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船體性能測量方法(ISO 19030)簡介 及船體性能解決方案







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高速船行業發展及就業概況

溫志光 / 劉銳業

高速船為香港、澳門及珠江三角洲 扮演著一個經濟起飛、維繫社交生活圈子 及學習交流的重要角色。然而,高速船行 業面對的主要挑戰,是要應對來自不同世 界的客戶和乘客。在新型冠狀病毒肆虐 下,高速船行業員工相繼失業,他們被迫 轉職到遊艇及本地渡輪行業。與此同時, 港珠澳大橋及澳門輕軌落成,加速了高速 船行業變成為夕陽行業。在這些不利的情 況下,高速船行業更加難以吸引年青人入 行。

一般來說,高速船行業主要循兩條途 徑發展:

第一條途徑:甲板見習生 ➡ 夜航員 Class 3(相等於內河船員) ➡ 大副(三級 牌) ➡ Class 2 ➡ Class 1(內河船長)。

第二條途徑:高速船 Class 3 ➡ 大副 (三級牌) ➡ 內河船 Class 2/3 ➡ 助理海 事監督 ➡ 遠洋船 Class 1 ➡ 海事監督/ 主任/經理。

年青人有上進心,不斷進修培訓課程 及考牌,絕對不愁沒有出路及晉升機會。 高速船行業收入穩定及工作富有挑戰性, 船長平均月薪為港幣62,000(已包括花紅); 大副平均月薪為港幣40,000-50,000。







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Law Column - Recent Developments in Employment Law

As one of the world's most overworked cities, Hong Kong has undergone a significant but quiet transformation in its workplace culture. The 2019 protests and the COVID-19 pandemic over the past three years have pushed companies to adopt novel working policies, such as working-from-home and COVID-related arrangements, that were rarities in pre-pandemic Hong Kong. As a result, employers now faced new duties and obligations under Hong Kong's employment law regime. This article covers such changes and, more generally, aspects of employment law that employers should consider in light of recent legal and social developments.

COVID-related Considerations

The Employment (Amendment) Bill 2022 took effect on 17 June 2022 and amends the Employment Ordinance Cap. 57 ("EO") to address employmentrelated COVID issues. Significantly, under ss32K(b) and 32KB, an employee's failure to comply with a legitimate vaccination request by his or her employer is now a valid reason for dismissal of the employee or variation of the employment contract. A legitimate vaccination request must be in writing and requires employees to produce proof of compliance with relevant Government vaccination requirements. Provided that such a request is complied with, an employee's obligation to be vaccinated at the behest of the employer will depend upon whether the requirement for vaccination is a lawful and reasonable direction of the employer. Nevertheless, depending on the circumstances in each case, dismissing an employee for nonvaccination may, in some cases, contravene the Disability Discrimination Ordinance Cap. 487 ("DDO").

Although COVID falls within the DDO's definition of "disability", antidiscriminatory laws do not apply where the disability is an "infectious disease" and the measure taken is "reasonably necessary to protect public health". Therefore, in relation to employees who contract COVID, employers should strike a careful balance between protecting "public health" and their obligation not to discriminate against those with a disability. This may require employers to adopt a more flexible approach towards sick leave and work arrangements. However, it is noteworthy that there is no statutory right under Hong Kong law for employers to compel employees to undertake COVID tests.

Working from Home Arrangements

With the increased popularity of working from home (WFH) arrangements, it is crucial for employers to take note of any potential issues that may arise. For instance, since WFH employees may access confidential data on both personal and work devices, employers should devise policies governing aspects including data transfer and data breaches. Employers should, in particular, review confidentiality agreements with employees to ensure that sensitive client information is protected from access by unauthorised third-parties.

Employers have a common law duty to take reasonable care of their employees' health and safety, and a duty under section 6(1) of the Occupational Safety and Health Ordinance Cap. 509 to, as far as reasonably practicable, provide a safe working environment. These duties indicate that employers may also be responsible for the health and safety of their employees working from home. Employers should check whether their employees' compensation insurance policies include provisions covering employees who sustain injuries whilst working from home.

Extension of Statutory Maternity Leave and Changes to Paternity Leave

According to the EO, a female employee is entitled to maternity leave only if she has been employed under a continuous contract. An employee is under a continuous contract if she has been employed continuously by the same employer for four weeks or more, with at least 18 hours worked in each week. Since the Employment (Amendment) Ordinance 2020 took effect on 11 December 2020, such employees are entitled to 14 weeks of statutory maternity leave, an extension from the previous 10 weeks of leave. For maternity leave to be granted, an employee must give notice to her employer of her pregnancy and intention to take maternity leave. Provided the employee has been employed by the employer for not less than 40 weeks immediately before the commencement of maternity leave, maternity leave pay is payable for the full 14-week period at a daily rate of 4/5ths of the employee's average daily wages, with the additional 4-week period (i.e. weeks 11 to 14) subject to a HK\$80,000 cap per employee. Employers may apply to the Government for reimbursement of the costs of maternity leave pay for weeks 11 to 14.

A male employee, as of 11 December 2020, is entitled under the EO to five days of paternity leave provided he is the child's father, has been employed under a continuous contract, and has satisfied the relevant notification requirements. To satisfy the notification requirements, the employee must notify his employer of both his intention to take leave at least three months before his child's expected birth date and the intended date of his leave. The employee can elect to take all five days of paternity leave in one go or on separate days, and provided that he has been employed for not less than 40 weeks immediately before paternity leave begins, he is entitled to paternity leave pay at a daily rate of 4/5ths of his average daily wages.

