

ISO TC8

Ships and Marine Technology
Technical Committee

STRATEGIC BUSINESS PLAN



Executive Summary

ISO/TC 8 Ships and marine technology is responsible for standardization related to the sector of ships and marine technology. TC 8 serves international shipping and shipbuilding, which is comprised of shipbuilders, ship repairers, ship owners, ship operator, marine suppliers and regulatory bodies, such as the IMO, national or regional maritime and port authorities, class societies, etc. Marine technology may be defined as any technology related to the marine field or maritime affairs. The marine technology sector is mainly concerned with scientific research vessels, companies engaged in marine surveying/ocean environmental assessment, oil companies, universities and researchers involved in the development of marine technology, and cooperates with marine environmental protection organizations and other public authorities. ISO/TC 8 is responsible for all ships with a hull length of more than 24 m, smaller ships are dealt with in ISO/TC 188. International shipping may also include national shipping where the ships are built to international standards – e.g. inland waterway vessels. Typical examples would be other vessels not normally described as ships, such as submersibles, floating offshore platforms, barges, wind farms, various offshore structures, fishing farms, floating or fixed man-made structures or islands at sea, exploratory and exploitative technology, diving systems, floating docks, caissons, autonomous (smart) ships, etc.

Transporting around 90% the world trade volume, seaborne trade plays a critical role in the world economy. Standards developed by ISO/TC 8 not only benefit the maritime industry by minimizing the world trade barriers, but also encourage technical innovation to the overall benefit of safety, environmental protection, the general welfare and economy of the world. Maritime affairs are unique in their international places, and their influence on trade, prosperity, human welfare, safety and the environment and must have sector-specific experts addressing standardization.

With the strategy of acting as the link between international regulatory bodies and the maritime industry, ISO/TC 8 takes both regulatory requirements and industry demands as the main drive for standardization. It actively participates in the activities of international organizations including IMO, UN BBNJ, ISA etc. to provide timely solutions for efficient regulation implementation. Meanwhile TC 8 is also actively involved in industry activities and forums in order to determine industry needs and respond in a timely and coordinated manner.

Taking IMO as the focus of standardization activities, Chair of TC 8 acts as the permanent representative of ISO to IMO. ISO/TC 8 also designates representatives to attend meetings of the IMO MSC, MEPC and relevant Subcommittees. TC8 standards address safety, environment protection, security as well as education and training issues, which is in line with several areas in the IMO Program of Work. Smart shipping, liquid and gas fueled vessels, greenhouse gas (GHG), aquatic nuisance species, polar region vessels, marine environment impact assessment, marine plastic, maritime safety and security are the priority items of ISO/TC8 at this time.

ISO/TC 8 is well represented by most maritime nations. Broader involvement worldwide and diverse representation is encouraged. Therefore TC 8 rotates the annual plenary meeting locations and organizes seminars during the plenary to gain better knowledge of specific region demands and encourage stakeholder involvement.

ISO/TC 8 is the only technical committee in ISO to win the Lawrence D. Eicher Award twice.

1 Introduction

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of [IEC](#) (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of [ITU](#) (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the [International Standard](#).

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2 Business Environment of the ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

■ **Industry Environment:** Modern shipbuilding industry is mainly an industry that provides equipment and technical support for shipping. It has the characteristics of labor, capital and technology intensity, and has formed a global industrial division of labor. The ship construction process includes important stages such as hull construction, equipment outfitting, test and trial. Shipyards, design companies, equipment suppliers, raw material suppliers, inspection institutions, classification societies, ship owners, state maritime authority (usually maritime administration) constitute the stakeholders. International maritime regulations, classification society specification and international standards have become important technical norms for ship construction and delivery.

At present, the global shipbuilding industry is mainly concentrated in China, South Korea and Japan. Some European countries also have certain advantages in cruise, yacht and special ships. Based on three major indicators of new order, completion and order book, the shipyards of China, South Korea and Japan together account for more than 95% of the market share, and have built almost all of the world's major bulk carriers, oil tankers, container ships, gas tankers, automobile carriers, and special for oil and gas development in the world. And the global shipbuilding supply chain has been affected to some extent by the epidemic.

Shipbuilding markets and technological changes are influenced by the shipping climate and the requirement of maritime trade. The COVID-19 pandemic in 2020 caused the global seaborne trade volume to decline by more than 4%, which is the largest decline in the 21st century. At the same time, the performance of the various segments of the global shipping industry is quite different: the container liner market freight index has quadrupled in the past eight months, some lines have increased more than 10 times; the freight rate of oil tanker market rose sharply for three months and then fell to a low level; the dry bulk cargo transport market continues to be depressed, which to a certain extent affects the sustainable development of the industry. The typical representative of marine leisure and entertainment industry is the cruise business and yacht industry. The 14-day quarantine of the Diamond Princess and the subsequent outbreak of COVID-19 have brought the cruise market to a halt. The safety and health of seafarers is of paramount concern in the epidemic. The shortage of seafarers affected the resumption of shipping for a considerable period due to difficult shift changes and vaccination. In 2021, the global maritime trade and port production showed rebound growth and slow recovery. Port handling capacity has also been hit by the epidemic, and the situation is still very serious even as the economy began to recover.

