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Total Ship Care

ClassNK

[English]

PrimeShip

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PrimeShip and the Concept of "Total Ship Care"

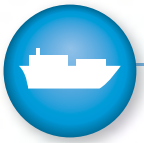
In its continuing efforts to provide the maritime industry with the latest and best technical services, ClassNK is actively engaged in the research and development of new technology based on the technical experience it has accumulated over more than a century of ship classification.
The result of these efforts is the integrated, comprehensive approach to total ship care known as PrimeShip.
PrimeShip is the collective name for the entire range of ClassNK's specially designed technical services. The PrimeShip service suite has been designed to prevent pollution of the marine environment and to help ensure the comprehensive safety of ships at every stage of a ship's life from inception and design, through construction, operation, management, maintenance, and related activities.

The Software and Services of PrimeShip

PrimeShip is a full suite of technical products and services which is constantly being upgraded and refined to incorporate the latest technological advances and research information. This commitment to innovation and excellence is the core element of the PrimeShip philosophy.
PrimeShip products and services contribute to the improved reliability and increased efficiency of hull structure analysis, ship design, load planning, and maintenance management. It is this holistic approach to the entire lifecycle of the ship that serves as the hallmark of the PrimeShip.

PrimeShip

The software and services of PrimeShip

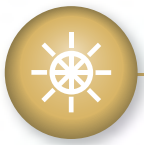


HULL

- [S] PrimeShip - **IPCA** — Integrated System for Ship Performance Capability
- [S] PrimeShip - **NAPA Manager** — NK-Customized Program for NAPA
- [S] PrimeShip - **HULL(Rules)** — Rule Calcuation System
- [S] PrimeShip - **HULL(DSA)** — Direct Strength Assessment System
- [S] PrimeShip - **HULL(HCSR)** — Design Support Software for Harmonised CSR
- [S] PrimeShip - **CAD Interface** — Interface Program for Data Linkage between 2D/3D CAD and Rule Calculation System
- [S] PrimeShip - **CTF for PSPC** — Coating Technical File (CTF) Preparation Support System

MACHINERY

- [S] PrimeShip - **SHAFT** — Shaft Alignment Analysis Program
- [M] PrimeShip - **CRANK** — Crankshaft Stress Calculation Service
- [A] PrimeShip - **TORRES** — Shaft Torsional Vibration Analysis Service



OPERATION

- [T] PrimeShip - **ETAS** — Emergency Technical Assistance Service
- [S] [I] PrimeShip - **PSC Intelligence** — Support System for PSC Performance Improvement
- [S] [I] PrimeShip - **CHEMISYS** — Integrated Database System for Chemical Products
- [S] PrimeShip - **DG/BulkCargo** — IMDG/IMSBC Loading Requirement Program

MAINTENANCE

- [I] PrimeShip - **HULLCare** — Hull Maintenance Information Service
- [M] PrimeShip - **CAP** — Condition Assessment Programme

ENVIRONMENT

- [S] PrimeShip - **GREEN/ProSTA** — Software for Progressive Speed Trial Analysis
- [S] PrimeShip - **GREEN/MinPower** — Software for Assessment of Minimum Propulsion Power
- [S] PrimeShip - **GREEN/SRM** — Ship Recycling Management
- [S] PrimeShip - **GREEN/EEOI** — EEOI Calculation and Analysis System

[S] Software [A] Analysis Services [M] Assessment Services [T] Technical Assistant Service [I] Information Service

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IPCA

Integrated System for Ship Performance Capability

Key Features

- ◆User friendly Input and Output
- ◆Statutory compliant calculation (including 2008 IS Code)
- ◆Easy creation of documents for approval
- ◆Transferred Design IPCA data is available on Onboard-IPCA Engine

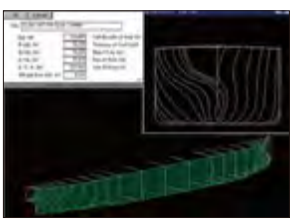
PrimeShip-IPCA(Integrated Program for Determining Ship Performance Capability) is a PC Windows-based program developed by ClassNK for determining trim, stability, longitudinal strength, freeboard, grain heeling moment, and other similar factors pertaining to ship performance capability.

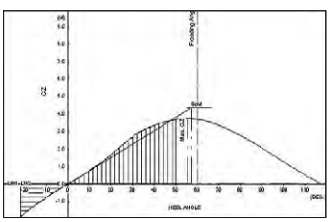
IPCA consists of two types of specialized applications: Design-IPCA for use in evaluating performance characteristic during ship design, and the Onboard-IPCA Calculation Engine which is used as a base calculation program for onboard loading instruments. IPCA is a convenient and powerful tool for shipbuilders and designers, ship owners, ship operators and other users.

Main Functions

Complete calculation of all elements of ship performance capability

- ◇Ship lines, hydrostatics, tank capacity, trim (Fixed/Free-trimming), stability, longitudinal strength
- ◇Deterministic damage stability (D-SDS)
- ◇Probabilistic damage stability (Chapter II-1/B-1 of SOLAS) (P-SDS)
- ◇Freeboard calculation (ICLL1966, JG Rule)
- ◇Grain heeling moment





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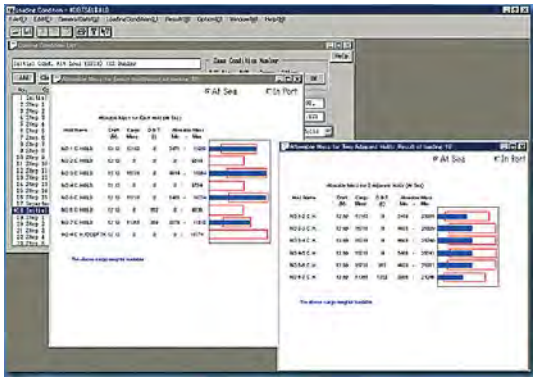
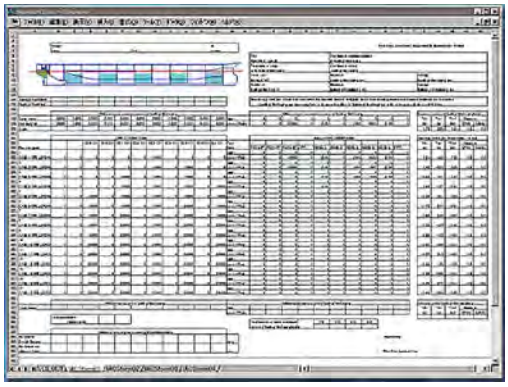
Bulk Carrier Safety (Chapter XII of SOLAS) related functions

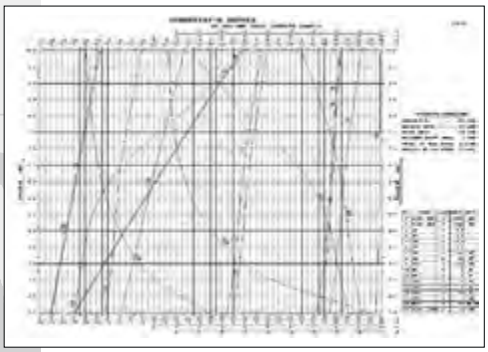
◇Damage stability and longitudinal strength calculations in case of flooding any cargo hold
◇Determination of allowable loads for each cargo hold in keeping with changes in draft
◇Determination of allowable loads for adjacent cargo holds in keeping with changes in draft
◇Preparation of loading and unloading sequences (based on IACS standard form)

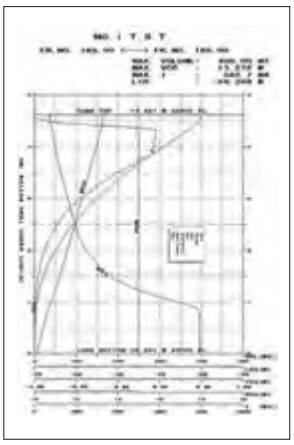


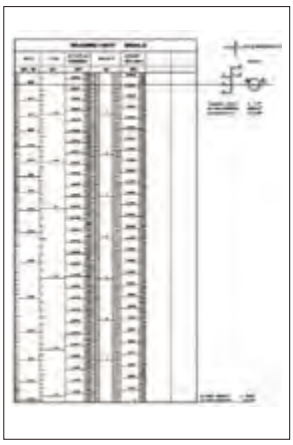


Detailed calculations for final documents

◇Highly accurate detailed calculations for final documents
◇Final documents such as correction tables of displacement due to trim, volume curves, sounding/ullage tables, deadweight scales, amongst others







