船舶与海洋工程英语

裘晓星 主编

海洋出版社

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内 容 提 要

本书可作为高等院校船舶与海洋工程系的专业英语教材，也可用作有关工程科技人员的专业英语自学参考书。内容包括船舶概论、钻井平台、潜水器、经济论证及计算机等。学完本书后读者可以了解船舶与海洋工程英语的基本特点，对进一步提高阅读和翻译专业英语的能力有所裨益。

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序

一个科技工作者应该经常注视自己所从事专业的世界最新科技发展，并尽力把其中有用的东西在自己的工作中加以采用。掌握一两种外国语是必要的。随着党的对外开放政策的正确执行，我国对外关系日益发展；对造船行业来讲，随着出口船业务的逐步增长与沿海石油开发的迅猛展开，要求我们更快地掌握国外先进技术。同时由于我们与外国专家、学者的科技交流，与外商的业务商谈日益频繁，造船科技人员学习外语的要求更加迫切。

裘晓星等同志根据近几年来从事造船专业英语教学的经验编写了这本书。由于作者们都是造船科技人员，因此在选材，提供附加专业名词术语和对课文的说明等方面都有一定特色。这本书也是作者们在专业英语教学方面探索一条较为便捷的途径的一个尝试。十分盼望读者通过使用这本教材多多提出宝贵意见，以便它可以不断改进，从而为广大造船人员学习英语创造更好的条件。

中国造船工程学会副理事长　　杨槱　教授
中国海洋工程学会副理事长

1984年2月

编者的话

本书是在我国出口船舶任务不断增加和海洋开发事业方兴未艾的新形势下，为满足广大读者的需要而编写的。全书专业内容较齐全，包括船舶主尺度、性能、结构、设计、建造工艺、钻井平台、潜水器、轮机、电气、无人机舱，以及经济论证和计算机等，而且英语语言典型，所有课文选自著名的英美百科全书和有关造船与海洋工程原版书籍。本书可作为高等院校船舶与海洋工程系的专业英语教材，也可作造船工程技术人员的自学用书。

考虑到读者各自的专业需要，书中每一课文后面，都列出一些专业词汇并且附加了一些必要的专业术语；此外，还就选择词义，分析长句、难句，组织译文等要点作了注解；同时，也有课文的译文供参考。学完此书可使读者了解造船英语的基本特点，以进一步提高阅读和翻译造船英语的能力。

该书的前身是上海交通大学船舶设计专业的专业英语教材，在该校使用了多年。后经修改，在全国造船行业中曾以此书作为教材举办了五期短训班，反应良好。在造船界众多专业技术人员的鼓励和敦促下，我们对此书作了修改和补充，特别是增加了海洋工程方面的内容。现将此书呈献给广大造船工程技术人员，以表达我们为造船与海洋开发事业贡献菲薄之力的心愿。

感到荣幸的是该书的编写工作受到了罗德涛教授的热情鼓励和支持。他在繁忙之中亲自担任了该书的主审工作。参

加本书编写工作的还有黄根余、裘诔铭、马佐章、陆伟东、高才苹等。黄根余对全书作了校对。该书作讲义使用时，孙光二、傅德海、沈长根、李军毅、吴忠骁等曾参加过部分课文的翻译工作。完裕华承担了该书英文稿子的打字工作，柳根权和周海描绘了文中的插图。该书编写过程中还得到了不少同志的帮助。在此一并表示感谢。

编者长期从事造船专业的技术工作，对编写英语书籍缺乏经验，加上水平有限，存在问题一定不少，切望读者批评指正。

编　者

1984年2月

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Lesson One

The Naval Architect

A naval architect asked to design a ship may receive his instructions in a form ranging from[1] such simple requirements as "an oil tanker to carry 100 000 tons deadweight at 15 knots" to a fully detailed specification of precisely planned requirements. He is usually required to prepare a design for a vessel that must carry a certain weight of cargo (or number of passengers) at a specified speed with particular reference to trade requirements; high-density cargoes, such as machinery, require little hold capacity, while the reverse is true for low-density cargoes, such as grain.