At the beginning of 2021, the global fleet of Clarkson Research database achieved a milestone breakthrough of 100,000 ships. A total of 100,001 ships, with a total transport capacity of 1.444 billion gross tons and 2.136 billion deadweight tons, valued at 976.4 billion US dollars and an average ship age of 21.69 years.

■ **Regulatory Environment:** The International Maritime Organization (IMO) is an intergovernmental body of the United Nations responsible for maritime affairs. The conventions and legal documents on maritime safety, marine environmental protection, navigation and personnel discussed and formulated by IMO serve as an important basis for the international standardization work of ISO/TC8. The three COMMITTEES of IMO -- Maritime Safety Committee (MSC), Marine Environment Protection Committee (MEPC), Facilitation Committee (FAL) are the technical regulatory making bodies that have major influence on ISO activities. The regulations of the global maritime industry discussed and formulated are the important traction for ISO/TC8 to carry out international standardization.

Another principle aspect of ISO/TC8 activities is to support global marine development, conservation and response to climate change, such as the rules agreed on international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) and the United Nations Framework Convention on Climate Change (UNFCCC), whose implementation and evaluation will be facilitated by international standards.

ISO/TC8 cares about the workers in the maritime industry. The laws and regulations of IMO and International Labour Organization (ILO) to protect workers (seafarers, shipbuilders and engineers) and to receive education and training are principle for ISO/TC8 to develop international standards.

■ **Technology Environment:** Since the beginning of the 21st century, with the deepening of globalization and the rising awareness of maritime safety and marine environment protection, the shipping industry is also facing a new situation of massive application of new technologies. In general, around the two significant themes of maritime safety and marine environmental protection, digital and intelligent technology, new material and new power technology are being widely applied, mainly in the following aspects:

A series of new technology applications based on smart shipping are being promoted. With the new generation of information and communication technology, network technology, digital technology and the application of big data and other technologies are profoundly affecting shipping, shipbuilding, equipment, port logistics and maritime supervision.

IMO Strategy on Reduction of GHG Emissions from Ships is to promote the application of green shipping technology, including innovative energy-saving and emission reduction (sail assist, resistance reduction by bubble layer, ship form optimization, etc.) and alternative fuels (LNG, ammonia, methanol, hydrogen) and fuel cell, which are becoming the focus of technological innovation and industrial infrastructure development in the industry.

Marine environmental protection is requiring the continuous application of new technologies, and the emergence of new equipment and new system, such as ship noise control, harmful aquatic organism invasion protection, environmental protection of deep-sea mining activities, etc. Also, new technologies of marine biotic, chemical, geological and geophysical surveys are important to make the marine environmental impact evaluation more efficient.

In addition, human activities at sea are bringing more technologies into traditional platforms and creating new industrial opportunities. In recent years, marine observation instruments, offshore wind power, marine aquaculture, seawater desalination and offshore energy infrastructure being discussed in some countries are transforming offshore structures, marine renewable resources and submersibles into complex and novel technology application and integration platforms, providing possibilities for the application of new material and other technologies.

■ **External Environment:** *Transforming our World: The 2030 Agenda for Sustainable Development* is a vital guide for the global realization of sustainable development and a significant part of ISO's development strategy for the next six years. ISO/TC8 identified 46 international standards related to UNSDG and has become an indispensable part of ISO/TC8 strategy.

The global COVID-19 in 2020 has not been fully controlled in the middle of 2022. Although vaccines are being used as a means to end the pandemic in many countries, the mutation of the virus still poses a threat to the normal life in all countries.

Seaborne commerce is still the most important way of transaction, and marine transportation is the cleanest and most convenient form of transportation. Global action is being taken to meet carbon neutrality goal, placing new demands on transnational and trans-regional trade, maritime transport and the production of ships and associated equipment. Trade facilitation, maritime safety, anti-piracy, enhanced information network security and marine environmental protection are the themes of this era.

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

■ **Industrial quantitative indicators:** During 2020, delivery of ships declined by 12 per cent, partly due to lockdown induced labour shortages that disrupted marine-industrial activity. The ships delivered were mostly bulk carriers, followed by oil tankers and container ships. During 2020, orders for new ships had declined by 16 per cent, continuing a downward trend observed in previous years. In early 2021, however, shipping companies reacted to the capacity constraints with a surge of new orders, especially for container ships for which orders were the highest for the last two decades. There were also more orders for LNG carriers.

In 2021, World's new orders reached 128.38 million DWT, World's completion reached 86.53 million DWT, World's orderbook reached 213.45 million DWT. China's shipbuilding new orders reached 65.60 million DWT, South Korea's 40.99 million DWT and Japan's 16.90 million DWT, accounting for 51.09%, 31.93% and 13.16% of the total global shipbuilding orders respectively.

2021 data	Completion (Mil. DWT)	New Order (Mil. DWT)	Orderbook (Mil. DWT)
China	41.98	65.60	101.32
South Korea	24.66	40.99	67.53
Japan	17.09	16.90	34.70
World	86.53	128.38	213.45

(Data source: Clarksons Research)

Lock-downs, travel restrictions and production cuts have compressed the demand for fuel. In 2020, shipments of crude oil, refined petroleum products, and gas together fell by 7.7 per cent. The impact was less, however, for dry bulk commodity trade: supported by strong demand from China for iron ore and grain, total dry bulk trade fell by only 1.5 per cent. Containerized trade also resisted, falling by only 1.1 per cent. Global container port throughput fell at a similar rate – and in 2020 totalled 815.6 million twenty-foot equivalent units (TEU).