Protection for Breastfeeding Women

The Sex Discrimination (Amendment) Ordinance 2021, which came into effect on 19 June 2021 to amend the Sex Discrimination Ordinance ("SDO"), provides breastfeeding women with protection from discrimination and harassment. In relation to discrimination, the SDO prohibits both direct and indirect discrimination: the former arising when an employer treats a breastfeeding employee less favorably than a non-breastfeeding employee in the same circumstances, and the latter occurring where a requirement is applied to everyone equally but which adversely impacts breastfeeding women. Similarly, harassment under the SDO can take two forms, namely unwelcome conduct towards the breastfeeding employee and the creation of a hostile or intimidating environment. To reduce the risk of being held vicariously liable for employees' discriminatory conduct, employers should ensure that they take steps to prevent such discriminatory practices in the workplace. This may include updating existing breastfeeding and anti-harassment policies, and making sure that appropriate mechanisms are in place for employees to voice any concerns confidentially.

National Security Law-related Considerations

Employers should ensure that they have mechanisms in place to discharge any duties that they or their employees may have under the Law of the People's Republic of China on Safeguarding National Security in Hong Kong ("National Security Law") which came into effect on 30 June 2020. Of particular importance is a person's duty to disclose relevant information to a police officer as soon as possible where he or she knows or suspects that any property is an offencerelated property. If a company has an existing internal reporting mechanism for its employees, the employees can discharge their disclosure obligations by reporting to their employer. The company, in turn, will be required to disclose the report to the police. Straightforward and confidential internal reporting mechanisms should be established for companies without such systems in place, and employees should be regularly reminded of their reporting obligations. On a more holistic level, employers should adopt a riskbased approach to avoid any inadvertent company or employee-level breaches of the National Security Law.

Closing Remarks

Hong Kong has all along enjoyed generally cordial and harmonious labour relations. This is by virtue of the effective and well-tried mechanism of tripartite consultation and cooperation amongst the Government, employers and employees. In enhancing labour rights and benefits, the Government has consistently pursued the prudent approach of striking a reasonable balance between improving protection for employees on one hand and the affordability of employers on the other and at a pace commensurate with Hong Kong's socio-economic development. The Government's decision to reimburse employers for the costs of maternity leave pay subject to a cap of HK\$80,000 per employee for the additional 11-14 weeks of extended maternity leave for eligible female employees is unprecedented move and a major step in this direction.

With the world of work becoming increasingly complicated, it is imperative for employer to be fully aware of their rights and obligations as well as understand the importance of the symbolic relationship between employers and employees. Equally important, employers should engage in constant constructive dialogue and effective communication with their employees and seek to resolve any difference through rational discussion and consultation.

HFW 夏禮文律師行 Karen Cheung: Partner, HFW Hong Kong

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Whilst every care has been taken to ensure the accuracy of this information at the time of publication, the information is intended as guidance only. It should not be considered as legal advice.





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Shengfeng Hou

With fluctuating fuel prices and ever tightening emissions regulations, the outlook for our industry is uncertain. However, no matter what the future holds tomorrow, we are ready with the dual-fuel engine solution you need today.

MAN Energy Solutions is the world's most trusted provider of dual-fuel marine engines. If you are looking to future-proof your investments and operate a more competitive fleet, we offer a complete portfolio of two-stroke dual-fuel solutions that enable you to switch between gas (LNG, LPG and ethane), methanol and fuel oils with no loss of performance or efficiency.

This article will focus on our excellent, world's most efficient, high-pressure dual fuel ME-GI engine that uses LNG as fuel.

1. Design philosophy

1.1. Gas safe engine room

All gas components inside the engine room are encapsulated and the duct is vented by a suction fan. HC sensors at the air outlet detect gas leakages. If the gas concentration becomes too high(<60LEL%), a gas shut down is released.

Negligible gas slip: pilot oil used to start the combustion. No accumulation of unburned gas in scavenge area. No knocking due to pre-ignition or high air temperature. We use Diesel injection – and all gas particles are burned in the cycle.

1.2. A single failure results in gas shut down or gas stop

For safety reasons detected single failure on a safety unit results in gas shutdown while a detected single failure on a control unit results in gas stop.

Gas Shutdown : Immediately stop of gas injection – continued operation on fuel oil , handled by gas safety system (Followed by a gas blow off and inert gas purging sequence).

Gas Stop : Normal changeover from gas mode to fuel oil mode – continued operation on fuel oil , handle by gas blow off and a nitrogen purging sequence).

1.3. The gas system must not affect the engine running on MDO/HFO.

In case of a gas shutdown the gas injection is stopped immediately and the engine continues almost bump less on fuel without load reduction.

In case of a gas stop the gas injection is ramped down to minimum gas injection and then gas injection is stopped. Engine speed and load is maintained all the time during the changeover to fuel running.

1.4. The gas system is an add on to the ME engine technology. It allows the engine to run on either heavy fuel oil (HFO) or natural gas (LNG). ME-GI engine has three operating mode, i.e. two gas modes and a fuel mode. Pilot fuel are mandatory according to gas code rule and control of the combustion.

> **Gas operation mode:** is used for gas operation. It can only be started manually by an operator on the main operating panel (MOP) in the control room when engine load is sufficient, depends on setting. The minimum preset amount of pilot fuel oil is as little as 3%, and the new engine pilot oil consumption is lowered from 3% to 1.5%

(0.5% for G70) at SMCR.



Specified dual fuel operation (SDF) mode gives the operator full fuel flexibility and the option to inject a fixed amount of gas fuel which FGS is available to supply (limited by FGS). The ME control system adds fuel oil until the required engine load is reached.