Interface with other systems

◇Supply of base data and calculation results to other program systems via CSV file

Basic Program Package

■Design-IPCA: Basic Set+Optional Set (D-SDS, P-SDS, Lines Generator, Container Arrangement, Grain Heeling Moment)
■Onboard-IPCA (Only calculation engine): Basic Set (including the function of intact stability calculation)+Optional Set (including the function of damage stability calculation)

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NAPA Manager

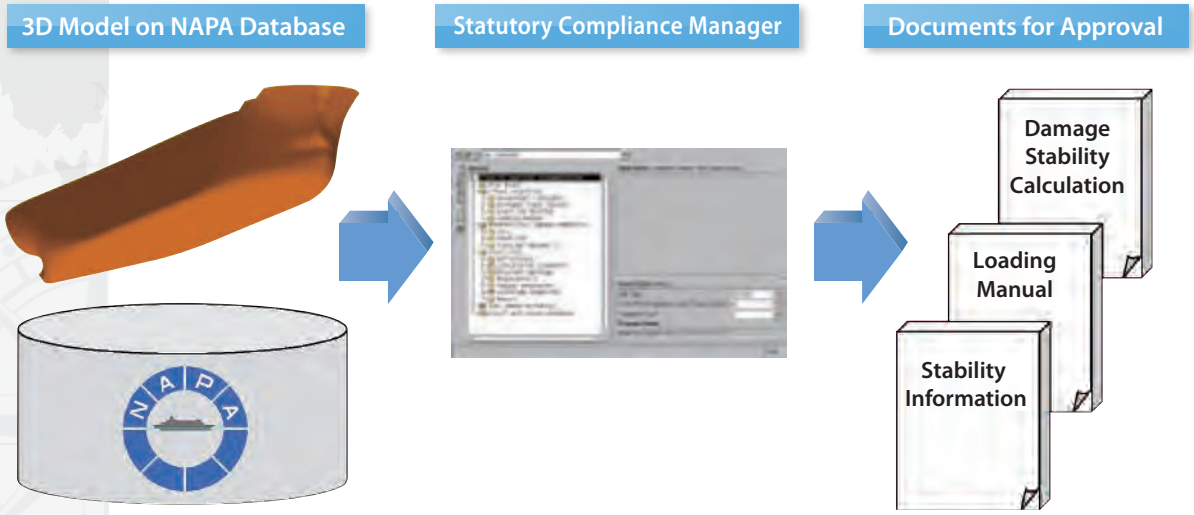
NK-Customized Program for NAPA

Key Features

- ◆Easy to use - even without training
- ◆Statutory compliant calculations on 3D models
- ◆Easy creation of documents for approval

PrimeShip-NAPA Manager, called Statutory Compliance Manager in NAPA systems, is a NAPA-based application tool for carrying out statutory compliance calculations on NAPA 3D models, and can be used to create intact/damage stability booklets and loading manuals.

Overview



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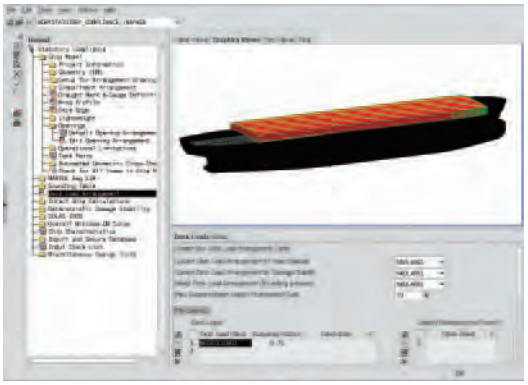
Main Functions

Ship model confirmation

Statutory Compliance Manager will check and confirm the accuracy of the NAPA 3D model, including the hull geometry, compartments and other data, as well as confirm that the model is compatible with Statutory Compliance Manager.

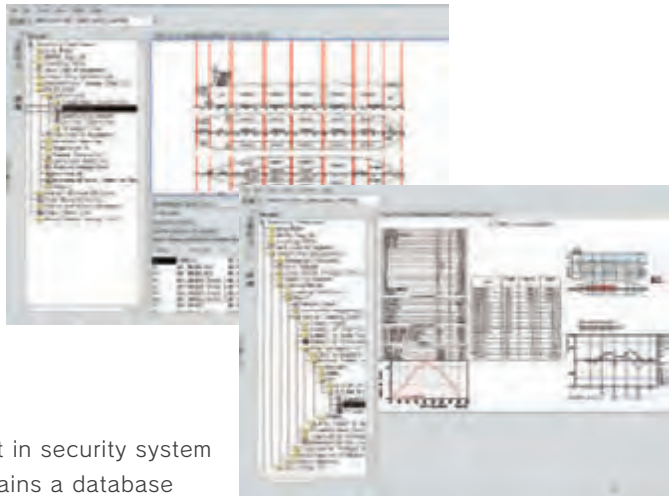
Complete calculation of all elements of ship performance capability

◇Intact Stability Calculation (2008 IS Code)
(including timber deck cargo loading)
◇Longitudinal strength calculation
(including CSR-based calculation)
◇Deterministic Damage Stability Calculation
◇Probabilistic Damage Stability Calculation
(including timber deck cargo loading)



Creation of final calculation booklet

◇Stability Information for the master
◇Loading Manual
◇Damage Stability Calculation
◇Grain Loading Manual



Secure exportable database

Statutory Compliance Manager's built in security system ensures that even if a third-party obtains a database exported from the software, they will be unable to access the information contained within.

System Requirements

Statutory Compliance Manager requires a properly installed and licensed copy of the NAPA software program.

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HULL (Rules)

Rule Calculation System

Key Features

- Rule compliance checks in accordance with the IACS CSR and Part C of the ClassNK Rules,
- Supports efficient ship structure design
- Quick calculations for strength members,
- User friendly interface,
- Create reports in NK required formats,
- Free to use

PrimeShip-HULL(Rules) is a rule calculation software suite for hull structures with a polished user interface. This free software allows ship designers to quickly calculate the requirements for structural members in accordance with the IACS-CSR and Part C of the ClassNK Rules.

Full support for structural design

Based on abundant experience ClassNK has accrued through more than a century of drawing approval, PrimeShip-HULL(Rules) is more than just a mere rule checking tool. It is a support system for designing ship structures. PrimeShip-HULL(Rules) boasts a number of special features to make the design process more efficient, including a user friendly interface, quick rule calculation, easy-to-understand calculation results, and transparent reports for scantling calculations. PrimeShip-HULL(Rules) has been upgraded with enhanced optimization functions and is now usable for a wider range of ship types.

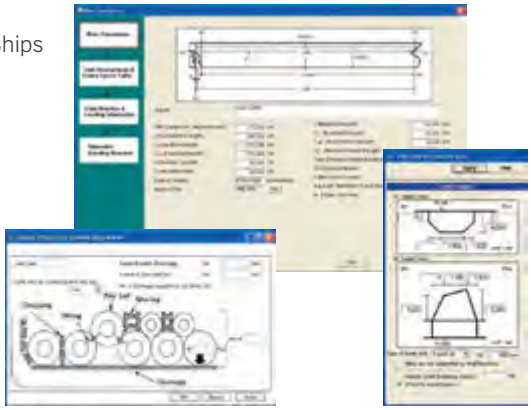
Composition of PrimeShip-HULL(Rules)

PrimeShip-HULL(Rules) is comprised of three specialized software programs designed for specific rule sets.

— PrimeShip-HULL(Rules)/NK Rule
NK Rules for the Survey and Construction of Steel Ships

— PrimeShip-HULL(Rules)/CSR Bulk Carriers
IACS CSR for Bulk Carriers

— PrimeShip-HULL(Rules)/CSR Tankers
IACS CSR for Double Hull Oil Tankers



User friendly interface

Even users who are unfamiliar with the rules can easily conduct rule calculations using PrimeShip-HULL(Rules).