Principal types	2020	2021	Percentage change 2021 over 2020
Bulk carriers	879 725 42.47%	913 032 42.77%	3.79%
Oil tankers	601 342 29.03%	619 148 29.00%	2.96%
Container ships	274 973 13.27%	281 784 13.20%	2.48%
Other types of ships:	238 705 11.52%	243 922 11.43%	2.19%
<i>Offshore supply</i>	84 049 4.06%	84 094 3.94%	0.05%
<i>Gas carriers</i>	73 685 3.56%	77 455 3.63%	5.12%
<i>Chemical tankers</i>	47 480 2.29%	48 858 2.29%	2.90%
<i>Other/not available</i>	25 500 1.23%	25 407 1.19%	-0.36%
<i>Ferries and passenger ships</i>	7 992 0.39%	8 109 0.38%	1.46%
General cargo ships	76 893 3.71%	76 754 3.60%	-0.18%
World total	2 071 638	2 134 640	3.04%

Source: UNCTAD calculations, based on data from Clarksons Research.

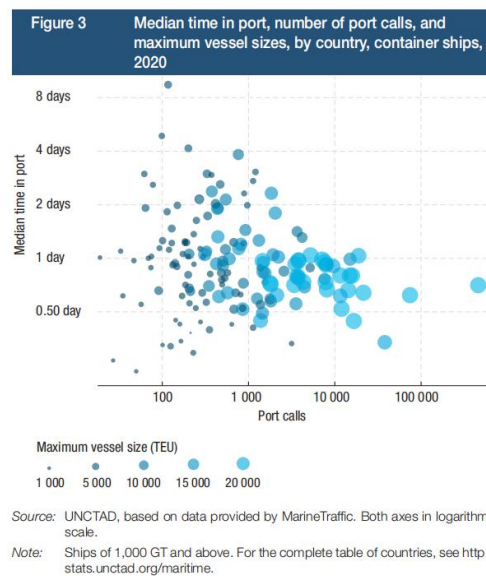
Note: Propelled seagoing merchant vessels of 100 tons and above; beginning-of-year figures.

(Data source: UNCTAD)

In 2020, the global commercial shipping fleet grew by 3 per cent, reaching 99,800 ships of 100 gross tons and above. By January 2021, capacity was equivalent to 2,13 billion dead weight tons (dwt). By exposing the vulnerabilities of existing supply chains, the COVID-19 disruption has sharpened the need to build resilience.

During the second half of 2020, and into 2021, world trade gradually recovered but supply was less elastic and constrained by COVID-19 related delays and congestion – leading to a significant increase in container freight rates. The future demand/supply balance will also be impacted by regulatory requirements to align shipping operations with decarbonization targets. Introduced under the auspices of the International Maritime Organization (IMO), these new regulations will require replacing some of the existing fleet so will entail significant costs. As well as creating a degree of uncertainty, this could reduce the capital available to expand the fleet to cater for trade growth.

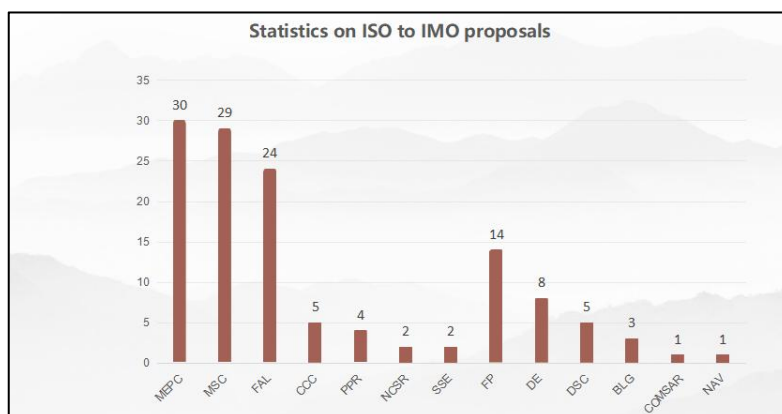
Member ports' annual throughput in 2020 ranged from 1.5 million to 80.9 million tonnes. Around half of were in the smallest category, less than 5 million tonnes, and the medium category, 5 million to 10 million tonnes, a range of volumes that was similar across all regions.



(Data source: UNCTAD)

■ **ISO/TC8 standards support regulatory indicators** : ISO has been given Non-Governmental Organizations (NGO) status by IMO since 1961 and ISO/TC8 Chair also acts as the Head of Delegates of ISO to IMO since 1961. ISO/TC8 is responsible for coordination ISO work in relation with IMO activities and will develop an attendance plan a year in advance to ensure proper ISO representation at IMO committees. Totally 128 proposals has been submitted in the name of ISO to IMO from 1998 to April 2022, and among them 106 are ISO/TC8 proposals, accounting for 83%. ISO speaks with one voice and provides

IMO with timely standardization solutions.