Deadweight is defined as weight of cargo plus fuel and consumable stores, and lightweight as the weight of the hull, including machinery and equipment. The designer must choose dimensions such that[2] the displacement of the vessel is equal to the sum of the deadweight and the lightweight tonnages. The fineness of the hull must be appropriate to the speed. The draft ——which is governed by freeboard rules——enables the depth to be determined to a first approximation.

After selecting tentative values of length, breadth, depth, draft, and displacement, the designer must achieve a weight balance. He must also select a moment balance because centres of gravity in both longitudinal and vertical directions must provide satisfactory trim and stability. Additionally, he must estimate the shaft horsepower required for the specified speed; this determines the weight of machinery. The strength of the hull must be adequate for the service intended; detailed scantlings (frame dimensions and plate thicknesses) can be obtained from the rules of the classification society. These scantlings determine the requisite weight of hull steel.

The vessel should possess satisfactory steering characteristics, freedom from troublesome vibration, and should comply with the many varied requirements of international regulations. Possessing an attractive appearance, the ship should have the minimum net register tonnage, the factor on which harbour and other dues are based.[3] (The gross tonnage represents the volume of all closed-in spaces above the inner bottom. The net tonnage is the gross tonnage minus certain deductible spaces that do not produce revenue. Net tonnage can therefore be regarded as a measure of the earning capacity of the ship, hence its use as a basis for harbour and docking charges.) Passenger vessels must satisfy a standard of bulkhead subdivision that will ensure adequate stability under specified conditions if the hull is pierced accidentally or through collision.

Compromise plays a considerable part in producing a satisfactory design. A naval architect must be a master of approximations. If the required design closely resembles that of a ship already built for which full information is available, the designer can calculate the effects of differences between this ship and the projected ship. If, however, this information is not available, he must first produce coefficients based upon experience and, after refining them, check the results by calculation.

Training

There are four major requirements for a good naval architect. The first is a clear understanding of the fundamental principles of applied science, particularly those aspects of science that have direct application to ships——mathematics, physics, mechanics, fluid mechanics, materials, structural strenth, stability, resistance, and propulsion. The second is a detailed knowledge of past and present practice in shipbuilding. The third is personal experience of accepted methods in the design, construction, and operation of ships; and the fourth, and perhaps most important, is an aptitude for tackling new technical problems and of devising practical solutions.

The professional training of naval architects differs widely in the various maritime countries. University degrees in naval architecture are offered by many universities and polytechnic schools; such academic training must be supplemented by practical experience in a shipyard.

Trends in design

The introduction of calculating machines and computers has facilitated the complex calculations required in naval architecture and has also introduced new concepts in design. There are many combinations of length, breadth, and draft that will give a required displacement. Electronic computers make it possible to prepare series of designs for a vessel to operate in a particular service and to assess the economic returns to the shipowner for each separate design.[4] Such a procedure is best carried out as a joint exercise by owner and builder. As ships increase in size and cost, such combined technical and economic studies can be expected to become more common.

(From "Encyclopedia Britannica", Vol. 16, 1980)

Technical Terms

1. naval architect 造船工程(设计)师
   naval architecture 造船(工程)学
2. instruction 任务书,指导书
3. oil tanker 油船
4. deadweight 载重量
5. knot 节
6. specification 说明书,设计任务书
7. vessel 船舶
8. cargo 货物
9. passenger 旅客
10. trade 贸易
11. machinery 机械、机器
12. hold capacity 舱容
13. consumable store 消耗物品
14. light weight 轻载重量,空船重量
15. hull 船体
16. dimension 尺度,量纲,维(数)
17. displacement 排水量,位移,置换
18. tonnage 吨位

19. fineness 纤瘦度
20. draft 吃水
21. breadth 船宽
22. freeboard 干舷
23. rule 规范
24. tentative 试用(暂行)的
25. longitudinal direction 纵向
26. vertical direction 垂向
27. trim 纵倾
28. stability 稳性
29. shaft horsepower 轴马力
30. strength 强度
31. service 航区,服务
32. scantling 结构(件)尺寸
33. frame 肋骨
34. classification society 船级社
35. steering 操舵、驾驶
36. vibration 振动
37. net register tonnage 净登记吨位
38. harbour 港口
39. dues 税收
40. gross tonnage 总吨位
41. deductible space 扣除空间(处所)
42. revenue 收入
43. docking 进坞
44. charge 费用,电荷
45. bulkhead 舱壁
46. subdivision 分舱(隔),细分
47. collision 碰撞
48. compromise 折衷,调和