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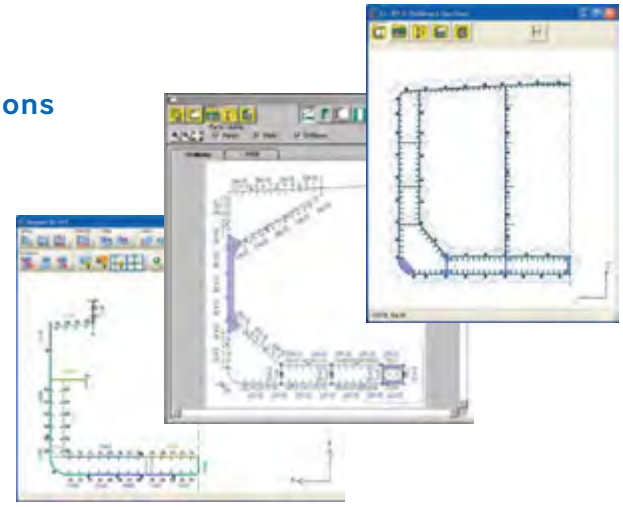
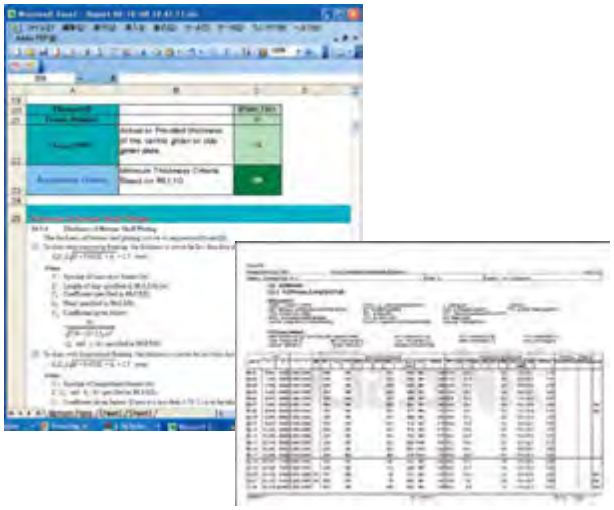
Quick and transparent calculations

Users can conduct rule calculations not only for the entire cross section of structural members, but also individually for specific members. Users can also quickly and easily assess the scantlings of members.
PrimeShip-HULL(Rules) transparent calculation procedures allows users to check and confirm each step of the calculation process.



Produce reports in ClassNK required formats

Reports created in PrimeShip-HULL (Rules) are in ClassNK required formats and can be submitted to ClassNK as reference documents for structural drawings, thus greatly increasing the speed of the approval process.

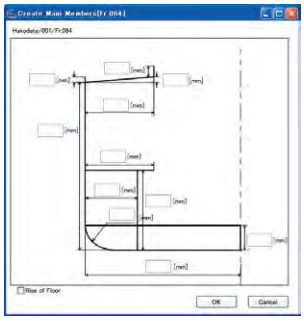


Free to use

The software is provided free of charge to users who plan to assess structural members of the ship according to the IACS CSR and ClassNK Rules.

Modifiable input supplement —PrimeShip-HULL(Rules)/NK Rule

Input figures are easy to adjust and modify. Use of actual structural shapes makes inputting data easier for users.

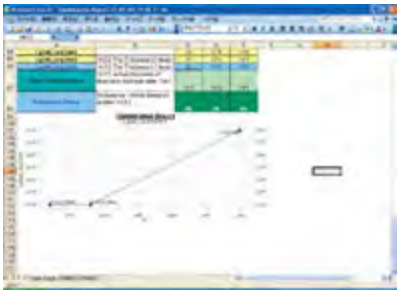


Optimization function — PrimeShip-HULL(Rules)/NK Rule

PrimeShip-HULL(Rules) makes it easy to check the optimum parameters of selected structural members (e.g. spaces, scantlings).

User support —PrimeShip-HULL(Rules)/CSR Bulk Carriers & Tankers

ClassNK has established a dedicated support desk to answer user questions by e-mail, telephone and fax. In addition, software updates are available on the ClassNK PrimeShip support website.



PrimeShip-HULL(Rules)/
NK Rule Contact address :
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PrimeShip-HULL(Rules)/
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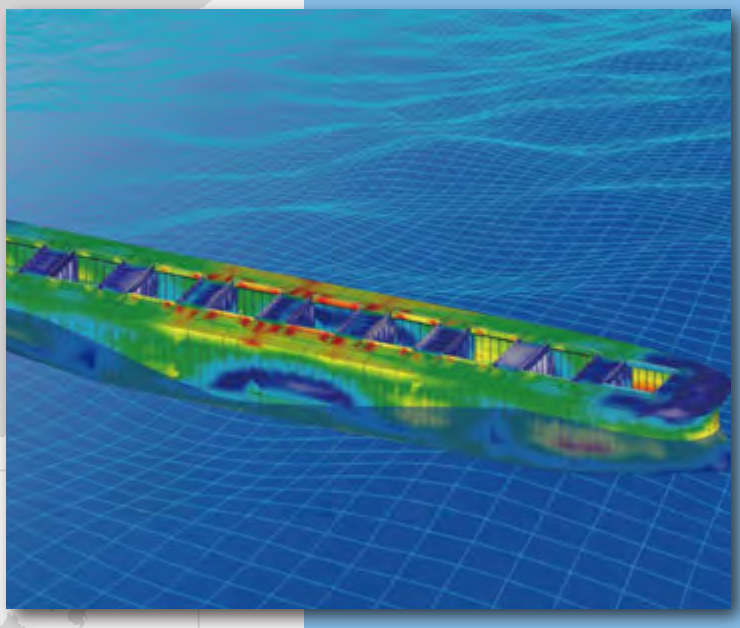
HULL (DSA)

Direct Strength Assessment System



Key Features

- Simple and efficient direct strength assessment system in compliance with ClassNK Rules and the IACS CSR.
- Automatic identification of structural members and compartments
- User friendly interface

PrimeShip-HULL(DSA) is a specialized software program for performing direct strength calculations of ship structures in accordance with ClassNK Rules and the IACS CSR. PrimeShip-HULL(DSA) helps make ship design an easy and efficient process by allowing users to quickly conduct complicated structural strength analysis for a wide variety of loading conditions.

Comprehensive technical expertise

PrimeShip-HULL(DSA) is an advanced calculation system based on ClassNK's extensive experience in ship classification and the results of cutting edge research and development.
Based on MSC Software's PATRAN system, PrimeShip-HULL(DSA) utilizes both the powerful function of PATRAN software and incorporates new dedicated functions for direct strength assessment.

Composition of PrimeShip-HULL(DSA)

PrimeShip-HULL(DSA) includes three dedicated software programs for specific rules sets.

— PrimeShip-HULL(DSA)/CSR
IACS-CSR for Bulk Carriers and Tankers

— PrimeShip-HULL(DSA)/Guidelines
ClassNK Guidelines for Container Ships, etc.

— PrimeShip-HULL(DSA)/Ore Carriers
Ore Carrier edition in accordance with ClassNK Rules.