■ **Indicators affected by external environment:** The UN Sustainable Development Goals (SDGs) represent an ambitious plan to enhance peace and prosperity, eradicate poverty and protect the planet. They are recognized globally as essential to the future sustainability of our world. TC8 (Ships and Marine Technology) has an impact on all of the 17 development goals, but some more than others. Of the 17, TC8 has the strongest contact relationship with the following 12 goals.



This committee contributes with 44 standards to the following [Sustainable Development Goals](#):



■ **Application data of ISO/TC8 standards in member countries:** According to the review of 211 ISO/TC8 international standards by Systematic Review Balloting from May 2017 to May 2022, 28 countries have adopted ISO/TC8 international standards as national standard. The five countries with the highest ISO/TC8 standards adopted are the Netherlands, the United Kingdom, South Korea, China and Denmark. Through data analysis, it can be found that various countries have uneven demand for ISO/TC8 international standards. For example, some countries only adopt international standards in the field of ship design, and others only adopts international standards in the field of inland navigation vessels.

3 Benefits expected from the work of the ISO/TC 8

Specific benefits are:

- An increase in voluntary consensus marine industry standards in lieu of increased regulations.
- Providing the technical standards to implement the broad aspects of IMO regulations where details have been left to each port state for implementation - ability to translate regulatory requirements into specific industry standards for implementation universally - currently over 160 ISO/TC8 published standards are in direct support of IMO requirements.
- Providing industry standards to serve as a foundation for international regulations.
- Providing industry standards to serve as foundation for environmental aspect in marine industry. Safety, security and environment protection are basic IMO concerns. Through industry standards that are adopted we can help create the balance between regulatory needs and industry advancements.
- Providing the ship owners with a common base for design, construction and repair of ships regardless of which nation the work is performed.
- Ensuring the interchangeability of key components and systems across ships of the same type in each owner's fleet.
- A reduction in unit cost of ship construction by applying uniform design/building standards internationally.
- Through active participation of regional bodies, obtaining greater support to the development and use of international standards and harmonization of regional standards. Since the maritime industry is international, regional or national standards only serve to increase trade barriers, limit market size, and do not help to "level the playing field".
- In the increasingly connected world, the marine sector needs to lay down its own sector specific performance requirements for interconnected items and the information they generate, communicate, manipulate, manage and store. TC8 has the structure and resources to understand and provide the required standards to provide this, in a safe, secure and environmentally friendly manner, along with others, such as the IEC who would provide the actual items that fulfill the performance requirements. For example - IMO will specify the required performance of a bridge equipment, but ISO/TC8 and IEC would provide a technical standard for the electrotechnical devices that provide such performance.

4 Representation and participation in the ISO/TC 8

4.1 Membership



More information: <https://www.iso.org/committee/45776.html?view=participation>

4.2 Analysis of the participation

- **The balance of participation among the maritime nations of the world is excellent.** Most of the seafaring-nations are actively involved within ISO/TC8. The participation of the Asian countries is growing, and at the same time more countries from Europe, America has participated in last three years. In order to include more countries in a fair way, ISO/TC8 insist meets in various continents each year except for pandemic year. The goal of ISO/TC8 is to better integrate South America, Africa and more developing countries in the future work.

Members and Liaisons participated ISO/TC8 plenary (2019-2021)
P members: Canada(2), China(3), Denmark(3), Finland(3), France(2), Germany(3), Greece(2), India(2), Iran, Islamic Republic of(2), Italy(3), Japan(3), Korea, Republic of(3), Luxembourg(1), Norway(3), Panama(2), Russian Federation(3), Singapore(1), Sweden(1), United Kingdom(3), United States(3).
Liaisons: AMPP(2), BIMCO(3), CIRM(2), EC(1), IACS(3), ILAMA(2), IMO(2), ISA(1), NGV Global(1), ISO/TC92/SC1(1).

- **Key to our success requires the close collaboration with other international organizations and major regional bodies.** The International Maritime Organization (IMO) is the most closely connected, but ISO/TC8 relies on relations with the following major additional organizations:

- Association for Materials Protection and Performance (AMPP)
- Baltic & International Maritime Council (BIMCO)
- International Association for Marine Electronics Companies (CIRM)
- Cruise Lines International Association (CLIA)
- Digital Container Shipping Association (DCSA)

- [European Commission \(EC\)](#)
- [International Association of Classification Societies \(IACS - classification\)](#)
- International Association of Ports and Harbours (IAPH)
- International Council of Marine Industry Associations (ICOMIA)
- International Chamber of Shipping (ICS - shipping)
- International Life-Saving Appliance Manufacturers' Association (ILAMA)
- International Labour Organization (ILO)
- International Marine Contractors Association (IMCA)
- International Marine Electronics Alliance (IMEA)
- [International Maritime Organization \(IMO\)](#)
- International Maritime Pilots' Association (IMPA)
- International Security Management association (ISMA)
- International Ship Recycling Association (ISRA)
- North Atlantic Treaty Organisation (AC/35) (NATO)
- Natural Gas Vehicle Knowledge Base (NGV Global)
- World Organization for Animal Health (OIE)
- The Royal Institution of Naval Architects (RINA)
- Security Association for the Maritime Industry (SAMI)
- The Society for Gas as a Marine Fuel (SGMF)
- Society of International Gas Tanker and Terminal Operators (SIGGTO)
- The Society of Naval Architects and Marine Engineers (SNAME)
- United Nations Environment Programme (UNEP)
- World Customs Organization (WCO)
- World Meteorological Organization (WMO)
- World Shipping Council
- [Active Shipbuilding Experts' Federation \(ASEF\)](#)

Orange represents liaison organizations participated actively, Blue represents liaison organizations newly established.

