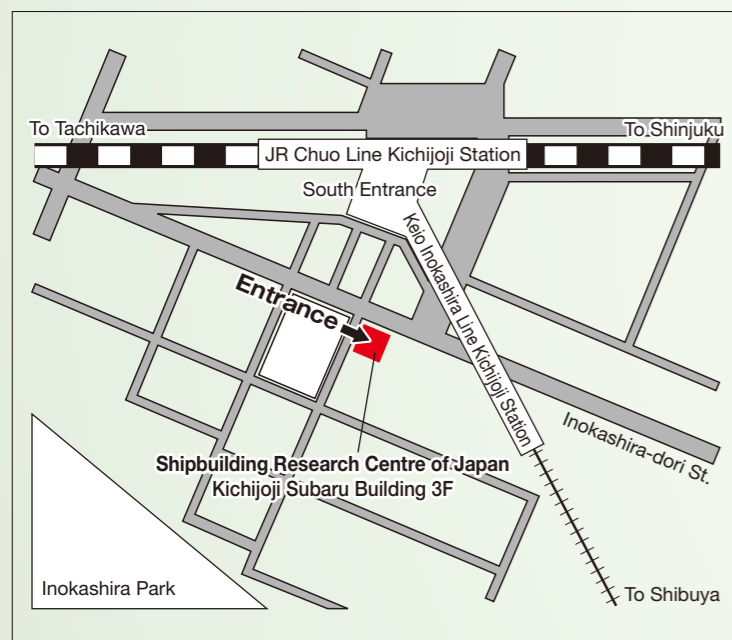
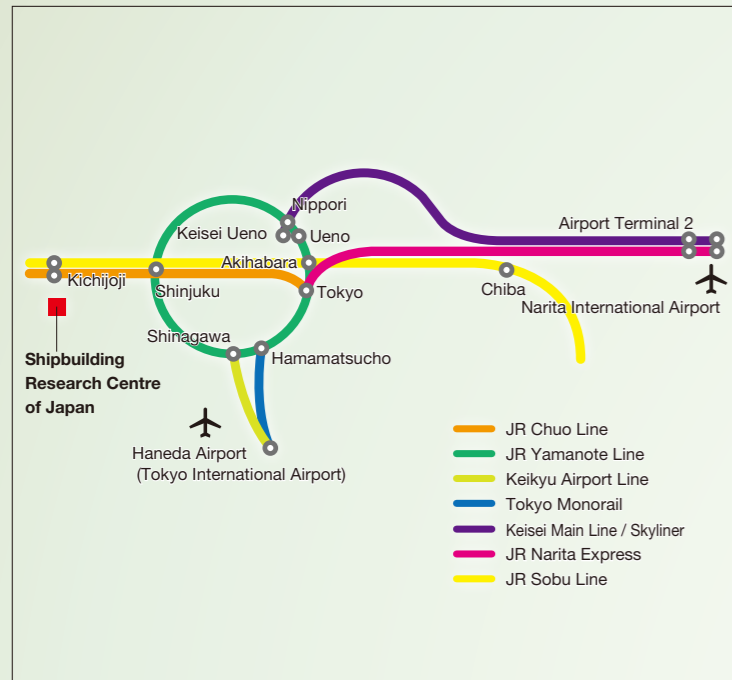


Access/Contact Info



Kichijoji Subaru Building, 3F,
1-6-1 Minamicho, Kichijoji, Musashino,
Tokyo 180-0003, Japan
Tel (Operator): +81-(0)422-40-2820
Fax: +81-(0)422-40-2827

Message from the Chairman



The Shipbuilding Research Centre of Japan (SRC) was established under the authorization of the Minister of Transport on 12 May 1967. Since our establishment over half a century, we have been engaged in various business activities, mainly focusing on tank testing services.

At SRC, we have been conducting the tank testing services to develop hull designs and propulsion systems, as well as initial designs of ship, supervision during construction and research studies. In addition, we have been involved in technical cooperation projects overseas since 2004. Further, we have been engaged in comprehensive consulting services since 2017 by utilizing the skills, knowledge, and human resources we have gained over many years.

