easily accessible by car and bus. The base and bottom half of the mountain is lined with countless trees forming a deep forest, and a typical summer hike at Mt. Fuji begins close to where the forest ends. As you scale your way up the mountain, the scenery changes noticea-



bly; green plants become less and less frequent as you reach the last few stations near the summit's crater where black volcanic rocks and red sand are abundant, detailing the traces of past eruptions and Mt. Fuji's history as a volcano.

Mt. Fuji is a prime example of a natural destination that experiences the four seasons, with distinct differences in appearance throughout the year. The orange and red autumn colors decorate the leaves around the area, followed by blankets of sparkling white snow in the harsh winter. In the spring, cherry

blossoms bloom at the foot of the mountain, and crimson azaleas later announce the coming of a green summer. One of the best spots to view Mt. Fuji from is across one of the Fuji Five Lakes just north of the mountain. Many iconic photographs of Japan seen today include Mt. Fuji and its reflection in one of the nearby lakes along with surrounding cherry blossom trees.

Whether you are watching the sunrise at the summit or enjoying the landscape from down below across the lake, Mt. Fuji is truly a majestic site to see in person.

# ClassNK 2020 events:

- ◆ SEA JAPAN, TOKYO, JAPAN, 11-13 MARCH
- ◆ ASIA PACIFIC MARITIME, SINGAPORE, 18-20 MARCH
- ◆ OTC, HOUSTON, TEXAS, USA, 6-9 MAY
- ◆ POSIDONIA, ATHENS, GREECE, 1-5 JUNE
- ◆ SMM, HAMBURG, GERMANY, 8-11 SEPTEMBER
- ◆ GASTECH, SINGAPORE, 8-10 SEPTEMBER

## CONTACT DETAILS FOR THIS ISSUE:

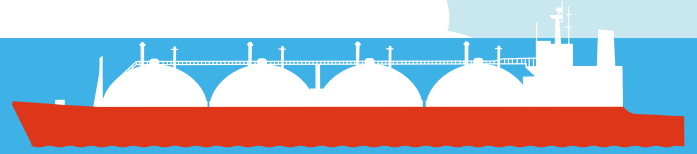
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