Fuel-oil-only mode is known from the ME engine. Operating the engine in this mode can only be done on fuel oil. In this mode, the engine is considered 'gas safe'. If a failure in the gas system occurs, it results in a gas shutdown and a return to the fuel-oil only mode.

1.5. Control and safety functionalities are separated on different hardware units.

Some essential process information is monitored by having two sensors. One sensor is monitored by a control unit and the other sensor by a safety unit. Both sensors have to be operative to continue running on gas. If the sensor send to the safety unit is failing a gas shutdown is carried out and if the sensor send to the control unit fails a normal gas stop is carried out.

The gas injection is controlled from a control unit and the window valve is controlled from a safety unit.

1.6. Window valve with interlock to gas injection valves

In case of a leaking gas injection valve it is necessary to have a window valve close to the gas injection valves in order to prevent a large gas leakage into the combustion chamber. This valve is also used to avoid in the following referred to as the window valve .

The amount of gas between the window valve and the gas injection valve is limited , by mounting the gas block on the cylinder top cover, so that it will do no harm to the engine in case of a leaking gas injection valve.

The gas pressure in between the window valve and the gas injection valves are monitored in order to detect a leaking gas injection valve or a leaking window valve.

2. Benefits of ME-GI engine

2.1. No knocking

The pilot oil starts the combustion process , being injected after the combustion air is compressed in the cylinder , after which gas is injected and ignited. As the combustion of the gas is immediate, total and complete , there is no need for derating because of the risk of knocking.

In a low pressure DF engine, gas and air is mixed before compression in the cylinder. Unintended ignition can take place and is referred to as 'Knocking', which is one of the primary reasons these engines are significantly derated in power.

2.2. Low methane slip

ME-GI engine leaves no gas remaining in the boundary layer at the cylinder liner wall, because it is burnt immediately upon injection. Methane slip is virtually undetectable on the ME-GI due to its operation in the Diesel cycle. When it can be measured it is some 0.2g gas per kWh.

The methane slip form a Otto cycle engine during routine operation can be up to 5% of the gas, which is a direct efficiency loss since methane is actually the fuel, and this is an unburned or wasted portion that needs to be added to the SGC number. During maneuvering, the amount of methane slip is even higher. Having been seen up to 10% of total fuel consumption in actual operation, which adds significantly to the global warming in that, the Green House effect of methane is about 25 times that of CO2.

When looking at the fuel consumption for an Otto cycle engine, be sure that it includes the methane slip!

2.3. Low cost

The 2 stroke engine has 50% + efficiency – far higher than medium speed engines.

Losses for low pressure injection plus diesel electric losses which mean a 17 MW HFO engine in DFDE will only make about 12.6 MW at the propeller. You'll still pay for (and maintain) 17 MW, but only get the benefit of a fraction of the power due to losses.

MC (mechanical) and ME (electronic control) engines can be retrofit to ME-GI.

Keep in mind that being high pressure injection engines, they'll be the same high efficiency in wither gas or fuel mode as originally, whereas you'll have extremely large losses with low pressure gas engines. What we've seen to date is that the engine retrofit cost is often not the decision factor, but the cost of LNG tanks (including space for then in existing designs). Double wall piping and high pressure gas delivery gas delivery equipment is more of an issue than the engine retrofit itself.

2.4. Clean exhaust gas

Estimated emissions 6S70ME-C		Estimated emissions 6S70ME-GI		Remark	
Load 100%	g/kWh	Load 100%	g/kWh		
CO ²	577	CO ²	446	23% reduction	
NO,	11.58	NO _x	10.12	13% reduction	
SO,	10.96	S0,	0.88	92% reduction	
PM (mg/m ³)	0.54	PM (mg/m ³)	0.34	37% reduction	

2.5. Experience since 1994

A ME-GI is a diesel engine and we have been designing diesel engines for more than 100 years. The ME-GI's electronic hardware and most of the software are based on the MEtype electronics that have been in successful service for over a decade.

We first installed a 40 MW stationary 12K80MC-GI in Japan 1993 as a peak shaving plant accumulating over 20,000 running hours . Extensive testing on our in-house research engine, as well as demonstration at our licensees in Japan and Korea have provided convincing evidence that we have perfected the gas components and supporting systems. Our ME-GI design on the other hand has plenty of in-service experience.

With more than 1.5 million running hours on gas and 0 reported safety incidents we are confident in saying that we have a proven product. This is also evident in the high sales number with 140 engines in service and a high markets share already. Within the last year we have extended the TBO's on a number of key components, such as piston rings and liners, by up to 50 % and introduced the new ME-GI MkII. which gathers all of our experience and brings them to the availability of both owner/ operator, yard and engine builder.

3. Summary – Safeguard your investment

ME-GI is the only LNG engine solution that lowers GHG emissions over the next 20 years. Even if methane slip of main engines on twostroke Otto cycle engines are reduced by new technology to e.g. 50%, ME-GI with already negligible methane slip still has lower GWP for both 20 and 100 years. Future regional or global carbon levy implementations will benefit the low CO2 and GHG emissions of ME-GI. Green ship financing and charter requirements are focusing more and more on total GHG emissions. While the initiao cost is lower on Otto cycle engine solutions, the ME-GI is a better overall business case that also lowers GHG emissions.

4. MAN Knowledge Share Platform – MAN 10

The purpose of this online learning platform is to provide convenient and fast learning for all technicians and engineers in the shipping industry, so that everyone can timely obtain the latest new product knowledge, the latest marine diesel engine service experience, and view and download technical materials, etc.

