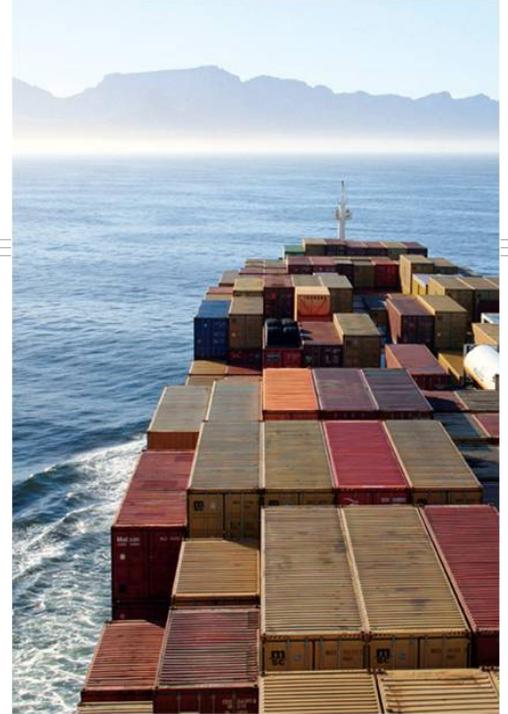




# WHAT IS SHIPPING

## 船舶知識簡介



## Why Shipping

Today, ships handle roughly 97% of the global transport of goods. With regards to costs and reliability, shipping is the best way - and sometimes the only possible one - to transport much cargo over long distances. In the last 25 years, world seaborne trade nearly doubled. In 2009, almost 7 billion tons of goods were shipped from one port to another. Research experts estimate this figure will be twice the amount by the year 2020. With the continuous trend of internationalization and globalization, shipping plays - and in the future will play - an increasingly important part in modern logistics.

全球貨物運輸的 97% 都是由船舶來完成的。船運成本低廉並且安全可靠，是長途運輸貨物最好的方式。在過去的 25 年，世界海運貿易增長了近一倍。2009 年，近 100 億噸貨物從一個港口運到另一個港口。據專家估計這個數字在 2020 年將翻一番。隨著貿易國際化和經濟全球化的發展，航運在現代物流中扮演著一個持續增長的重要角色。

航運從根本上保證了貨物在供應商和購買者之間的聯繫。供應商或者托運人會根據貨物的不同類型和規模，選擇包租整個船、船的部分貨艙、某個集裝箱或者一些特定貨船。供應商和承運人通過合同規定了貨物運輸的條款和條件。

## Liner Shipping and Tramp Shipping

The shipping segment can be divided into two main areas, the liner-shipping segment and the tramp-shipping segment. Liner services today employ mainly container and to some extent general cargo vessels. They have fixed shipping schedule. The main characteristics of the tramp-shipping segment are that vessels only move when there is a specific requirement.

The container sector today plays a vital role in the whole transportation and logistics chain. Up to the middle of the 20th century, cargo handling was the main bottleneck in the transportation chain. The solution was to pack the cargo into internationally accepted, standardized units, which could be handled quickly and cheaply with specially designed equipment. A very well working system of unification is the container - standardized boxes into which individual items are packed.

船運業有兩個主要市場，即班輪市場和貨船市場。班輪航班是定期的。現今班輪航線主要採用集裝箱船和普通貨船。與班輪航線相比，貨船市場的運輸是不定期的。船舶只在有需求的時候才出航，集裝箱在現在的運輸和物流鏈中發揮著重要作用。集裝箱的出現是在半個世紀以前。在此之前，貨物裝卸一直是運輸中的難點。採用集裝箱是將貨物裝入國際公認的標準體積內，使得運輸既迅速，成本又低。

## Liner Services

Container vessels carry them in mostly two different sizes, 20 feet and 40 feet long. It is to some extent possible to load smaller dry bulk and liquid bulk cargoes in containers, consumer products, like electronics or clothing, however, form the main share of containerized cargoes. An increasingly important segment is reefer containers for meat, fish, fruits, fruit juices etc. The first deep-sea container service was introduced in 1966. In the following twenty years, containers rapidly became the dominant way of transporting general cargo. By applying economies of scale, investing in high-speed cargo handling systems and integrating the whole transport system, transport costs have over the years been reduced to such an extent that it is often cheaper for industries to import goods by sea from suppliers thousands of miles away rather than by land from suppliers only a few hundred miles away. This can lead to prawns from the North Sea being shelled and packed in Asia.