- **Liaisons with Other ISO Technical Committees:** ISO/TC8 has maintained good cooperation and relationship with related technical committees, covering but not limited to ISO/TC 28/SC 4, ISO/TC 35/SC 9, ISO/TC67, ISO/TC 70/SC 8, ISO/TC104, ISO/TC 147. According to the changing needs of internal and external environment, new liaisons has been established from ISO/TC8 such as ISO/TC 265, ISO/TC207/SC5, ISO/TC207/SC7, to better develop international standards in emerging fields.
- **Recruitment and Publicity:** Publicity to increase visibility of the TC 8 activities will be coordinated through TC 8 Secretariat as authorized by the Chairman, ISO/TC 8.

Efforts shall be made towards increasing awareness by regulatory bodies and industry about TC 8 activities through various ways. Numerous articles have been published in the ISO FOCUS and will continue. ISO/TC 8 flyers have been prepared and distributed in IMO/MSC and IMO/MEPC meetings over the past several years (except for pandemic years). Major achievements are brought to the attention of IMO and all other stakeholders at IMO via formal document submission to IMO secretariat. A special pamphlet named ISO/TC8 2021 was

designed and distributed as annual summary.

Status Reports are published twice a year. An Opening Ceremony has been added to each plenary meeting which helps TC 8 to better comprehend the local industry development and standardization demand. Also, ISO/TC 8 supports different kinds of activities (workshop, seminar, forum, roundtable etc.) to communicate the concept of standardization of ships and marine technology, to attract more experts and stakeholders to be involved in the work of ISOTC 8. Speeches and presentations are made by the Chairman or other persons designated by the Chairman of TC 8, and Subcommittee Chairs at various international conferences, symposia and other meetings[^] or interviews on TV, radio, and other social media^v shall be recorded and open to the public to increase awareness of ISO/TC 8 and its activities.

An ISO/TC 8 Committee Profile Video can be found at <https://www.iso.org/committee/45776.html>

An ISO/TC8 official exclusive website can be found at <https://committee.iso.org/home/tc8>

5 Objectives of the ISO/TC 8 and strategies for their achievement

5.1 Defined objectives of the ISO/TC 8

ISO/TC 8 is the internationally recognized body of experts in the development of standards for the marine community. As part of a continuous process for improvement, ISO/TC 8's strategic vision to be the world-wide standards body and the "linking instrument" between international maritime legislative bodies, which sets the requirements and regulations, and the maritime industry.

Our standards must satisfy the following strategic objectives:

- **Internationalism.** Maritime standards may be used across national boundaries. Equipment and materials will come from many sources as long as they comply with recognized standards. Suppliers will compete in many more areas when standards are in harmony with requirements of IMO and other international maritime legislative bodies .
- **Standards will drive Products/Standardization.** Due to the rapid changes in marine technology, product life cycles are becoming shorter. The customer wants to protect his investment; therefore, a greater emphasis will be placed on products meeting accepted standards. Standards must be developed concurrently with new technology. Standards must be focused on interchangeability and performance, rather than detail design, to allow improved technology to be used. This can also be accomplished by creating interface standards.
- **Shortened Development Cycles.** To convert technology advancements into products in a timely manner, the ship design cycle will be shortened. A body of current standards is required so that new technology can be combined with existing technology in a building block approach.
- **Electronic Document Distribution and Maintenance.** With the increasing availability and capability of on-line computer systems, our standards must be located, reviewed, coordinated, and updated electronically.
- **Quality and Producibility.** To support the visions of how standards will fit into the world of the future, the standards must be of the highest calibre to define high quality, cost effective products capable of meeting ISO 9000 Series requirements. They must also define a product that can be manufactured, installed, used, and supported safely and efficiently at a competitive cost. Standards should provide for improvement in overall safety, including environmental protection, through standardization of specific safety features, standard operating procedures, reliability and maintainability, and standards for testing and inspection.
- **Satisfy the market need.** Be sure that the Committee is working on standards that the international maritime industry needs -get feedback from shipbuilders, ship owners and operators, and suppliers.
- **Universal acceptance.** Since the primary priority of the Committee is to produce standards for products capable of competing in worldwide markets, Committee activities must reflect this objective. Standards developed must be seen by producers/users as "the standard of choice" in preference to any national or regional developed standard. (Work to reduce proliferation of

standards). Harmonization between international standards and domestic standards and rules (legislation) must be actively pursued through continuous long-range efforts.