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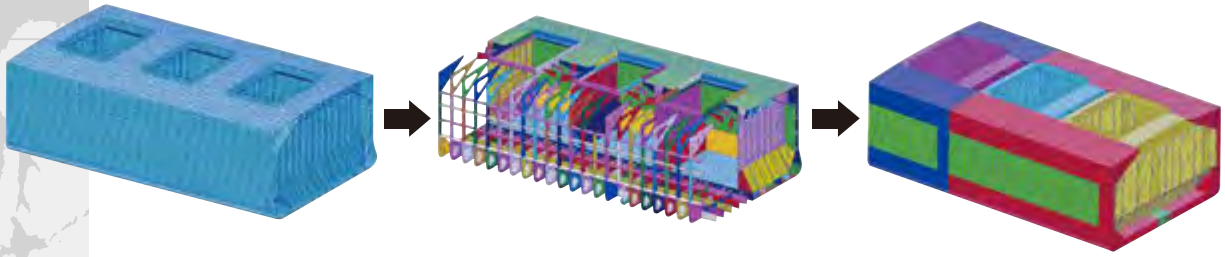
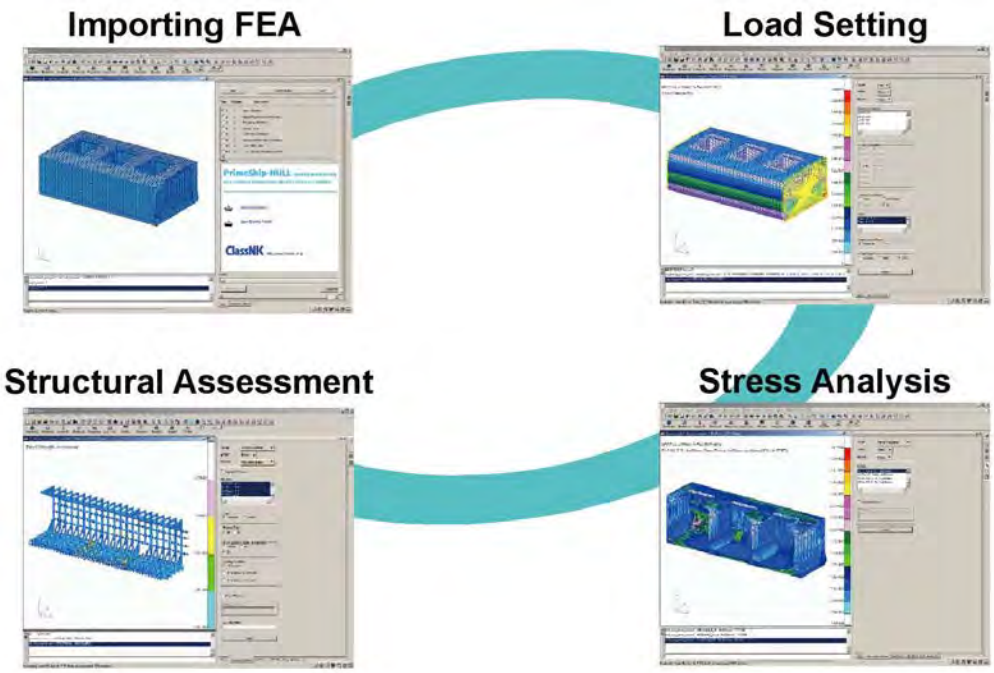
Automatic identification of structural members and compartments

By simply inputting a few parameters, hull construction, structural members and compartments can automatically be identified in an FEA model. This makes applying loads and corrosion margins easy, and allows for strength assessments to be carried out efficiently.



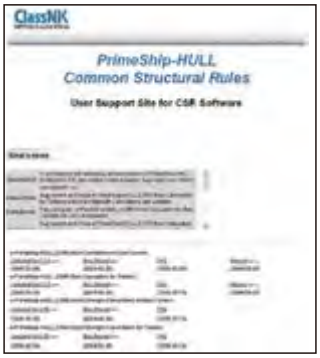
User friendly interface

Analysis procedures are displayed step-by-step, and necessary parameters are easy to input, so even novice users can easily carry out a series of operations from importing FEA models to evaluating yielding, buckling and fatigue strength.



Superior Support

ClassNK's dedicated PrimeShip-HULL support email service ensures that user questions are answered quickly and completely. Updated programs, FAQs and other materials are also available via ClassNK's PrimeShip-HULL support website.



* PrimeShip-HULL(DSA) requires properly installed and licensed copies of Patran and MSC.Nastran.

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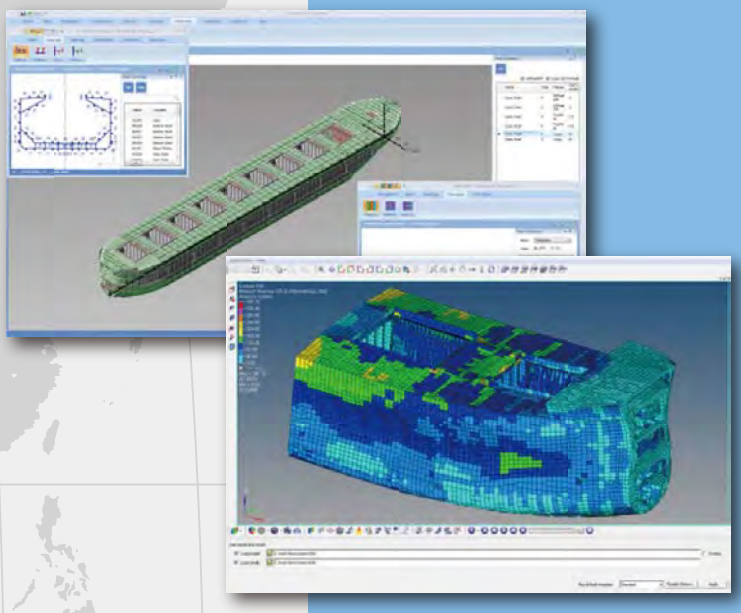
HULL (HCSR)

Design Support Software for Harmonised CSR



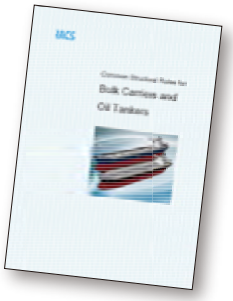
Key Features

- ◆Total design support tool
- ◆Support for prescriptive rule and direct strength calculations
- ◆Create models and perform strength analyses of the entire ship from stem to stern
- ◆Free of charge

PrimeShip-HULL (HCSR) is an entirely new concept that was developed from the ground up. It not only makes use of the knowledge gained from previous software development as well as the latest technical information, but also takes into account the opinions and desires of ship designers. It is a total support tool to help make your ship designs efficient and HCSR compliant.

What is the HCSR?

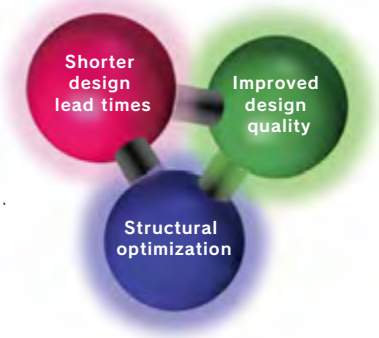
The HCSR (Harmonised Common Structural Rules) is the harmonisation of two sets of separate rules related to the construction of bulk carriers and double hull oil tankers— the Common Structural Rules for Tankers (CSR-T) and the Common Structural Rules for Bulk Carriers (CSR-BC)—which were adopted by IACS in 2006. Bulk carriers (90 m or longer) and double hull oil tankers (150 m or longer) contracted for construction on or after 1 July 2015 must be designed in accordance with the requirements specified in the HCSR.



Supporting the 3 key elements of design

PrimeShip-HULL (HCSR) includes a variety of features which help improve the efficiency of the design process through “shorter design lead times”, “structural optimization” and “improved design quality”. Some of the features provided are as follows:

◇Dimensions necessary for prescriptive rule compliance can be clearly displayed.
◇Parameters can be freely changed to allow various cases studies to be easily carried out.
◇Extensive data linkage with major commercial 3D CAD and other software.
◇FE models for direct strength analyses can be quickly and automatically created.



Components of PrimeShip-HULL (HCSR)

PrimeShip-HULL (HCSR) is comprised of the following two programs:

PrimeShip-HULL (HCSR)/Rules: Prescriptive rule calculation software to evaluate prescriptive requirements
PrimeShip-HULL (HCSR)/DSA: Direct Calculation software to carry out direct strength analyses

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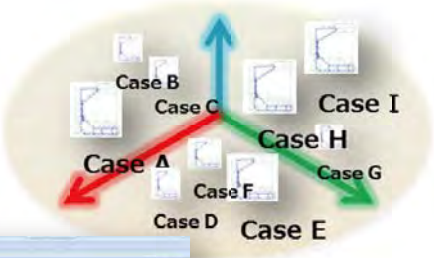
PrimeShip-HULL(HCSR)/ Rules

Based upon requests received from designers, this software can be used as not only a strength analysis tool, but also as a total design support tool capable of performing various functions such as the following:

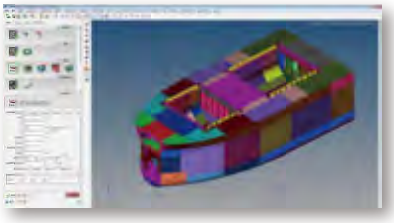


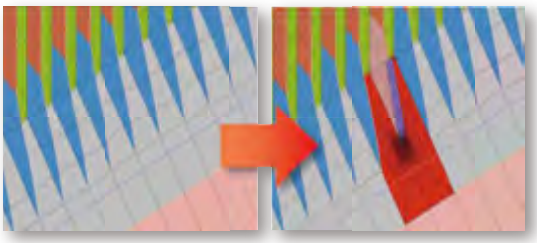
◇Rapidly studying cross sections to determine initial dimensions
◇Determining structural dimensions from stem to stern
◇Calculating with a high degree of transparency
◇Creating geometric models for direct strength analyses

Data Linkage

PrimeShip-HULL(HCSR)/ DSA*

This software is able to perform strength evaluations using the Finite Element Method required by the HCSR, and its various features allow the amount of time required for analysis to be greatly reduced. Moreover, this software can be used together with either Altair's "HyperWorks" or MSC's Patran.