49. coefficient 系数
50. training 培训
51. fluid mechanics 流体力学
52. structural strength 结构强度
53. resistance 阻力
54. propulsion 推进
55. shipbuilding 造船
56. aptitude (特殊)才能,适应性
57. maritime 航运,海运
58. polytechnical school 工艺(科技)学校
59. academic 学术的
60. shipyard 造船厂
61. electronic computer 电子计算机
62. owner 船主,物主
63. encyclop(a)edia 百科全书

Additional Terms and Expressions

1. the Chinese Society of Naval Architecture and Marine Engineering (CSNAME) 中国造船工程学会
2. the Chinese Society of Navigation 中国航海学会
3. "Shipbuilding of China" "中国造船"
4. "Ship Engineering" "船舶工程"
5. "Naval and Merchant Ships" "舰船知识"
6. China State Shipbuilding Corporation (CSSC) 中国船舶工业总公司
7. China Offshore Platform Engineering Corporation (COPECO) 中国海洋石油平台工程公司
8. Royal Institution of Naval Architects (R.I.N.A.) 英国皇家造船工程师学会
9. Society of Naval Architects and Marine Engineers

(SNAME) 美国造船师与轮机工程师协会

10. principle of naval architecture 造船原理
11. ship statics (or statics of naval architecture) 船舶静力学
12. ship dynamics 船舶动力学
13. ship resistance and propulsion 船舶阻力和推进
14. ship rolling and pitching 船舶摇摆
15. ship manoeuvrability 船舶操纵性
16. ship construction 船舶结构
17. ship structural mechanics 船舶结构力学
18. ship strength and structural design 船舶强度和结构设计
19. ship design 船舶设计
20. shipbuilding technology 造船工艺
21. marine (or ocean) engineering 海洋工程

Notes to the Text

1. range from A to B 的意思为"从 A 到 B 的范围内",翻译时,根据这个基本意思可按汉语习惯译成中文。例:

   Lathe sizes range from very little lathes with the length of the bed in several inches to very large ones turning a work many feet in length.

   车床有大有小,小的车床其床身只有几英寸,大的车床能车削数英尺长的工件。

2. Such that 可以认为是such a kind/value 等的缩写,意思为"这样的类别/值等……以致于……"。译成中文时,可根据具体情况加以意译。例:

   The depth of the chain locker is such that the cable is easily stowed.

   锚链舱的深度应该使锚链容易储存。

3. Possessing an attractive appearance, the ship should

have the minimum net register tonnage, the factor on which harbour and other dues are based.

Possessing an attractive appearance 现在分词短语，用作表示条件的状语。意译成"船舶除有一个漂亮的外形……"。一般说，如分词短语位于句首，通常表示时间、条件、原因等。

the factor on which…are based 中的 the factor 是前面 the minimum net register tonnage 的同位语，而 on which … are based 是定语从句，修饰 the factor。

4. Electronic computers make it possible to prepare series of designs for a vessel to operate in a particular service and to assess the economic returns to the shipowner for each separate design.

句中的 it 是形式宾语，实际宾语为不定式短语 to prepare series of designs… 和 to assess the economic returns…。

第一课

造船工程师

造船工程师应船主要求设计一条船舶，他所得到的任务书形式很不相同，简单的形式，只提出要求设计"一条具有 10 万吨载重量、航速为 15 节的油船"，复杂时可为一份包括有很多明确要求的详细说明书。通常，在规定的航速下，考虑到贸易上的要求，要求造船工程师设计的船，必须能装载一定重量的货物（或一定数量的旅客）；如装重货（机器设备等），对舱容很少有要求，而若装轻货（如谷物之类），情况就相反。

载重量被定义为货物重量加上燃料与消耗品的重量；而空船重量定义为包括机械和设备在内的船体重量。设计师所