Prefatory Note

Introduction to the Special Feature on

“Latest Technological Trends for Protection of the Marine Environment”

General Manager of Research Institute, Research and Development Division, ClassNK
Kinya ISHIBASHI

On the occasion of the publication of ClassNK Technical Journal No. 11, I would like to extend a warm welcome to all our readers.

ClassNK Technical Journal is a technical publicity journal which is published with the aim of contributing to the progress of technology in the maritime industry by making information concerning the technological activities and research results of the Society available to a wider range of interested parties. The previous issue (ClassNK Technical Journal No. 10) reported the latest technological trends and the latest research and development results of the International Maritime Organization (IMO) and other organizations. As a new initiative, in January 2025, ClassNK held the ClassNK R&D Forum to provide opportunities for the creation of new collaboration such as joint research and also heard the various needs of members of the maritime industry and other stakeholders for services and R&D by ClassNK. Among topics related to the theme of the Forum, “ Towards Safer and Environmentally Friendly Ships,” this Special Feature summarizes presentations in two areas: reduction of underwater noise from ships and safe decarbonization.

In the early 2000s, there was growing interest in the effects of underwater noise on marine organisms and on underwater acoustic equipment used by the oil and gas industry in offshore oil field development. The IMO also discussed the reduction of underwater noise levels emitted from commercial vessels, and issued guidelines for the reduction of underwater noise on ships in 2014. However, the guidelines were not mandatory due to various issues in underwater noise measurement methods and noise reduction measures for large commercial vessels. Although the guidelines were not still mandatory as in 2023, the revised guidelines were adopted to enhance their effectiveness. In this issue, we outline the status of efforts by the IMO and other organizations to reduce underwater noise and the future actions taken by the Society. In addition, we have invited outside experts to contribute to the technologies related to "estimating and designing" and "measuring and evaluating" of underwater noise on ships, which will serve as the basis for future discussions, although the international trends regarding future regulations are uncertain.

The IMO has also established the ambitious goal of “aiming for net-zero emissions of GHG by around 2050 at the latest,” and IMO/EU regulations accompanied by monetary charges are to be introduced. Since accelerated construction of alternative fuel ships that respond to those regulations is expected, ClassNK is developing “safe decarbonization” technologies related to the safety required in alternative fuel ships. This issue includes the latest information on the development of the IMO’s Guidelines for the Safety of Ships using Ammonia as Fuel, the initiatives of ClassNK for practical application of alternative fuels, and a contribution by outside experts on the most recent techniques in methods for estimation of the frequency of ammonia leaks, which is necessary in quantitative risk assessments.

Until now, ClassNK has devoted its efforts to the creation of “good ships” as its highest-priority issue. In addition to that goal, based on the needs of society and the industry, the Society will continue to grapple

wholeheartedly with research and development which contribute to securing the safety of human life and property at sea, protecting the marine environment and creating innovations that lead society, and will strive to contribute to the further development of the maritime industry, also including the viewpoints of “good management” and “good operation.”

In closing, we sincerely request the continuing understanding and support of all those concerned in future, as in the past.