集裝箱船大多可以分為 20 英尺和 40 英尺兩個不同規格。小型的干散貨和液體商品都可以通過集裝箱裝載。消費類產品，如電子或衣服，也可以通過集裝箱來運輸。此外，冷藏集裝箱的廣泛應用使得運輸肉類，魚類，水果，果汁等變為可能。世界上第一個遠洋集裝箱航線於 1966 年推出。在隨後的 20 年裡，集裝箱迅速成為運輸一般貨物的首要方式。集裝箱帶來了巨大的規模經濟效應，通過對整個運輸系統的整合，運輸費用在最近幾年大為降低。一般來說，數千英里的海上運輸要比幾百英里的陸地運輸便宜得多。這使得在北海捕撈的蝦在亞洲完成包裝變成可能。

## Tramp Shipping

Tramp vessels only move when there is a specific requirement. Within the tramp-shipping sector the two main areas are dry bulk and liquid bulk cargoes. The five major dry bulks are coal, iron ore, grain, bauxite and phosphate; all other dry bulk cargoes like wood are considered minor bulks. Dry bulk cargoes are carried by bulk carriers. Liquid bulk cargoes are crude oil, oil products, liquefied gas, liquid chemicals, vegetable oils, water and wine. They are all transported by tankers. Raw materials for the production of energy dominate the bulk-shipping sector, with this group of commodities accounting for 45 % of overall worldwide seaborne trade.

與班輪航線相比，貨船市場的運輸是不定期的。船舶只有在有需求的時候才出航，船舶主要運輸幹散貨和液體散貨。五個主要的干散貨類別包括煤、鐵礦石、糧食、鋁土礦、磷酸鹽，而其他散貨如木料等被認為是小宗散貨。幹散貨主要由散裝貨輪運輸。液體散裝貨物是原油、成品油、液化氣、液體化工品、植物油、水和酒，都由油輪運輸。散裝船的類型受運輸材料的特性決定。散貨運輸在全球海運貿易中所佔的比重達到了 45%。



## Shipping Fleet: Tanker, Bulker, Container

Today, the three main shipping segments, i.e. tankers, bulk carriers and container vessels, are subdivided into the following size categories:

目前，世界船隊主要分為油輪，集裝箱和散貨船三種。

### Tankers

- ❖ Small tankers/chemical tankers (1-20,000 DWT);
- ❖ Handysize/MR (medium range) tankers (20,000-55,000 DWT);
- ❖ Panamax/LR1 (long range) tankers (55,000-85,000 DWT);
- ❖ Aframax/LR2 (long range) tankers (85,000-120,000 DWT);
- ❖ Suezmax tankers (120,000-200,000 DWT);
- ❖ VLCCs (very large crude oil carriers, 200,000-350,000 DWT);
- ❖ ULCCs (ultra large crude oil carriers, 350-450,000 DWT).

### 油輪:

- ❖ 小型油輪/化學品液貨船(1-20,000DWT);
- ❖ 輕便型/(中程)油輪(20,000-55,000DWT);
- ❖ 巴拿馬級(遠程)油輪(55,000-85,000DWT);
- ❖ 阿芙拉馬型/(遠程)油輪(85,000-120,000DWT);
- ❖ 蘇伊士型油輪(120,000-200,000DWT);
- ❖ VLCC 級大型油輪(200,000-350,000DWT);
- ❖ ULCC 級超大型原油輪(350,000-450,000DWT).

### Bulk Carriers:

- ❖ Handysize bulk carriers (10,000-40,000 DWT);
- ❖ Handymax bulk carriers (40,000-60,000 DWT);
- ❖ Panamax bulk carriers (60,000-80,000 DWT);
- ❖ Capesize bulk carriers (> 80,000 DWT).

### 散貨船:

- ❖ 小型散貨船(10,000-40,000DWT);
- ❖ 中小型散貨船(40,000-60,000DWT);
- ❖ 巴拿馬型散貨船(60,000-80,000DWT);
- ❖ 好望角型散貨船(大於 80,000DWT).