- **Forward compatibility.** Revisions to standards are few in number and minor or narrow in scope. This is essential for sustainability and to continue to maintain acceptance by the IMO and other legislative bodies in regulatory requirements.
- **Developing standards in a timely manner.** Streamline the process and ensure that standards developed to reflect current and emerging technologies in the marine industry and that they are kept up-to-date. Offer “guidance” standards as well as “contractual” standards. Since timely development and timing are key issues, it shall be a goal to have an accepted committee draft (CD) within one year of the accepted work item proposal for a standard. Maximum use will be made of the PAS (Publicly Available Specification) to facilitate the process and to ensure meeting market required dates.
- **Strengthen ties with other international bodies and with other ISO Technical Committees.** Strengthen ties with IMO and other legislative bodies to ensure that regulatory goals are met in international standards. Ensure that marine applications are satisfied in standards developed by other ISO Technical Committees - through amendment, supplement or development of a new marine industry particular standard.
- **Increase national participation.** Expand our active working membership to include Europe, Asia, Africa, Oceania, North and South America as well as developing nations.

5.2 Identified strategies to achieve the ISO/TC 8's defined objectives

- **Organizational structure setting**

ISO/TC 8 viewed constantly what changes were necessary for the existing subcommittees and working groups and to carry out the newly stated paradigm which can meet the needs of ISO/TC 8 strategic objectives. Subcommittees responsible for functional areas and some high priority areas were assigned as working groups directly under ISO/TC 8. ISO/TC 8 made its subcommittees and working groups transparent to guarantee more open and inclusive working to assist reaching consensus.

- **Provide standard solution in a timely manner**

The “link” to IMO: ISO/TC 8 believes that through positive contribution that can be made by adoption of voluntary consensus standards to help avoid these instances where IMO has left certain areas “to the discretion of the Administration” when nations have not agreed on the details. Chair of ISO/TC8 who is Head of Delegation (HoD) to IMO/MSC and IMO/MEPC to insure that “ISO speaks with one voice”. ISO/TC 8 appointed HoD to IMO meetings and produce better quality TC8 information before the meeting for planning, and after the meeting for understanding the consequences of the meeting and action required; accompanied by relevant and timely news releases.

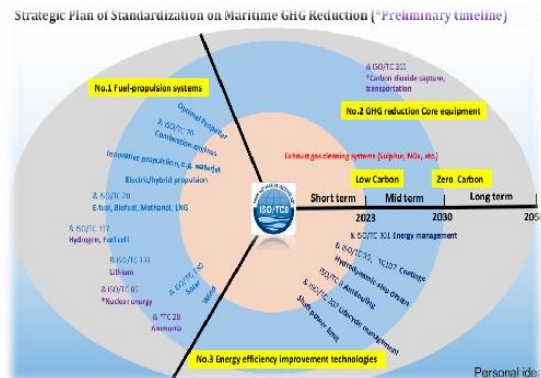
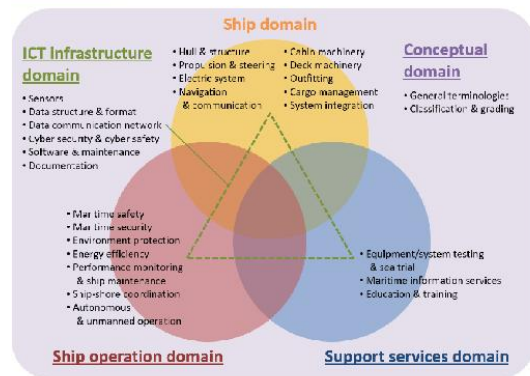
The “link” to Industry: ISO/TC 8 focuses on shipbuilding, shipping and Marine technology and has been working to increase participation of all marine industry. Standard development also were undertaken specifically to support the needs of the entire marine industry and delivered when industry needs it.

Full speed ahead: The focus in TC 8 is on the timely development of ISO/PAS and formal ISO Standards. IMO is receptive to citing an ISO standard or ISO/PAS, and other ISO deliverables have not been received yet. The member at the 31st TC8 plenary in Italy unanimously approved that ISO/TC 8 will not prepare CD in general which can facilitate our work in a more expeditious manner to meet stakeholder’s needs. In addition, TC 8 is trying to develop TS and TR where technical development is not mature enough or consensus can not fully reached to meet the latest requirement.

■ **Strategic management model**

TC8 Chairman’s Strategic Advisory Group (CSAG) and Manager’s workshop/meeting meet annually to resolve administrative matters, insuring cooperation and collaboration, avoiding overlapping, taking necessary steps to meet schedule to insure delivery to industry and/or legislative bodies as promised, and sharing ideas for improvement and optimum administrative management within ISO/TC8. In view of the cross-field issues of international standard development, ISO/TC 8 takes the lead in using the international standardization roadmap as a solution. Currently, roadmap on smart shipping and roadmap on maritime decarbonization are underdevelopment.

The Framework



■ **Improving the way we work**

Due to the impact of COVID-19, face-to-face meetings will remain the exception, and the ISO President’s committee has decided that all governance and technical meetings planned for 1 May 2022 onward, be held as virtual or hybrid at the discretion of the relevant group leaders. All ISO/TC8 meetings had been hold in virtual from March 2020 to May 2022. TC8 plenary was still schedule at least a year before among Asia, Europe and America in case face-to-face meeting was allowed the next year, seminar in conjunction with plenary and other conferences were hold via online softward as far as possible. ISO/TC 8 also promotes the use of zoom, which is the ISO approved meeting software. Each subcommittees usually meets annually and also made the meeting plan at least a year in advance among different continents every year, but the frequency is determined by the SC chair based on the progress of work or other factors.