In the global shipbuilding market, the Japanese shipbuilding industry has been competing fiercely with that of China and South Korea to win shipbuilding orders around the world. On the other hand, in recent years it is necessary to solve various global technical issues in response to social needs emanating from enhanced environmental awareness and safety. Such an environment as this provides Japan with a great opportunity to strengthen its international competitiveness further by demonstrating the high technical capability, that is recognized as strength of Japan, and differentiating Japan from other countries.

For this reason, as a member of the Maritime Cluster of Japan, SRC will maximize its abilities and hope to contribute to the development of local and international societies/economies and also to the conservation of the global environment by contributing to the development of shipbuilding, shipping and ship machinery industries.

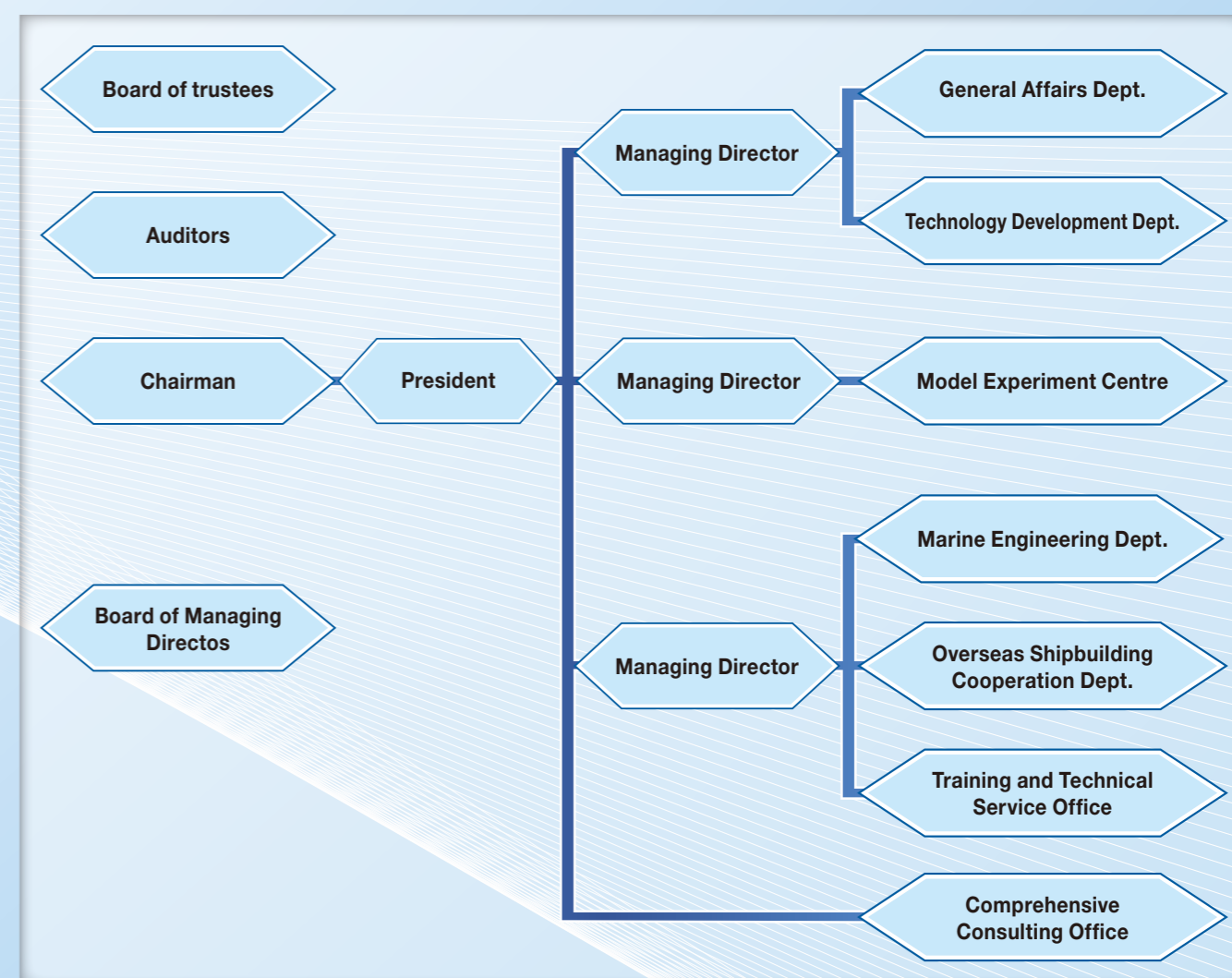
Recognizing that our mission is to contribute to the development of the maritime industry, we are all committed to continue striving to improve the quality of our services. We hope for your continued guidance and encouragement.