### Container Vessels:

- ❖ Feeder container vessels (100-500 TEU)
- ❖ Feedermax container vessels (500-1,000 TEU)
- ❖ Handysize container vessels (1,000-2,000 TEU)
- ❖ Sub-Panamax container vessels (2,000-3,000 TEU)
- ❖ Panamax container vessels (3,000-5,000 TEU)
- ❖ Post-Panamax container vessels (5,000-10,000+ TEU)

### 集裝箱船:

- ❖ 支線集裝箱船舶(100-500TEU)
- ❖ 支線最大型集裝箱船(500 至 1,000TEU)
- ❖ 小型集裝箱船(1,000-2,000TEU)
- ❖ 準巴拿馬型集裝箱船(2,000-3,000TEU)
- ❖ 巴拿馬型集裝箱船(3,000-5,000TEU)
- ❖ 超巴拿馬型集裝箱船(5,000-13,000 TEU)





## Ship Owner and Ship Management

The ship owner is the legal owner of a vessel. He makes the investment decision, arranges the financing of the vessel and he takes care of the financial management of the vessel including the disinvestment decision. The ship owner would also take care of managing the vessel technically, with regards to manning and commercially. Today, this would be described as in-house ship management. A so-called 3rd party ship manager is an external service provider to the ship owner, taking care of part or all aspects of vessel management.

船東的嚴格定義是船舶法律意義上的擁有者。船東直接參與船舶的投資和融資活動，也參與船舶的管理，比如船員的配備和商業管理。此外，船東也可委託第三方進行船舶的全部或者部份事務的管理。

A typical ship management company would include the following departments:

一個典型的船舶管理公司的組織架構通常如下：

- ❖ Technical department for the technical management of vessels including maintenance, repairs, dockings, IT-management and operating expenses budget control
- ❖ Chartering/operations department for the commercial management of vessels including arrangement of vessel employment (chartering) and execution of employment (post-fixture) related duties
- ❖ TQM (Total Quality Management) for the implementation and monitoring of internal and external rules, regulations and safety management guidelines
- ❖ Insurance department for the negotiation of insurance policies (like Protection and Indemnity (P&I), Hull and Machinery, Loss of Hire) and the management of incidents/insurance claims
- ❖ Accounting department for the management and controlling of vessel accounts
  
- ❖ **技術部門：**  
主要負責船舶的日常保養、維修、船舶上船塢的年檢和大修、IT 管理和日常運營費用的預算控制；
- ❖ **船員管理部門：**  
主要負責船長，船員，輪機長的僱傭，船員培訓和船員定期輪換；
- ❖ **租船部門：**  
主要管理船舶的租賃業務，以及船舶出租後的一切後續業務；
- ❖ **質檢部門：**  
主要負責制定船舶內部和外部的管理體系，規章和安全監督管理準則，並且監督這些體系的執行；
- ❖ **保險部門：**  
負責船舶的各類保險業務，包括船舶的責任險，租約保險，船體保險等。
- ❖ **財務部門：**  
主要負責船舶收益和支出等資金往來。



## Ship's Technical Management

The technical management of a vessel includes the purchasing of spare parts and supplies, the continuous maintenance of the vessel, repairs, the planning and execution of regular and extraordinary dockings and the planning and controlling of the vessel's operating expenses budget.

The quality assurance department forms a vital part of the technical department. Increasing pressure from regulatory bodies and industry members have led to extensive rules and regulations concerning the shore- and sea-based management of vessels. The quality assurance department transfers rules and regulations into the language of internal and external quality management, carries out internal audits, plans and supervises external audits and is highly involved in any kind of incident. Part of the quality assurance department's duties is to obtain so-called 'oil major approvals' for tankers (sometimes also called 'vetting').

As it is of utmost importance for the maintenance of the vessel to employ well-trained and capable crew, the crewing department could be considered part of the technical department. The actual employment and training of crew is carried out in the countries of origin by crewing agencies. The crewing department controls the crewing agencies, employs some of the crew directly, negotiates employment contracts, trains crew members, takes care of social security issues and plans and executes crew changes, i.e. the embarking and disembarking of crew members including the booking of flights. The insurance for crew members is also an important issue.