◇Can be used with prescriptive rule calculation software
◇Automatically create FE Models (Coarse/Fine/Very-fine mesh)
◇Automatically create buckling panels
◇Easy structural optimization

Full Support

A dedicated technical support desk is available to rapidly resolve any problems you may have, and a website has been set up to provide the latest software-related information. Furthermore, training seminars are also held as needed to help designers become familiar with using the software.

* Patran and MSC.Nastran (not included), or Hyperworks (not included) is needed to run PrimeShip-HULL(HCSR)/DSA

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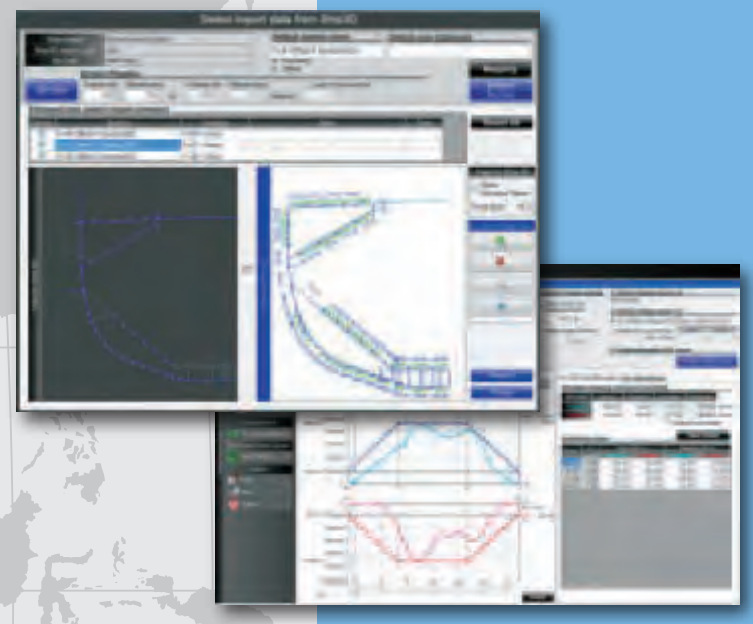
CAD Interface

Interface Program for Data Linkage between 2D/3D CAD and Rule Calculation System



Key Features

- ◆Effective use of CAD and performance data
- ◆Reduces data creation time and helps prevent input errors
- ◆Strong support for ship design work

PrimeShip-CAD Interface covers all of the information needed to perform the rule calculation of the current and harmonised CSR (Common Structural Rules) such as hull cross-sectional shapes, scantling and compartment data, longitudinal strength calculation results, etc. It effectively reduces data creation time and helps prevent input errors.

Overview of data linkage

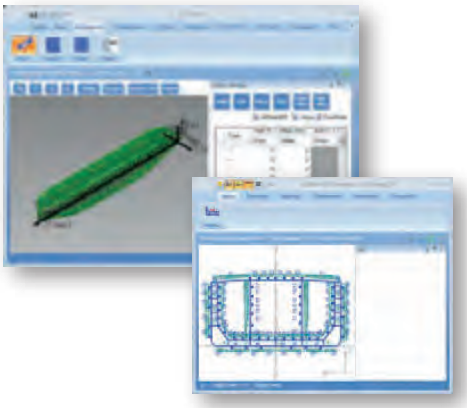
2D CAD
◇DXF, DWG

3D CAD
◇NAPA Steel

Performance Software
◇PrimeShip-IPCA
◇NAPA

CAD Interface

PrimeShip-HULL



※Data linkage performed using PrimeShip-CAD XML Schema Group.

XML Schema

PrimeShip-CAD XML Schema Group is a data structure file in XML format that has been developed in order to realize data linkage between the rule calculation software that ClassNK provides and commercial hull 2D/3D CAD or ship performance calculation software. The versatility of XML makes it possible to data-link among the various systems and it is widely used by numerous organizations and individuals.

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Components

PrimeShip-CAD Interface is comprised of the following interface programs:

3D CAD Interface

◇ **NAPA Steel XML Interface***
Interface program for performing data linkage between NAPA Steel and XML Schema for Ship3D

Performance Interface

◇ **IPCA Interface for PrimeShip-CAD***
◇ **NAPA XML Interface***
Interface program to generate XML Schema for Performance from performance calculation software

Rule Calculation Interface

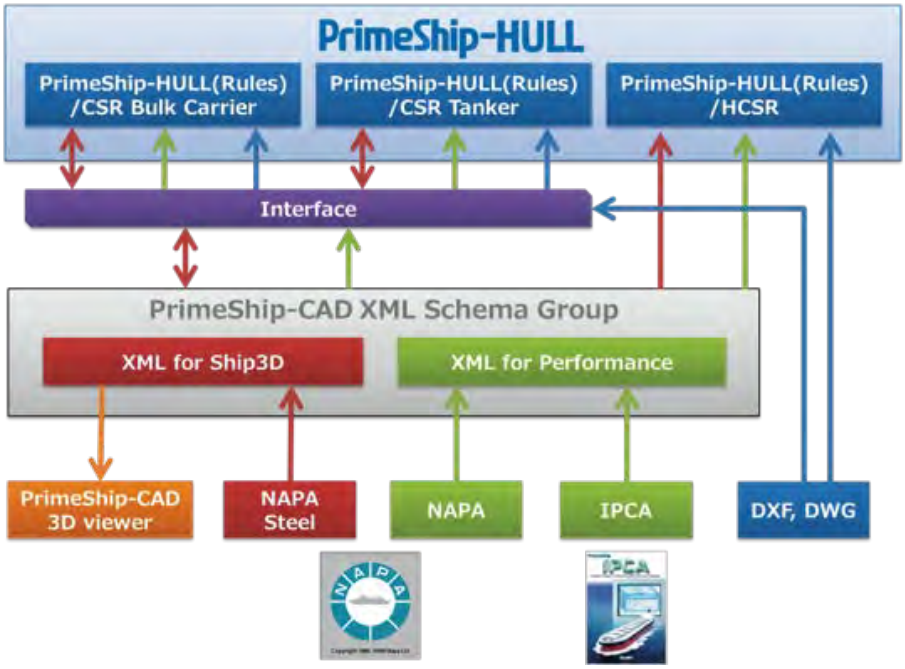
◇ **PrimeShip-CAD Interface for CSR Rules**
Able to generate data files for the rule calculation software from both XML files and 2D CAD data in DXF or DWG format

Ship 3D Viewer

◇ **PrimeShip-CAD 3D Viewer**
Able to read XML files in “XML Schema for Ship3D” format and display them in 3D.

※Implemented as a standard feature of the software

Overall Structure of Data Linkage



※Requires an environment where each piece of software used during data linkage is properly installed and operating.

Contact address : Hull Rules Development Department
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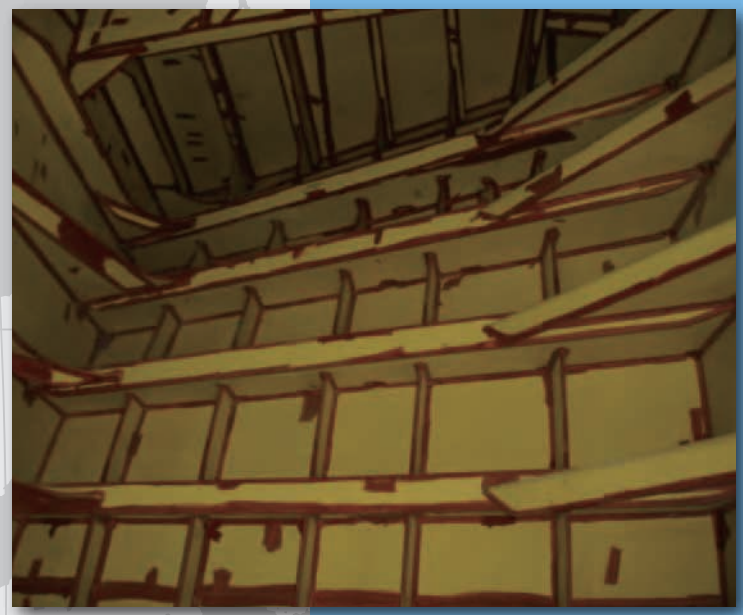
CTF for PSPC