July 2018
Chairman Shigeru Ito

Organization

1967: Established in May, 1967. SRC inherited towing tanks from the Ship Technology Research Institute and began propulsive performance testing and other tank testing, basic design and other ship design and research, technical training and guidance.

2004: Took over overseas economic and technical cooperation work from the Overseas Shipbuilding Cooperation Centre



Tank Testing

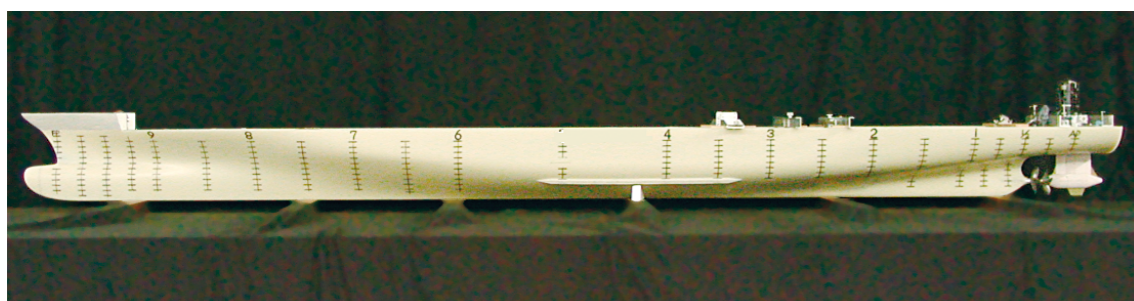
We provide tank testing services and also technical advice for the improvement of propulsive performance and energy efficiency.



Tank testing



Towing tank



Model ship and propeller used in tank testing

1. Testing

We manufacture highly accurate ship models and perform high quality tank tests which can be immediately adapted to actual ship construction and new hull development. The results of these tank tests can be used for EEDI^[1] verification.

- Resistance and self propulsion tests
- Wake measurements
- Maneuverability tests (PMM tests)
- Free running tests
- Cavitation tests
- Free rolling tests
- Propeller open-water tests
- Tests in waves
- Wind resistance tests
- Flow visualization tests

Note 1: EEDI

In response to increasing awareness of global warming in recent years, the shipping and shipbuilding industries have started various initiatives aimed at reducing ship greenhouse gas emissions.

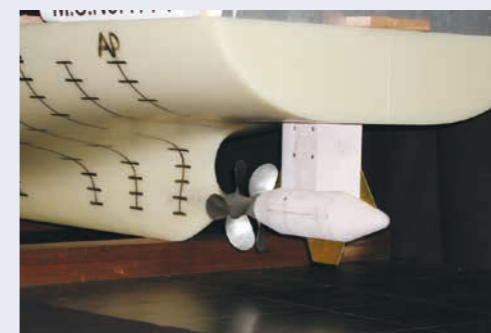
In July 2011, the International Maritime Organization (IMO), a specialized UN agency, adopted amendments to international conventions requiring the Energy Efficiency Design Index (EEDI) values for carbon emissions per ton-mile of goods transported to be below certain reference values. Regulations will be incrementally increased from 2013, in the future only permitting the commissioning of ships showing 30% improvements over current ship averages on this indicator. Construction agreements thus require obtaining advance certification, confirmed through model testing, that the ship will clear the reference values.

SRC can assist in hull and technical development to meet EEDI regulations through various testing.