■ **Expand liaison organization cooperation**

Cooperation with other ISO/TCs: ISO/TC8 has also been working on IMO issues on behalf of ISO with support and assistance of other TCs. ISO/TC8 is also planning to set up regular IMO round table meeting with other TCs to better provide international standard as solutions to IMO and maritime industry. MoU have been signed with ISO/TC 67 and ISO/TC 104 respectively in 2000 and 2002 as guidance of work for mutual interest.

Cooperation with international organizations: The need exists to expand similar relationship with more shipowners and specific regional bodies such as Intercargo, Intertanko, COPANT (Pan American Standards Commission), PASC (the Pacific Area Standards Congress), PASC (Pacific Areas Standards Congress), ARSO (African Regional Standards Organization), ACCSQ (ASEAN Consultative Committee on Standards and Quality), ASMO (Arab Standardization and Metrology Organization).

■ **Initiatives in the fields of advanced technology**

Taking into account of the latest progress in the maritime industry and marine scientific research and development activities, and on the basis of assessment of internal and external environment with standard needs, Maritime safety, Marine environment protection, Maritime security, Maritime education and training, Marine technology are the five strategic areas with Polar regions, Aquatic nuisance species, LNG ship, Smart Shipping, New ocean engineering, Deep sea are the six important areas of ISO/TC8.

ISO/TC8 note the importance of the strategic discussion on maritime GHG reduction session and urges all subcommittees and related working groups in ISO/TC8 to consider the issue of maritime GHG reduction and investigate how standard could help.

6 Factors affecting completion and implementation of the ISO/TC 8 work programme

The quickening pace of international maritime legislation puts forward new requirements on the speed and way of advancing standards. To maintain the credibility of TC 8, it is important to ensure that standard does not conflict with IMO regulations or requirements, and have the standard developed when the market needs it. TC 8 must be flexible to provide solutions to IMO.

The international standardization of TC 8 needs to accelerate inter-field cooperation and jointly develop standards with relevant technical forces. It is necessary to vigorously promote the participation of participating members, observing members, liaison organizations in TC8 works. In addition, it can not be ignored that with current technological innovation and market changes, the exchange and cooperation with other ISO/TCs is more urgent than ever.

As a result of COVID-19, our working environment and mode of work have changed greatly, bringing about changes in the way and extent of the participation of relevant countries. ISO quickly issued a series of new regulations and measures against the pandemic, and actively promoted zoom software to ensure the international standardization work continues. Online meeting mode has advantages and disadvantages. More experts participate in TC 8 works, especially those from developing countries. In order to ensure that experts from all continents can participate at the same time, online meetings are usually held at night in Asian countries, which increases the working hours and workload of experts for them.

7 Structure, current projects and publications of the ISO/TC 8

Scope: Standardization of design, construction, training, structural elements, outfitting parts, equipment, methods and technology, and marine environmental matters, used in shipbuilding, comprising sea-going ships, vessels for inland navigation, offshore structures, ship-to-shore interface, the operation of ships, marine structures subject to IMO requirements, and the observation and exploration of the sea.

Excluded:

- electrical and electronic equipment on board ships and marine structures (IEC / TC 18 and IEC / TC 80);
- internal combustion engines (ISO / TC 70);
- offshore structures for petroleum and natural gas industries, including procedures for assessment of the site specific application of mobile offshore drilling and accommodation units for the petroleum and natural gas industry (ISO / TC 67 / SC 7);
- steel and aluminum structures (ISO / TC 167);
- equipment and construction details of recreational craft and other small craft (not being lifeboats and lifesaving equipment) less than 24 metres in overall length (ISO / TC 188);
- sea bed mining;
- equipment which is not specific for use on board ships and marine structures (e.g. pipes, steel wire ropes, etc.) and falling within the scope of particular ISO technical committees with which a regular mutual liaison must be maintained.

ISO/TC8 Chairman's Strategic Advisory Group (CSAG)

Scope: The Chairman of a technical committee is responsible for the overall management of that technical committee, including any subcommittees and working groups (ISO/IEC Directives, Part 1, paragraph 1.8.2 - Responsibilities). The Chairman's Strategic Advisory Group is a small group of experts in the international community appointed by the Chairman to advise and assist the Chairman in his Strategic and Business Planning and Successful Programme Management and Direction of the Committee; especially in strategic goals for the future, resolution of resource issues, reallocation of "slow process" work items or reallocation of other work items between subcommittees to avoid duplication of work and to insure optimum assignment of the work.

TC8 meets annually and the Chairman's Strategic Advisory Group (CSAG), which serves as non – voting advisors to the Chairman. The Chairman may consider the suggestions of the CSAG for his further action as he deems appropriate. Experts do not represent any member bodies; they provide individual expertise and advice - not national positions. The CSAG does not deal with routine administrative matters which remain the responsibility of our TC8 Manager and the cognizant SC Managers. The TC8 Manager is responsible for the overall administrative aspects of the Committee, working in close coordination with the Chairman.

SUBCOMMITTEES (SCs)

ISO/TC 8/SC 1 Maritime Safety

Chair: Mr. Bill Cairns

Committee Manager: Ms. Stephanie Groleau (USA)

Scope: Standardization of marine lifesaving, fire protection, and miscellaneous safety equipment (e.g., pilot ladders) design, construction, equipment, materials, and technology used in shipbuilding and the operation of ships in support of requirements developed by the International Maritime Organization and the needs of the world maritime industry.