How to use: please scan the QR code below on Wechat and start your learning journey immediately.

New MAN 10



Shengfeng Hou: Team leader of Two-stroke technical instructor, MAN Energy Solutions Hong Kong Ltd. IQAX is proud to announce COSCO SHIPPING Lines and Orient Overseas Container Line ("OOCL") as early adopters of IQAX eBL, which has been given the seal of approval by the International Group of Protection & Indemnity Clubs ("IGP&I").

HONG KONG – Jun. 23, 2022 – As a leading innovator of digital solutions for the logistics industry, IQAX Limited has launched IQAX eBL, a blockchain-based, contactless document management digital solution.

IQAX eBL has been approved by IGP&I.

Prior to February 2010, the rules of all Clubs of the IGP&I preferred paper documentation and excluded liabilities for cargo carried under electronic documentation. However, since 20 February 2010 liabilities arising in respect of the carriage of cargo under such paperless trading systems were covered, provided that the system had first been approved by the Group. In the 12 years since this date, only 7 other solutions have been approved by the IGP&I for use by its members. The addition of IQAX Limited to the list of approved solution providers is a significant milestone as IQAX joins an exclusive list of electronic bill of lading solutions.

As the latest addition to the list of approved electronic bill of lading solution providers, IQAX leverages GSBN's independent blockchain technology platform to bring an enhanced level of security, assurance and transparency to IQAX eBL users.

The innovative IQAX eBL offers cargo owners, cargo forwarders, ocean carriers, finance providers and other trade participants a paperless solution to manage original bill of lading digitally with oneclick title transfers, surrender for delivery, status updates and history reviews.

The IQAX eBL provides a single source of truth for document authenticity, security and traceability. It allows all parties involved in a shipment to manage their bills of lading entirely online, streamlining operations, cutting costs and increasing efficiency. The IQAX eBL runs on GSBN's blockchain technology platform, which renders ease of adoption and sets it apart from legacy systems. IQAX eBL enables the issuance, transfer, surrender and visibility of original bill of lading and provides access to real time trade status of electronic bill of lading and cargo transportation. (Further details can be found on the company's website at: https://www.iqax.com/en/ solutions/ebl/.)

IQAX eBL is the first electronic bill of lading solution built on GSBN's blockchain network. This ensures the authenticity of the bill of lading and ensures data privacy and security. IQAX eBL empowers the industry to create opportunities with trade finance, strengthens risk management and improves cost-effectiveness as well as enhancing overall customer experience.

Romney Wong, IQAX's CEO mentioned that: "IQAX eBL leverages GSBN blockchain technology platform to provide a completely secure digital environment to further facilitate digitalization of documentation processes. With the layers of protection for data privacy and security, IQAX eBL promotes greater connectivity in global trade and of financial institutions, which significantly improves operational efficiency and revolutionising document management not just for carriers, but for the entire shipping ecosystem." Despite challenges faced during the Covid-19 pandemic, IQAX eBL has already been successfully adopted by major carriers - COSCO SHIPPING Lines and OOCL. Both COSCO SHIPPING Lines and OOCL validated the solution with their key clients.

"We empowered our clients to process bill of lading online and efficiently worldwide via IQAX eBL, implementing bill of lading management digitally and offering contactless services. We are able to achieve full visibility as all parties can track detailed logistics information, records of bill of lading transfer and bank processing status. This is crucial during the pandemic. The IQAX solution enables seamless integration across the shipping ecosystem and facilitates the efficient operation of global trade." said Andy Deng, Global Sales Division General Manager at COSCO SHIPPING Lines.

"We received positive feedback from our customers after OOCL adopted IQAX eBL. There are significant improvements on cost saving and operational efficiency. We look forward to continuing the cooperation with IQAX so more customers can enjoy the convenience and security brought by paperless bill of lading while we jointly promote the transition of the whole industry towards paperless operation." said Michael Xu, Director of Trades at OOCL. Bills of lading are critical for the efficient operation of global trade - but the traditional paper-based approach can be cumbersome. The adoption of electronic bill of lading solution can bring sustainable benefits for users and the industry as a whole.

About IQAX

IQAX is a global information technology company that provides intelligent digital transformation solutions using blockchain for enterprises in the logistics ecosystem. Backed by a strong heritage in container shipping, IQAX strives to foster a harmonized and connected global trade environment. As an industry leader, IQAX connects with shippers, freight forwarders, carriers, terminals and financial institutions and empowers them with digitized solutions to meet emerging business challenges throughout the supply chain.

IQAX is an independent technology company wholly owned by Orient Overseas (International) Ltd. (HKEX:0316), one of the largest integrated international transport and logistics companies in the world.

何恩洪律師行 JAMES HO&CO. Solicitor

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Newsroom, IQAX, 23 June 2022





The Hong Kong Special Administrative Region recognizes that Hong Kong's maritime logistics industry has played a significant role in Hong Kong's economic development and is dedicated to ensuring that it remains a world-leading trading center in the forthcoming years. In order to accomplish this, the following highlighted measures have been undertaken to enable the Hong Kong maritime logistics industry to continue to thrive in the future.