Coating Technical File (CTF) Preparation Support System

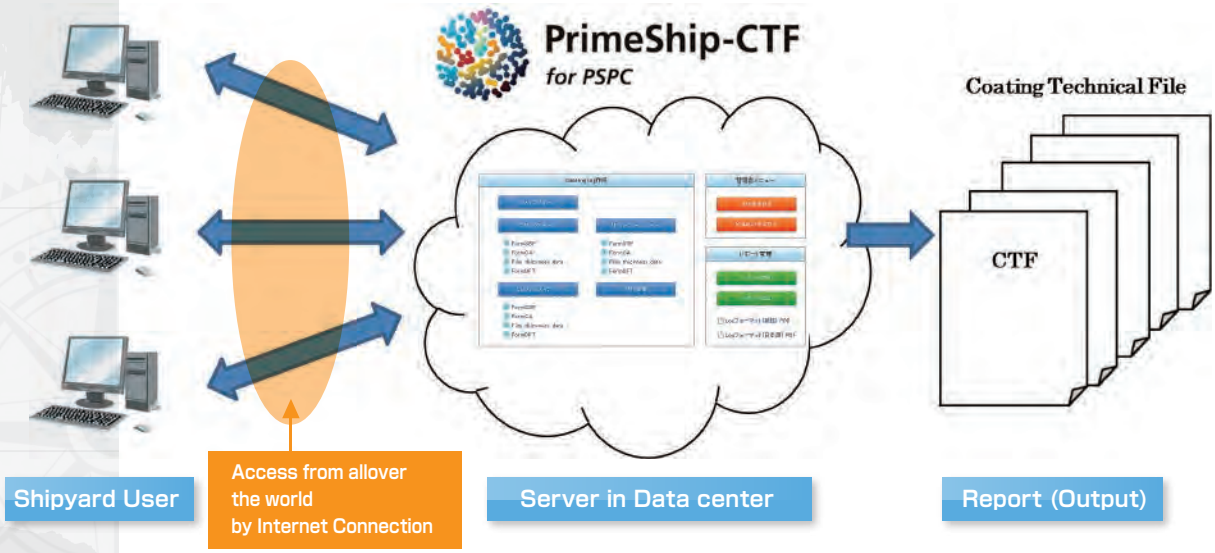


Key Features

- ◆Adopt the Cloud Computing System
- ◆User friendly interface
- ◆Easy to use – even without operation manual
- ◆Establish the security system strictly

PrimeShip-CTF is the supporting tools for preparing Coating Technical File established by cloud computing systems and the relevant coating logs required by the regulations of PSPC can be made easily by using this tool.

Concept of PrimeShip-CTF



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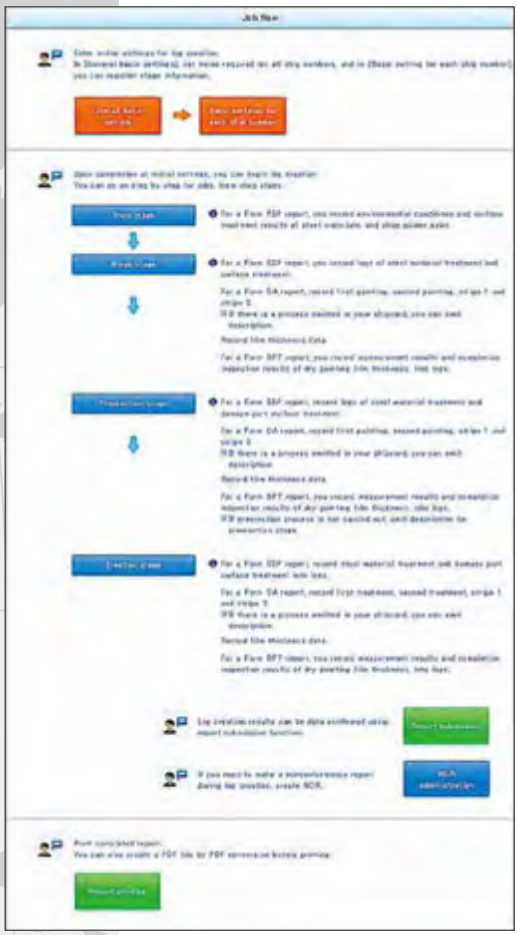
Main Functions



Composition of Contents to be easily understood

Preparing the relevant Coating Logs

◇Form PSP (Primary Surface Preparation)
◇Form SSP (Secondary Surface Preparation)
◇Form CA (Coating Application)
(Full Coating & Stripe Coating)
◇Form DFT (Dry Film Thickness)
◇Form NCR (Non-Conformity Report)

Preparing and Control for Coating Technical File (CTF)

◇Shipyard work record
◇Shipyard's verified inspection report
◇Output report by PDF files
◇Easily confirm the conditions of the relevant Logs

Security of Data Communication

This system can be used safely by SSL.

System Requirements

PrimeShip-CTF requires an adequate internet circumstances.

Contact address : Survey Operations Headquarters
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: svd@classnk.or.jp Tel: +81-3-5226-2027 Fax: +81-3-5226-2029

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SHAFT

Shaft Alignment Analysis Program

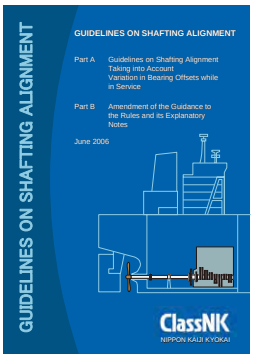
Key Features

- **Guidelines and software for shafting alignment**
- **Shaft bearing positioning optimization software**

Based on ClassNK's expertise in machinery surveys and an in-depth analysis of machinery damage reports, ClassNK developed and released its new Guidelines on Shafting Alignment. ClassNK's PrimeShip-SHAFT service provides clients with shaft alignment calculations based on these Guidelines. Which serves as the cornerstone of the PrimeShip-SHAFT service. Based on these Guidelines, ClassNK provides a Shafting Alignment calculation system.

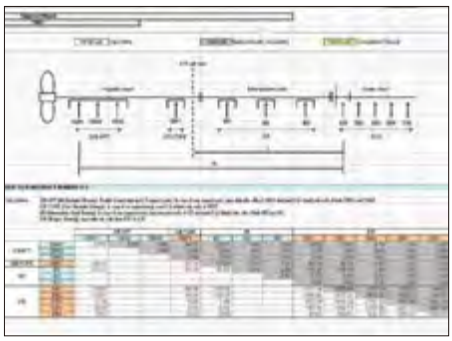
Guidelines on Shafting Alignment

In recent years ship hull structures have become more likely to deform as result of reaching size and design limitations. At the same time, propulsion shafting is being made increasingly stiff for use in larger and lower-revolution main engines. The combination of these factors is reported to be the main cause of alignment related main bearing damage seen in ships with large differences in draught. Based on a thorough analysis of these alignment related problems, ClassNK has released the new Guidelines on Shafting Alignment in order to help prevent such damage from occurring.



PrimeShip-SHAFT calculation software

Based on these Guidelines ClassNK has developed the new PrimeShip-SHAFT calculation software tool which enables users to easily determine optimized positions for shaft bearings.



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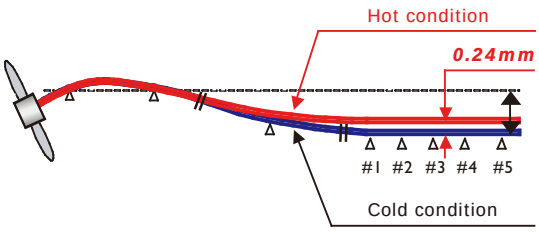
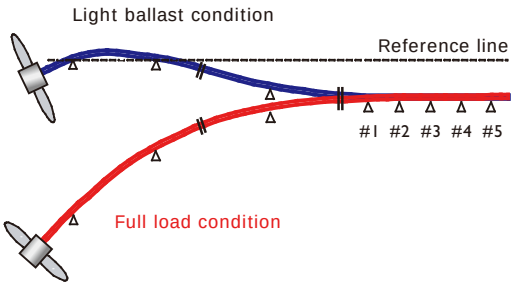
Causes for engine bearing failures

There have been a growing number of incidents of engine bearing damage reported in recent large two-stroke cycle main engines. Among the various cases of bearing damage reported, there have been several cases in which engine bearings have become unloaded due to the effects of changes in temperature and hull deflection.