ISO/TC 8/SC 2 Marine Environment Protection

Chair: Dr. Tetsuya Senda

Committee Manager: Dr Carolyn Junemann (USA)

Scope: Standardization of marine pollution abatement materials, equipment and technologies and environmental matters to be used in shipbuilding and operation of ships, comprising sea-going ships, vessels for inland navigation, offshore structures, ship-to-shore interface and all other marine structures subject to International Maritime Organization (IMO) requirements.

ISO/TC 8/SC 3 Piping and Machinery

Chair: Mr. Woon-ho Lee

Committee Manager: Mr. Thane Gilman (USA)

Scope: Standardization of design, construction, equipment and technology for piping and machinery used in shipbuilding and the operation of ships, comprising sea-going ships, fishing vessels and trawlers, vessels for inland navigation, offshore structures, ship-to-shore interfaces, and all other marine structures subject to IMO requirements.

ISO/TC 8/SC 4 Outfitting and Deck Machinery

Chair: Mr. Zhen Liu

Committee Manager: Ms. Longxia Yang (China)

Scope: Standardization of design, construction and operation of equipment and technology for ship outfitting and deck machinery, including ship-to-shore interface, cargo systems and lifting gear etc. used in shipbuilding and the operation of ships in support of the requirements developed by the International Maritime Organization (IMO) and the needs of the world maritime industry.

ISO/TC 8/SC 6 Navigation and Ship Operations

Chair: Dr Ruri Shoji

Committee Manager: Mr. Kosei Hasegawa (Japan)

Scope: Standardization in the field of navigation, including instruments and systems etc., for navigation.

ISO/TC 8/SC 7 Inland Navigation

Chair: Mr. Anton Lutskevich

Committee Manager: Mrs. Dipl.-Holzwirtin Maja Buntrock (Germany)

Scope: Standardization of general issues, principal requirements, design elements, equipment

and technology in the field of inland navigation vessels, including shipborne barges and dredging equipment.

ISO/TC 8/SC 8 Ship design

Chair: Dr. Jong-Kap Lee

Committee Manager: Mr. Byeong Cheol Choi (Korea)

Scope: Standardization of design and construction for ships and maritime installations for definition of interfaces and creation of the interchangeability as well as for determination of safety requirements and ship performance.

ISO/TC 8/SC 11 Intermodal and Short Sea Shipping

Chair: Mr. Steven O'Malley

Committee Manager: Ms Su-yeon Oh (Korea)

Scope: Standardization of general issues, principal requirements, design elements, construction and operation of ships technology for intermodal, including ship/port interface and other modes of transportation, and short sea shipping.

ISO/TC 8/SC 12 Large yachts

Chair: Mr. Jo Assael

Committee Manager: Mr. Paolo Santato (Italy)

Scope: Standardization of design, construction, structural elements, outfitting parts, equipment, methods and technology, and marine environmental matters, used in large yacht building and in the operation of large yachts, comprising super-yachts, mega-yachts and large yachts used in commercial, charter and pleasure use. Focus should be on unique requirements for large yachts as defined and should not duplicate existing standards.

Excluded: Small recreational craft less than 24 meters, which are within the Scope of ISO/TC 188 (Small craft)

ISO/TC 8/SC 13 Marine technology

Chair: Dr. Jiabiao Li

Committee Manager: Ms Xuwen Feng (China)

Scope: Standardization of test methods, operation, design, construction and logistics of equipment, systems, infrastructure and technology used for observation, exploitation and protection of the ocean and sea areas.

ISO/TC 8/WG 4 Maritime security

Convenor: Mr. Robin Townsend

Scope: Work to safeguard against threats, risks and other attacks, specifically in the maritime sector.

ISO/TC 8/WG 6 Ship recycling

Convenor: Dr. Koichi Yoshida

Scope: To develop and maintain the ISO standards for ship recycling including ISO 30000, 30001, 30002, 30003, 30004, 30005, 30006 and 30007.

ISO/TC 8/WG 8 Liquid and gas fueled vessels

Convenor:Mr.Steven O'Malley

Scope:Requirements for vessels using LNG, CNG and non-traditional fuels, bunkering vessels, bunkering operations, and fixed and floating fuel supply facilities as appropriate.

ISO/TC 8/WG 10 Smart shipping

Convenor:Mr. Yanqing Li

Scope:Standardization in the field of computer applications (big data and processing, IoT, sensor etc.) in shipbuilding, operation of ships and marine technology.

ISO/TC 8/WG 11 Dredgers

Convenor:Mr. Xiaoming Hou

Scope:Standardization of Dredgers.

ISO/TC 8/WG 12 Aquatic nuisance species

Convenor:Dr Carolyn Junemann

Scope:To provide standards supporting the entry into force of the Ballast Water Management Convention, and other matters arising from invasive species and aquatic nuisances such as fouling on hulls.

ISO/TC 8/WG 14 Maritime education and training

Convenor:Dr. Charles H. Piersall

Scope:Developing outreach documents designed to encourage new people to join the maritime industry.