- I. Development of intermodal connectivity between Hong Kong and other cities in the Greater Bay Area
 - To set up a "Hong Kong International Airport logistics park" in Dongguan.
 - To exempt for further screening and customs clearance in Hong Kong.
 - To launch a pilot scheme at end of 2021 using existing facilities at the Hong Kong International Airport to establish a full upstream and sea-air intermodal processes.
- II. Commence preparation for the provision of cross-boundary commercial helicopter services between Guangdong and Hong Kong

Yui-yip Lau / Andrew Y. Wu

- To introduce point-to-point travel in order to enhance the internationalized business environment in the Greater Bay Area.
- III. Development of a common platform for deployment by port operators and other stakeholders
 - To enhance port efficiency and reduce cargo handling time and cost through streamlining and optimizing the multiparty coordinated processes electronically.
- IV. Promoting the use of clean energy by oceangoing vessels ("OGVs")
 - To examine measures to take forward the adoption of liquefied natural gas in OGVs, with a view to attracting more OGVs to call in Hong Kong.

V. Hong Kong Maritime and Port Board (HKMPB) has provided tax concessions

To provide a half-tax concession (i.e. a tax rate of 8.25%, half of the profit tax rate for corporations at 16.5%) for specific shipping commercial principals; namely ship managers, shipping agents, and shipbrokers under a new standalone preferential tax regime, with a view to attracting these businesses to be based in Hong Kong, thereby bolstering the maritime cluster in Hong Kong and enhancing the maritime capabilities of Hong Kong as a leading international maritime centre.

VI. Explore the feasibility of developing a multi-story complex for containers

To enhance storage and cargo handling at a site in Tsing Yi and a multi-story heavy goods vehicle carpark-cum-modern logistics complex at another site in Kwai Chung. "The research work discussed in this paper is funded by (1) the Research Grant Council of Hong Kong SAR, project reference number UGC/FS24/E08/21, and (2) PolyU CPCE Research Fund, project reference number SEHS-2021-228(J)"

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萬邦集團 IMC Group



Founded in 1966, the IMC Group comprises companies with diverse interest worldwide.

The major strategic business interests which are core to the IMC Group include the industrial group - a leading integrated maritime and industrial solutions provider in dry bulk shipping, industrial logistics, chemical transportation, shipyard and marine engineering, offshore assets and services, consumer logistics and palm oil plantations.

Other IMC businesses include investments, lifestyle and real estate development, and social enterprises.

The IMC Group is a global company with offices in China, Hong Kong, Indonesia, Singapore, Malaysia, Vietnam, Thailand, India, Japan, Korea, Myanmar, Philippines, South Africa, UAE and USA.

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高杲

船體性能和燃油成本、溫室氣體排放 的關係

船舶航行過程中,由於海生物汙損或 船體機械損傷,船體性能會降低。船體性 能降低導致的額外燃油消耗和溫室氣體排 放,佔全球船隊總燃油消耗和溫室氣體排 放的10%,即超過300億美元的額外燃油 成本和0.3%額外的人為碳排放。

2009年 IMO 的一項研究報告中指 出,由於船體性能降低,一艘典型船舶的 一個完整航行週期內,船體性能會降低 15%。Hellio等提出,船舶航行週期內船 體性能會降低 20%。佐敦向清潔航運聯盟 (CSC)提交的報告中,對 150多個航行 週期進行了研究,涵蓋了大部分主要船型 和防汗漆技術,研究結果顯示,60 個月的 航行週期內,船體性能會降低 18%。CSC 向 MEPC63-4-8 提交的檔中指出,船體性 能降低 15-20%,燃油成本和溫室氣體排放 增加 9-12%。

2、 市場現狀

首先,通過燃油消耗來衡量船體性能 是不準確的,因為除了船體性能,天氣、 船舶操作方式、主機等都會造成影響。

其次,某些防汙漆廠商聲明的節省燃 油,通常沒有一種嚴格的方法論為基礎, 或僅僅使用小樣本,不具有代表性,並且 沒有規定用於比較的性能基準。此外,也 沒有說明塢修時如何進行表面處理(例如 是修補還是100% 噴砂處理)。還有,只 比較塢修時剛進塢和剛出塢的性能而沒有 體現航行過程中的性能變化,也會導致船 東對測量結果產生誤解。

船體性能解決方案 "Hull Performance Solution" (HPS) 是一種簡單、精確、完 全透明的船體性能解決方案,可用來分析 一個完整的塢修間隔期內船體性能變化情 況。基於自動資料記錄的測量方法,為統 計的長期趨勢分析提供了理想基準,使我 們能夠提供可靠資料來完整記錄船舶使用 期內的船體性能。

3、 HPS 簡介

HPS包括以下四個部分:1、基於新 一代甲基丙烯酸矽烷技術,初始粗糙度降 低20%,達到與FRC(有機矽類汙損釋放 型防汙漆)相同等級,優化了節油減排性 能;2、高標準技術服務:專門的現場HPS 顧問及塗裝顧問團隊,保證客戶的最大利 益;3、性能監測:100%透明的測量船體 性能的方法,完全自動的資料記錄——無 需增加船員工作量,按協定的週期提供船 體性能狀況報告

全球已有主要超過百家船東包括馬士 基、達飛、地中海、赫伯羅特、中遠海運 集運、招商輪船、中遠海運散貨等,超過 2000 個項目選擇了 HPS。

4 ISO 19030: Measurement of changes in hull & propeller performance

2015年5月19日,代表 ISO 海洋環 境保護小組委員會(ISO-TC8-SC2)的17 個國家標準化組織投票贊成《ISO 19030: 船體和螺旋槳性能的測量》第一部分和第 二部分成為國際標準草案。該標準的總體 目標是規定一種測量船體和螺旋槳性能變 化的實用方法,並對表徵船體和螺旋槳維修、維護和升級的性能指標進行了定義。 該標準有望加速此實用方法在全行業中的 應用,並為買賣雙方提供急需的各種節油 技術和服務的透明度。船舶和船隊的決策 者能夠更好的瞭解過去的情況,進而對未 來做出更好的決策, ISO 19030於 2016年 11月正式發行。