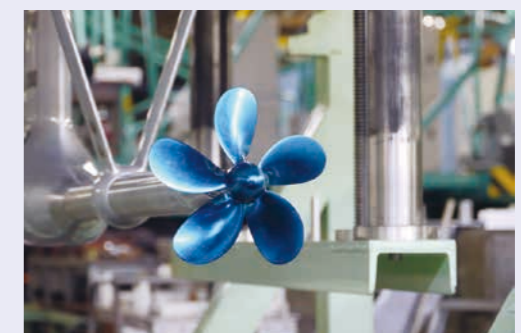
2. Technical Advice for Propulsion Performance and Energy Efficiency Improvements

We offer our customers advice on how to improve propulsion performance and deal with flaws, as well as assistance in new hull and concept ship development. In doing so, we make full use of various hull tests and computational fluid dynamics (CFD) for ships in order to complement our extensive skills and knowledge on ship performance which we have honed to date.

- Suggestions to improve mother ship hulls and performance
- Suggestions to improve course stability, maneuverability and noise abatement



Hybrid counter-rotating propulsion system



High-performance propeller matched to hulls

Performance improvement proposals

Ship Design and Supervision during Construction

We provide assistance in design, construction and maintenance of ships and marine facilities.

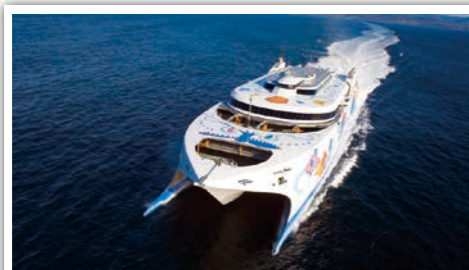
1. Assistance for Ship Design and Shipbuilding

● Initial Design of Ship

We provide initial ship design services for various kinds of ships in accordance with the clients's request.

● Supervision during Construction

We assist in smooth construction by reviewing the various drawings, offering support for various checks of the hull and equipment during construction and supervising the construction schedule.



High speed ferry (10,000 gross tons)



Passenger ship (1,124 gross tons)



Fire fighting boat (60 gross tons)



Fire fighting boat (19 gross tons)



Passenger ship (132 gross tons)



Fishing research vessel (189 gross tons)



Ferryboat (19 gross tons)

Since 1989, we have been involved in the initial design of 130 vessels and supervised the construction of 111 vessels, mostly for ships owned by local governments.

● Ship Stability Assessment

We provide consulting services for ship stability which is one of the most important factors for the safety of ships.

2. Examination Work for Ship Maintenance

We examine and evaluate the aged deterioration of ships.

● Examination of floating oil storage barge for long-term maintenance



Floating oil storage base

● Examination of fishing vessels for maintenance



Measurement of bottom shell thickness for aged deterioration



Surveyed fishing vessel

Overseas Cooperation

Consulting Services on Economic and Technical Cooperation Projects

We assist with the facilitation of economic and technical cooperation projects through project feasibility studies, basic ship design, supervision during construction and other technical consulting services.

- Project finding and formation
- Feasibility studies for economic and technical cooperation projects
- Basic ship design for overseas cooperation projects
- Supervision during construction for overseas cooperation projects
- Follow-up on finished projects



Field surveys for basic design



Technical meeting during construction



People celebrating the maiden voyage of a newly built ferry

Technology Development

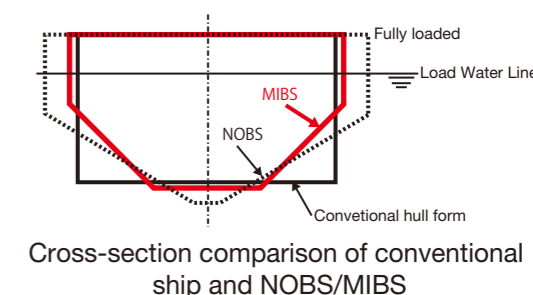
We have made contributions to ship innovations in terms of hull form design systems and new concept ship development.

1. New Concept Ship Development

With our ship technology, we can develop new concept ships and propose improvements for hull forms and other ship components.