Temperature Changes



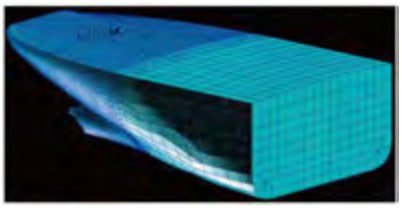
Hull Deflection

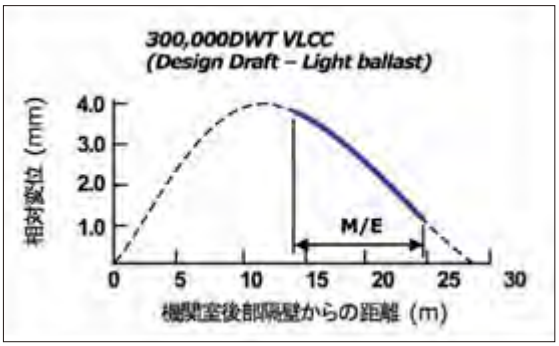


Validation by analysis and testing

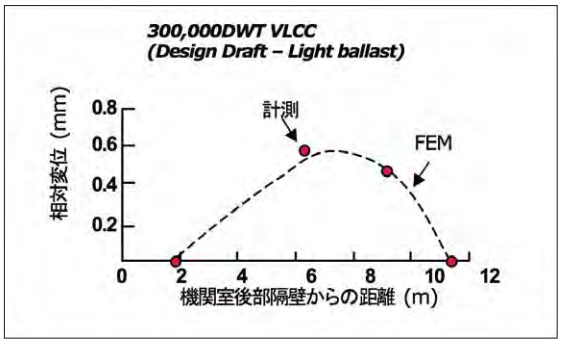
The accuracy of these guidelines has been validated by both Finite Element Analysis and full-scale measurements.

Finite Element Analysis





Measurement of Hull Deflection



Contact address : Machinery Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: mcd@classnk.or.jp Tel: +81-3-5226-2023 Fax: +81-3-5226-2024

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CRANK

Crankshaft Stress Calculation Service

Key Features

◆Crankshaft stress calculation service
◆Compliant with both the NK Rules and IACS UR M53

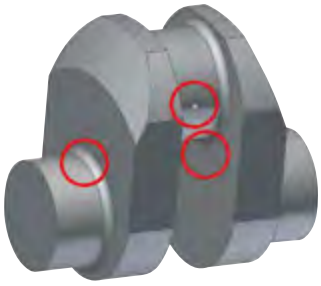
PrimeShip-CRANK is a crank shaft stress calculation service designed to evaluate the strength of diesel engine crankshafts of in accordance with Chapter 2, Part D of the ClassNK Rules for the Survey and Construction of Steel Ships and IACS UR M53.

Calculation method and evaluation criterion

PrimeShip-CRANK provides crankshaft strength evaluation based on the rigorous methods developed over more than a century of classification experience and embodied in the ClassNK Rules.
ClassNK evaluates the crankshaft strength of NK classed diesel engines during the drawing approval process; however, PrimeShip-CRANK allows the owners and operators of non-NK classed ships to have their crankshafts evaluated using ClassNK's highly reliable crankshaft strength evaluation system.

Evaluation of high stress areas

In order to evaluate the overall strength of the crankshaft, stresses at following high stress parts can be calculated.
◇Fillet transitions between the crankpin and web
◇Fillet transitions between the journal and web
◇Outlets of crankpin oil bores
For built-up crankshafts, strength evaluations relevant to shrinkage fitting can also be carried out.



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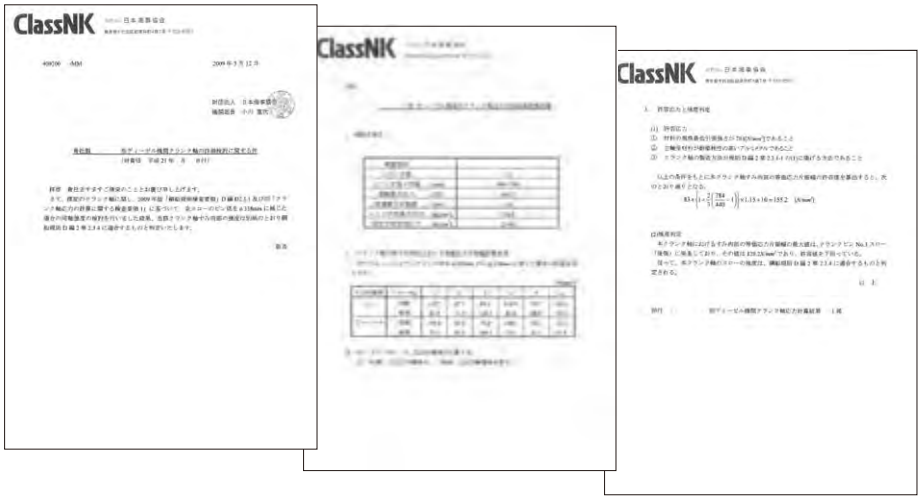
Rule based crankshaft evaluation

PrimeShip-CRANK evaluations are conducted in accordance with the simplified calculation formula specified in 2.3, Part D of the ClassNK Rules and can also be carried out using either of the detailed calculation methods specified in “Annex D2.3.1-2(1) Guidance for Calculation of Crankshaft I” or “Annex D2.3.1-2(2) Guidance for Calculation of Crankshaft II” at the applicant’s request.

Crankshaft statement of compliance

After confirmation of compliance with Chapter 2, Part D of the Society’ s Rules, ClassNK will issue a statement of compliance to the applicant.



How to apply

To apply for the PrimeShip-CRANK evaluation service, please contact the ClassNK Machinery Department at the address below.

Contact address : Machinery Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: mcd@classnk.or.jp Tel: +81-3-5226-2023 Fax: +81-3-5226-2024

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TORRES

Shaft Torsional Vibration Analysis Service

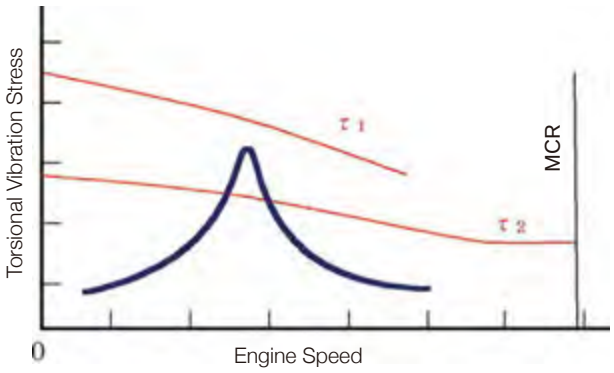
Key Features

- **Shaft torsional vibration analysis service using the new TORRES (TORsional vibration RESponse analysis) calculation program**
- **Analysis based on both NK Rules and IACS UR M68**

Evaluation of torsional vibration is essential for shafting system design. This is especially true for diesel engine driven shafting systems, as diesel engines generate exciting torque due to the internal combustion in each cylinder. ClassNK's PrimeShip-TORRES is a service for carrying out torsional vibration analysis and evaluation.

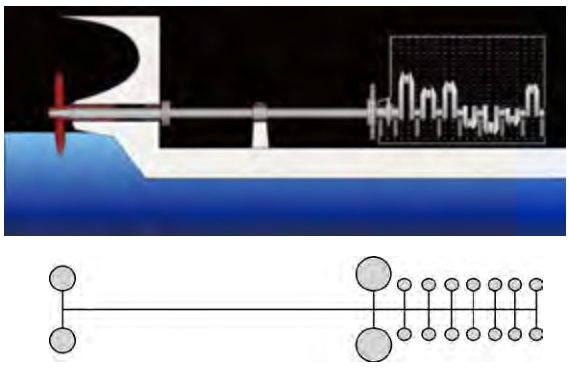
Evaluation criterion

PrimeShip-TORRES is an analysis and evaluation service developed based on the wealth of knowledge contained in the ClassNK rules. PrimeShip-TORRES can be used to evaluate torsional vibration both at the design stage and during shafting system modification,
e.g. replacement of the propeller etc. This service is a vital tool for preventing damage caused by torsional vibration.