ISO 19030 包含三個部分:

第一部分(ISO 19030-1: General principles)介紹了船體和螺旋槳性能測量 方法的一般性原則,並對以下問題做了詳 細說明:船體和螺旋槳性能的定義;船舶 推進效率和船舶阻力的關係;需測量的基本參數以及基本測量步驟;反映船體和螺旋槳維護、維修和改裝效果以及決定是否 需要維護維修的性能指標。

第二部分(ISO 19030-2: Default method)適用于傳統的定距單螺旋槳驅動 的船舶,比較船舶自身不同時期內的船體 和螺旋槳性能。首先,詳細說明了所需測 量的參數、測量過程及性能指標計算方 法。

第 三 部 分(ISO 19030-3: Alternative methods)詳細說明了一系列其 他備選的船體和螺旋槳性能測量方法,是 缺少第二部分所需設備時可選用的替代方 案。

5、 ISO19030-2 船體性能測量方法

(1) 資料測量和記錄

使用標準的設備來測量任一發動機功 率下預期航速和實際航速的差別,這些設 備已在船上廣泛使用,如表1所示。

Parameters 參數	Sensors 設備	Accuracy 精度
Propeller torque 螺旋槳扭矩	Torque Meter 扭矩計	$\pm 0.5\%$
Shaft rev. per min. 尾軸每分鐘轉速	RPM counter 尾軸轉速表	$\pm 0.5\%$
Speed through water 水中航速	Doppler Log 多普勒計程儀	±1%
Speed over ground 對地航速	GPS	
Wind velocity 風速	Wind sensor 風速儀	± 1 m/s
Wind direction 風向	Wind sensor 風向儀	$\pm 5^{\circ}$
Draft fore and aft 船艏和船艉吃水	Draft sensor 吃水顯示儀	±0.1m
Water depth 水深	Depth sensor 水深測量儀	± 1 m

表1測量設備及精度要求

這些設備資料記錄的方式也是非常 重要的,微小的變化也會影響分析結果, 因此錯誤的或遺漏的測量資料很容易導致 整個分析出問題。鑒於此,使用自動資料 記錄單元來記錄這些設備的即時資料,可 以去除人為因素的干擾,提高資料的可信 度,避免測量資料的錯誤或遺漏導致整個 分析出問題,再根據這些大量的完整記錄 的資料做長期的統計分析,增加結論的準 確性和品質。

若有以下資料輔以分析,結論的準確 性會大大提高:

主機燃油消耗(流量計讀數)	Fuel consumption (from flow-meter)
水深	Water depth
浪高和波向	Wave height and direction
動態縱傾和橫傾(加速度計讀數)	Dynamic trim and list (from accelerometers)
推進器推力	Propeller thrust
舵角	Rudder angle
水溫	Water temperature
船舶艏向	Vessel heading

(2) 資料分析方法

為了分析一種解決方案是否真的能實 現船體性能的提高,首先需要建立一個性 能比較的基準。為了高度精確設置基準, 必需選擇一個相對比較漫長的時期,在我 們的研究中,選擇船舶出塢後3-12個月 作為基準期限。在這段時間內,使用上述 設備,每天自動記錄資料,得出給定軸功 率下實際航速,再通過該軸功率和實際吃 水下的設計曲線得到設計航速,進而計算 出每天的船舶航速偏差,篩選去除風速超 過6級、發動機功率小於50%的偏差資料 後取平均值,得到基準期限內的平均航速 偏差,以此作為船舶出塢時船體性能的基 準,用偏離的百分比表示。

基準確定後,在剩餘的塢修間隔期 限內,繼續每天自動記錄設備資料,計算 航速偏差。將計算結果與基準比較,我們 就可以精確監測施工防汙漆後以及防汙漆 使用壽命期間,即塢修間隔期內的船體性 能。與基準的偏差越大,說明船舶航速降 低的越多,船體性能越差。

該方法適用於不同的船型、不同的防 汙漆體系,週期的選擇也可靈活多變。 ISO 19030 船體性能分析標準首次規 定了一種測量船體和螺旋槳性能變化的實 用方法,並對表徵船體和螺旋槳維修、維 護和升級的性能指標進行了定義。船體性 能解決方案 (HPS) 將防汙塗料和應用技術 與高端技術服務相結合。這種解決方案使 船東和船舶運營方能夠最大限度地提高船 體性能,從而降低燃料成本和溫室氣體排 放。可通過透明的技術方法(ISO 19030) 跟蹤和測量船舶能效的性能和影響,並提 供額外的高性能保證,確保客戶獲得明確 的投資回報。

高杲(中遠佐敦船舶塗料公司)





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AA Talk



Notes On General Average (1)

Editor's Note: -

Notes on "General Average in relation to Marine Insurance" were compiled and published in the Seaview in 1985/6, which are now being revised and expanded by the Editor with inputs from William Lai and Rocky Siu, both members of the Institute's Education Sub-committee. William is a Fellow of the Association of Average Adjusters and Rocky, an Associate. These notes are compiled based on papers, notes and books by former colleagues and learned friends, all authoritative in average adjusting, including but not limited to John Crump, John Wilson, John Macdonald and Geoffrey Hudson.