船舶的技術管理包括船舶配件的採購和補給、船舶維修、保養，船舶年檢，上船塢檢修，定期大修，以及船舶營運開支管理和預算控制。

質量保證部門是船舶技術管理的重要組成部分。國際航運監管機構會越來越多出台大量有關海岸和海上船舶管理條例。質量保證部門負責把相關管理法規和條例轉換成內部質檢的具體要求進行實施，並且提供給公司作內部規劃和外部審計核查所用。質保部門的其中一項工作是對船舶執行質量安全管理，申請相應的質檢證書，比如油輪中必須的質保證書 oil major approvals，有時也簡稱為“核查書”（vetting）。

聘請訓練有素的船員是船舶平時保養和維修中至關重要的一個環節。船員部門可被看作是技術部門的一部分。船員的僱用和船員培訓一般是由原籍國的海員訓練機構提供。船員管理部門的主要職責是監督海員訓練機構、直接僱用船員、僱用合同談判、船員培訓、船員的社會保障措施、船員換班的安排，比如安排船員的離岸和登陸，包括預定來回航班。此外，船舶保險部門主要處理船員的保險和船舶保險，並且負責保險索賠。

## Ship's Insurance

Marine insurance plays a vital role in the management of technical and mercantile risks in shipping. The three main marine insurances are:

- ❖ Hull and Machinery Insurance;
- ❖ Protection and Indemnity (P&I) Insurance;
- ❖ Loss of Hire Insurance

The Hull and Machinery Insurance covers all sorts of watercraft from barges and tugs to supply vessels, research vessels, huge oil tankers and other commercial vessels. This coverage protects the vessel's hull and the machinery and equipment on board against fire, actual total loss of the vessel, machinery damage and so on, as well as property damage due to a collision with another vessel. Additional coverage may be issued for risks such as strikes, riots and war at the request of the owner of the vessel.

Protection and Indemnity (P&I) Insurance covers liability claims from third parties. In shipping it had been customary for a very long time to split typical risks of a voyage amongst several partners. In everyday practise, several "pools" have emerged, the so-called 'Protection and Indemnity Clubs' (P&I-Clubs). P&I- Clubs are insurance clubs based on the principle of mutuality, which was introduced by British ship owners in the 18th century. One of the leading players is the "Standard P&I Club" headquartered on the island of Bermuda. Damages, which have to be paid by a P&I-Club are covered through cost sharing by all members. Thereby it is assured that it is in the interest of all members to avoid or minimise damages by vigilant action. Typically, the P&I Insurance covers the following items:

- ❖ Loss of life, injury or sickness of crew, passengers and/or third parties
- ❖ Damage to cargo on board of the vessel
- ❖ Damage to piers, docks, jetties and other fixed or floating objects
- ❖ Wreck-removal costs
- ❖ Environmental damage and clean-up costs arising from bunker fuel or cargo spills
- ❖ Collision liability for amounts in excess of the vessel's value

Loss of Hire Insurance as part of the Hull and Machinery Insurance policy for the compensation of loss of earnings due to technical failure of the vessel.



## Ship's Insurance

由於船舶的建造技術和安全性能不斷提高，船舶運營中造成的海事風險機率不斷降低。船舶的海洋保險在航運技術和商業風險的管理方面發揮著重要的作用。三個主要保險是：

- ❖ 船體和機械設備的保險 (Hull and Machinery Insurance) ;
- ❖ 船舶責任險 Protection and Indemnity (P&I) ;
- ❖ 船舶收益喪失險 Loss of Hire Insurance.

船體和設備保險主要為船舶和機械的損失提供賠償，覆蓋面很廣，包括了駁船、拖船、補給船到大噸位的油輪，散貨船，集裝箱船等所有商業船隻。凡是船體和船上的機械設備由於火災，實際耗損（非賬面折舊），機械故障，船隻相撞造成的財產損害都屬於保險受理範圍。船東也可提出在此基礎上提供附加保險條款，例如罷工，騷亂和戰爭風險。

船舶責任險是為第三方的索賠提供賠償服務。保險的範圍包括人身傷害和由船員或船隻的原因造成的第三方財產損害，航運業歷史上就一直有行業保險，分散風險的傳統。隨著船運業務的發展，各種風險分散的產品不斷出現。比如所謂的“保護和賠償俱樂部”（P&I）。P&I 是由英國船東基於對等原則在 18 世紀成立的俱樂部。其領導者之一是“標準 P&I”，總部設在百慕大群島。船東加入俱樂部後，船隻的損失由俱樂部的所有成員共同分攤。因而能夠從最大程度上保證其所有成員為避免或減少損失而時刻保持警惕。通常情況下，P&I 保險包括下列項目：