Example concept ship designed by SRC

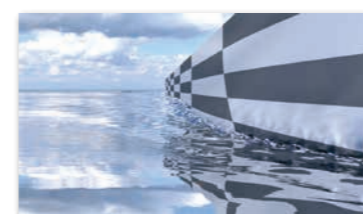
- Realized double hull design of 749GT coastal crude oil tanker by introducing single pod electric propulsion system.
- Designed new coastal cargo ship with good habitability which applies the new ILO Convention without reducing cargo capacity
- Developed a Non-Ballast Water Ship (NOBS) which does not require ballast water, and a Minimal Ballast Water Ship (MIBS) which requires only a minimal amount of ballast water



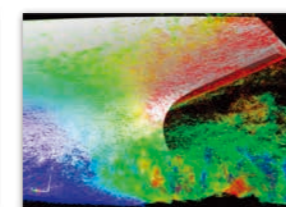
2. Development of the highly accurate Computational Fluid Dynamics (CFD)

With our collective experience in tank testing, we are developing numerical tank testing by utilizing the highly accurate CFD methods.

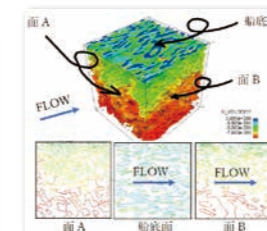
At present, the numerical simulation by CFD, widely utilized in hull form development, plays an auxiliary role in tank testing. However, by simulating the turbulence around the hull in detail, we are working on the development of more accurate and reliable CFD which can substitute in a towing tank test.



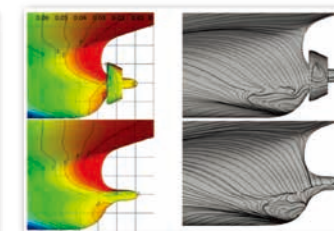
Turbulent boundary layer on the free surface around the side hull



Vortex structures in the complex turbulent boundary layer at stern



Turbulent vortex structures near the bottom of the ship



Pressure distribution and flow diagram / limiting stream lines of the stern part

We perform analysis processing with a supercomputer for issues such as turbulent boundary layer control, noise analysis, energy-saving device performance analysis, that are difficult to deal with via existing CFDs, and also for detailed analysis of flow fields which are difficult to grasp in towing tank tests.

Training and Technical Services

We offer training and technical services for the persons engaging in maritime fields.

1. Training Related to International Maritime Treaties and Conventions

With our extensive technical knowledge and experience in maritime technology, we offer training services for maritime personnel in developing countries.

- Training in international maritime conventions and ship safety inspections
- Training in PSC implementation
- Training in specific items to be implemented at the request of the governments of developing countries



Training at shipyard

We have trained 868 trainees from 59 developing countries under JICA training projects and trained 685 trainees on PSC implementation from 67 countries under the Tokyo MOU Secretariat project.

2. Technical Seminars and committees for R & D of Hull Form etc.

We hold technical seminars and organize the following committees etc. for developing hull forms in order to support and help improve the engineering capabilities of the shipbuilding industry.

- Technical seminars
Public technical seminars are annually held to introduce the latest engineering epochs etc. which aims to help the progress of the maritime industry.
- Hull Research Committee (HRC)
A committee joined by the research members of specified shipbuilders and SRC to develop better hull form by studying and conducting tank tests.
- Ship Performance Calculation Group (SPCG)
An engineering group joined by research members of specified ship builders and SRC to develop better hull form by using CFD.
- Technical bulletin (SRC News)
Technical bulletins are regularly published to introduce the latest engineering news and the technical review of various matters developed by SRC etc.

Comprehensive Consulting

We provide consulting services, throughout the life cycle of ships, such as drafting the initial design, supervising during construction, making administrative documents for delivery, providing solutions on the performance development of the ship after operations, and making plans on the maintenance and demolition of ships.

1. Comprehensive Consulting

- Comprehensive consulting in relation to ship hull form development, verification and improvement of performance, confirmation of compatibility with standards, technical support, technical transfer, etc.
- Utilization of the comprehensive abilities of each division of SRC (Tank Testing Department, Marine Engineering Department, Technology Development Department, Technical and Training Department)
- Collaboration with external organizations such as design companies and classification societies
- Collaboration in the development of human resources, training, and education

Examples of consulting