The notes will be presented under the following sections:

- Part I Introduction and outline of the discipline of General Average
- Part II Common allowances in General Average per York-Antwerp Rules
 - Expenditure
 - Salvage
 - Port of refuge expenses
 - Temporary repairs

Raymond Wong

- Substituted expenses
- Non-separation provision
- Ancillary insurances following a casualty giving rise to general average
- Sacrifice
 - Damage to Ship
 - Damage to and/or loss of Cargo
- Part III Application to Insurance
- Part IV York-Antwerp Rules 1994 & 2016 An Analysis
- Part V Adjusting General Average an example adjustment

Part I

Introduction and Outline of the Discipline of General Average

"The subject of General Average can never be as well understood as when it is studied apart from insurance, with which it is only accidentally associated."

Richard Lowndes

The story of general average dated back over 2,500 years in the Eastern Mediterranean, emanating in relation to jettison of cargo.

Imagine a ship with the ship-owner as shipmaster and 3 merchants with their respective cargoes on board sailing from one port to another. During the voyage, something happened, the vessel grounded, which necessitated the cargo of one of the merchants being jettisoned in order to refloat the vessel to save the other cargoes and the ship.

Whose cargo should have been jettisoned?

Common sense would suggest that there was a need for a system which would enable the master and the merchants to adopt the best course in the moment of danger and to make the fairest allocation of any loss. When the ship eventually reached destination, the master and the merchants would work out how much those whose property had been saved should contribute towards the loss sustained by the unfortunate merchant, so making it completely immaterial to all concerned whose property was sacrificed at the time of the peril.

Assume that at the time of the accident, the value of the property at risk was:

Ship Cargo A Cargo B Cargo C	20,000 15,000 10,000			
Cargo C	5,000			
	50,000			
and that Cargo B	10,000	was jettison	ed	
Value saved	40,000			/
It was initially thought that the l adjusted as follows:	oss might be			
Ship	20,000	pays	5,000	
Cargo A	15,000	pays	3,750	
Cargo B (jettisoned)	0	pays	0	
Cargo C	5,000	pays	1,250	
	40,000	pays	10,000	/

It would, however, be readily seen that by this adjustment Merchant B was in a better position by having been reimbursed, i.e. made good in full for the sacrifice, whereas other interests by contribution had only had a net saving of 75%. Accordingly, to preserve the principle of equity, after arguments and discussions, the parties concerned, agreed that the amount made good should be brought in to contribute, hence the correct apportionment should be as follows:

Ship	20,000	pays	4,000
Cargo A	15,000	pays	3,000
Cargo B (made good)	10,000	pays	2,000
Cargo C	5,000	pays	1,000
	50,000	-	10,000

All interests therefore had a net saving in the same proportion, 80%. In other words, everybody whose property had been at risk sustained the same degree of loss, i.e. 20%.

Independent of insurance and contract

From the above brief recital, it is apparent that general average exists independently of insurance and, indeed, had been in existence long before any policies of insurance as we know them today were in use. Nevertheless, it is now the practice for ship-owners and cargo owners to be insured so that they may recover anything they pay in general average from their insurers. Consequently, the settlement of general average has in practice become a settlement between insurers. Hence, whilst general average has nothing to do with insurance, insurance has much to do with general average. Similarly, general average which derives from common law existed long before contracts such as bills of lading were even thought of and is therefore independent thereof, though the rights and liabilities in connection with general average "may be limited, qualified or even excluded by the special terms of a contract between the parties to the contract" (Simonds v. White 1824).

Development of General Average and the York-Antwerp Rules

The earliest available statement of general average can be found in the Digest of Justinian published around A.D. 533 which reads as follows:

"The Rhodian law decrees that if in order to lighten a ship merchandise has been thrown overboard, that which has been given for all should be replaced by contribution of all."

General average varied in its development in various parts of the world; the right to general average would depend on the law and practice of the country where the common maritime adventure ends. So that by the earlier part of the 19th century, though the fundamental principle of sharing the loss remained unchanged, there was a considerable divergence of practice throughout the world. In view of the international character of shipping, the disadvantages of this became particularly noticeable. Whenever there is uncertainty, or a difference in the law and practice adopted, there is scope for dispute and trade suffers.

In 1860, the first of a number of conferences was held with a view to obtaining uniformity in practice. The York Rules was pronounced in 1864 and later amended at the conference at Antwerp in 1877 to become the York-Antwerp Rules (the YAR) which have been regularly revised - YAR 1890, YAR 1924, YAR 1950, YAR 1974, YAR 1974 as amended 1990, YAR 1994, YAR 2004 and YAR 2016. The Comite Maritime International (CMI) has been the custodian since 1950. It must be emphasized that these Rules represented a considerable compromise by the maritime nations with regard to their respective laws and practice.

Today, the York-Antwerp Rules are almost universally adopted by provisions inserted into the contracts of affreightment, being either charter parties or bills of lading and this, of course means that a shipowner and/or cargo owner, wherever the adjustment is prepared, can expect to receive or to pay exactly the same amount under that adjustment.

Scope of general average [per YAR]

The York-Antwerp Rules do not comprise a "code" covering all aspects of general average; rather they provide a framework to fit or modify, as may be most desirable in the interests of uniformity, the laws and practices respecting general average in the various maritime countries of the world. The latest version, the York-Antwerp Rules 2016, comprise lettered Rules, A to G, and numbered Rules, 1 to 23. The lettered Rules state the general principles of general average whereas the numbered Rules cover specific points and how they should be dealt with. A Rule of Interpretation provides that the lettered and numbered Rules shall apply to the exclusion of any law and practice inconsistent therewith, and that except as provided by the numbered Rules, general average shall be adjusted according to the lettered Rules. In addition, a Rule Paramount which was introduced in 1994 provides that in no case shall there be any allowance for sacrifice or expenditure unless reasonably made or incurred.