- ❖ 船員、旅客和/或第三方的生命喪失或受到傷害；
- ❖ 船舶上貨物的受到損壞；
- ❖ 碼頭，船塢和其他固定或浮動對象的損壞；
- ❖ 船舶殘骸的搬運費；
- ❖ 對環境的破壞和清理艙載燃料產生的洩漏費用；
- ❖ 船舶碰撞後超出被撞船舶價值的責任索賠。

船舶收益喪失險其實是船體保險的一部分，主要為船舶在出現故障時造成的收益損失進行賠償。

## Shipping Risks

Risks in shipping can be divided into technical risks and mercantile risks. Technical risks mainly originate from the risk of fire, collision, grounding, sinking/loss, corrosion, technical damage/malfunctions and crewing. Mercantile risks mainly originate from the risk of ship building, employment, operating expenses, disinvestment/disposal, exchange and interest rates. The management of technical risks is a wide field and starts even before a vessel is built. A solid design, extensive ship model tests, a high-quality new building shipyard, high-quality component suppliers and an expertise new building supervision carried out by the shipyard's client can prevent many negative impacts at a later stage.



In shipping there are classification societies in existence, which are comparable to technical inspection agencies. They approve new building designs, plans and specifications, they supervise the building of a vessel and they supervise the maintenance, dockings (at minimum intervals of 5 years) and repairs of the vessel. The ship receives certificates showing the compliance with the classification society's standards. The high-quality classification societies, like the "Germanischer Lloyd" and "Det Norske Veritas", have founded the International Association of Classification Societies to implement and keep a high level of quality standards. By choosing one of the members, a ship owner can minimise his technical risks.

During the lifetime of a vessel, it is of utmost importance to employ capable and well-trained crew, to maintain the vessel and all its machinery and to implement functioning emergency and incident response plans. One of the main duties of a ship owning/ship management company is to supervise and control the observance of standards. Due to past incidents, governmental bodies have over the years implemented a large number of safety and environmental regulations like the International Safety Management Code (ISM Code). Such regulations assure high quality standards for the shore- and sea-based vessel management including crewing. Since the majority of incidents is caused by human error or negligence, it is absolutely essential to employ, train and supervise capable and knowledgeable crew on board of a vessel. Apart from that there are many voluntary quality standards implemented by members of the industry, like the ISMA (International Ship managers Association) Code.

船運風險可分為技術風險和商業風險。技術風險主要來自火災、船舶碰撞、靠岸、沉沒/損失、腐蝕、技術損壞/故障及海員訓練。商業風險主要源於造船、船員僱用、經營費用、撤資/報損、匯率風險和利率風險等。技術風險涵蓋面較廣，船舶在建造時就會面臨各種技術風險。為了防止船舶建造時產生的技術問題，船東須考慮堅實的船舶設計圖樣、廣泛的船模試驗、高品質的新船建造廠、優質的船舶配件供應商和擁有新船建造專門知識的監督機構。

在船運業，有一種稱為船級社的機構可以解決上述問題。他們批准新的船舶設計和規範，監督船舶的建造和維修，負責核查船舶上船塢檢修和定期大修以及和船舶的平時的年檢。通過驗收的船舶會從船級社獲得標準質檢證明書。高等級的船級社，像“德國勞氏船級社”和“挪威船級社”具備世界級的知名度，有著一系列的高標準質量維護體系。船東可以選擇此類船級社，最大限度地降低其技術風險。船舶在平時運營階段，船東可聘請訓練有素的海事人員直接管理船舶。高素質的海員可以維持該船運作，並且具備應對緊急事件的能力。船舶管理公司會制定一系列的安全管理標準，並且監督這些標準的執行和遵守。

近年來，各國政府機構已實施了各類船運安全和環境保護管理法規，類似於現行的國際安全管理規則（ISM 規則）。這樣的法規保證了高標準的海岸和海上船舶管理，其中也包括船員管理細則。由於大多數事件是人為錯誤或疏忽造成的，培訓和監督船員在船上的操作能力和專業知識是絕對必要的。此外，還有許多自願性的質量標準供參考，如國際船舶管理協會（ISMA）實施的標準。