Included in the Rules are the two expressions – <u>'common safety'</u> and <u>'safe</u> <u>prosecution of the voyage'</u>. These, most probably, are the most important words which are included because, unless any given situation satisfies one or the other, there can be no general average. As defined by Rule A, there is a general average act when, and only when, any extraordinary sacrifice or expenditure is intentionally and reasonably made or incurred for the common safety for the purpose of preserving from peril the property involved in a common maritime adventure. This definition restricts the general average sacrifice and expenditure made or incurred for the 'common safety' which covers an actual physical danger to the ship and cargo.

But, there are very often expenses incurred solely for the 'safe prosecution of the voyage' which envisages no immediate physical danger, but something necessary such as repairs, without which the vessel could not complete her voyage. This is where the question of a vessel being detained at a port usually comes in and, in these circumstances, if the detention is through some accident, or through some unforeseen happening where without repairs the vessel could not proceed on her voyage, then the expenses as listed in certain of the numbered Rules (which by virtue of the Rules of Interpretation, override the lettered Rules) are recoverable in general average.

General average loss can be divided into two categories – sacrifice (i.e., sacrifice of the physical property) and expenditure (i.e., expenditure of money for the purchase of services necessary to extricate a vessel and her cargo from a situation of peril or for the safe prosecution of the voyage).

Story today

Suppose a vessel laden with cargoes onboard, whilst en route to destinations, strands on a reef. To refloat the vessel for the common safety, there are apparently 3 feasible options open to the Master and/or the Ship-owners, namely:

- To jettison (and/or forcibly discharge) part cargo to lighten the vessel;
- 2. To engage tug assistance to tow the vessel off the reef, risking additional damage to her bottom and consequently to the cargo through leakage;
- 3. To try forcing her off using the main engine and ground tackle with similar risks as well as probable damage to such machinery and equipment.

Understandably, conflict would arise from the need to choose means for saving the common adventure. Through general average, however, owners of the property sacrificed are placed as nearly as possible in the same financial position as the owners of the property saved by that sacrifice. Therefore, the Master on the spot in time of peril can freely take the best action solely in accordance with his judgment in the circumstances as to what is the best for ship and cargo as a whole without regard to the conflicting rights and interests of the various owners of the property in his charge. In the result the vessel refloats and, for the common safety, is put into a port of refuge where, after necessary repairs, is able to sail to complete her voyage with the cargo remaining on board. As noted earlier, in addition to the sacrifice, certain expenses incurred during the prolongation of the voyage are admissible as general average under the York-Antwerp Rules.

Editor's Note:

Readers would be interested to note that the?《中國國際貿易促進委員會共同 海損理算暫行規則》(簡稱《北京理算 規 则》), commonly known as Peking Adjustment Rules 1975, after having been provisional or probationary enacted for about 47 years, were rescinded or repealed and replaced by a new edition 新版《中國 國際貿易促進委員會共同海損理算規則》 which became effective on 1st September 2022. Apparently the provision for general average adjustment prepared in China per Peking Adjustment Rules was found during the late 1970's and the 1980's in contracts of affreightment where cargo was carried to China in their own vessels or in vessels chartered by them.

DURING THE HK MARITIME WEEK 2022

The Institute of Seatransport [IoS] in conjunction with Asia Maritime Adjusting (HK) [AMAdj] will organize the final one (1) day Course in a series of four, on Saturday, 26th November 2022, providing a masterclass on the practical application of the principles of marine hull insurance in handling, adjusting and settling claims for Total Loss of Vessel and Sue & Labour Charges. MATF Refund is available for eligible participants, and application is being submitted for CPD points of the Law Society of HK, which are recognized by the Insurance Authority. Registration details will follow shortly.

Raymond T C Wong: Average Adjuster



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我們感謝大家的熱忱支持。

We aim to expand and enrich the contents of "Seaview". If you would like to share your thoughts or experiences with other members, please feel free to submit an article to the Editorial Board for consideration for publication. Articles and materials in connection with all aspects of sea transportation are welcome from members.

The number of words in an article should be around 1000, with soft copy in .doc format. Please mail to:

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I, the undersigned, hereby apply for admission to membership of the Institute of Seatransport, a if admitted, to comply with the By-laws and by any subsequent amendments and / or alternatio may be made, and by any Regulations made or to be made for carrying them into effect.	nd do agree, ns there to which
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On completion of this form, it should be sent to "The Secretary, Institute of Seatransport, G.P.O. Box 6081, Hong Kong" together with a cheque of HK\$400, payable to "Institute of Seatransport". This amount is for covering the entrance fee and first Annual Subscription only and is not refundable if withdrawn by the applicant.

Please state name, number, date and place of issue of certificate/degree, or name and membership no. of other related Institute(s) on separate sheets. Please enclose a photocopy of your qualification if possible.

* For applicant with only commercial background, please fill in sufficient experience to cover the minimum requirements as stipulated in Articles 6.3. If insufficient information is given, the applicant will only be graded according to Article 6.4 as Associate Member.



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招商局創立於一八七二年晚清洋務運動時期,是中國 近代民族工商企業的先驅,在中國近現代化進程中起到過 重要推動作用。

賴於幾代人的努力,現已成長為一個實力雄厚的综合性大型企業集團。其交通運輸及相關基礎設施建設、經營與服務,金融資產投資與管理,房地產開發與經營等三大核心產業,在業內居領先地位。

集團總部位於香港,業務分佈於香港、中國內地、東南亞 等極具活力和潛力的新興市場,被列為香港『四大中資企 業』之一,在國際工商界有著廣泛影響。

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