Evaluation of essential items relevant to torsional vibration

Evaluations are provided for all essential items related to torsional vibration, including torsional vibration stress, barred speed range and gear chattering, among other items.



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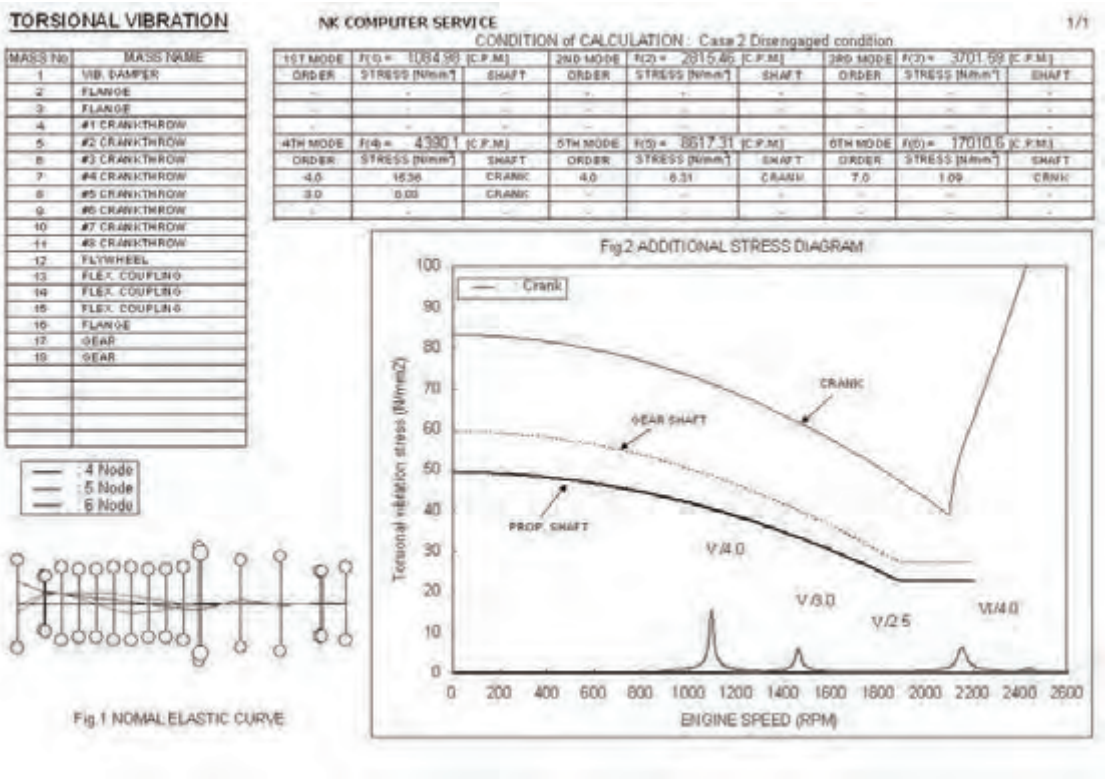
Rule based evaluation criteria

All evaluations are carried out in accordance with Chapter 8, Part D of the ClassNK Rules and Guidance, as well as IACS UR M68.

Comprehensive analysis reports

After the evaluations are completed, comprehensive analysis reports will be provided. Reports include diagrams of the torsional vibration stress and the engine speeds at which torsional vibration stress is generated, are diagrammatically as well as information on allowable stresses.



How to apply

Applications for PrimeShip-TORRES are to be submitted to the ClassNK Marine and Industrial Service Department. To apply for PrimeShip-TORRES, please submit relevant drawings and calculation data to:

Marine and Industrial Service Department
ClassNK Administration Center Annex

3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: mid@classnk.or.jp
Tel: +81-3-5226-2175/2176
Fax: +81-3-5226-2177

Inquiries regarding technical matters related to PrimeShip-TORRES calculations should be directed to the ClassNK Machinery Department.

Contact address : Machinery Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: mcd@classnk.or.jp Tel: +81-3-5226-2023 Fax: +81-3-5226-2024

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ETAS

Emergency Technical Assistance Service


Mainichi Newspapers

Key Features

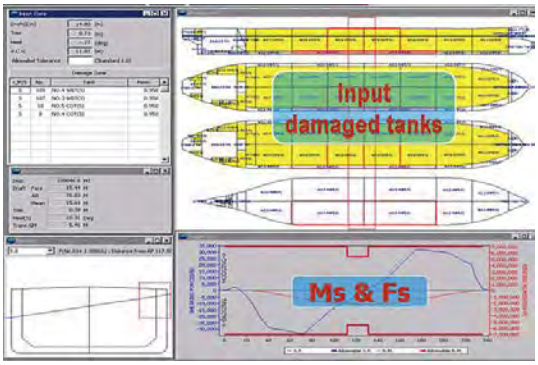
- ◆Computer-based strength & stability analysis for damaged ships.
- ◆Available at any time- 24 hours a day, 365 days a year.
- ◆Meets the MARPOL 73/78 Annex 1 "Shore-based Computer Programs" requirement for 5,000+ dwt oil tankers

PrimeShip-ETAS is an emergency service designed to help ship owners and operators ensure ship safety and prevent or minimize the effect of marine pollution in the event of a serious ship casualty such as stranding, collision or explosion. Working closely with the owner and salvage team, the ClassNK ETAS team is often the brains behind the brawn, making sure that salvage operations don't make the situation worse, while minimizing environmental impact.

PrimeShip-ETAS: Emergency Technical Assistance Service

Damage stability and residual longitudinal strength

Using exclusive software incorporating each individual ship's data, the ClassNK ETAS team can swiftly calculate stability at damage condition and residual longitudinal strength.



Quick results and reliable countermeasure advice

Once stability and residual strength calculations are completed, the ETAS team can will report the results to the client, and advise the client of appropriate countermeasures, including the sequence for transferring/ offloading cargo and ballast water for salvage operations. After a successful salvage operation, the ETAS team will provide advice on stability at damage condition and residual longitudinal strength for the voyage to the repairyard.

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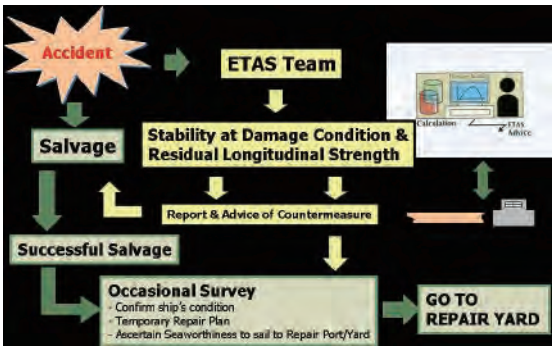
24 hours a day, 365 days a year

A special team composed of highly trained, expert surveyors and naval architects is on call to respond to client emergencies 24 hours a day, 365 days a year.

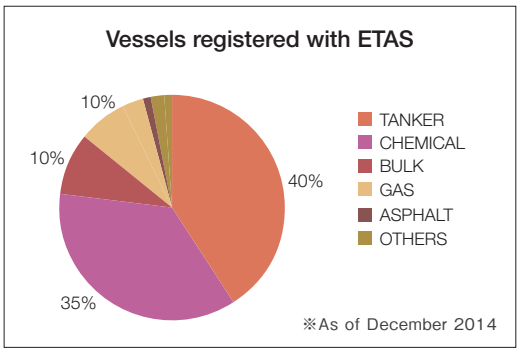


"Shore-based Computer Programs" requirement of MARPOL 73/38 Annex I

PrimeShip-ETAS complies with the MARPOL 73/78 Annex I shore-based computer programs requirement for oil tankers of 5,000 tons deadweight and above, and the PrimeShip-ETAS address can be used as the contact address for the stability at damage and damage longitudinal strength assessments shown in SOPEP, as required by MARPOL 73/78 Annex I. PrimeShip-ETAS also complies with the OPA 90 vessel response plan requirement for oil tankers entering the territorial waters of the USA.

Applicable to all types of ships

PrimeShip-ETAS is available for all types of ships, not just oil and chemical tankers. At present, more than 1,200 ships are registered for PrimeShip-ETAS, including bulk carriers, gas carriers, and other vessels.



Contact address : Survey Operations Headquarters/
Emergency Technical Assistance Service Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: svd@classnk.or.jp Tel: +81-3-5226-2027 Fax: +81-3-5226-2029

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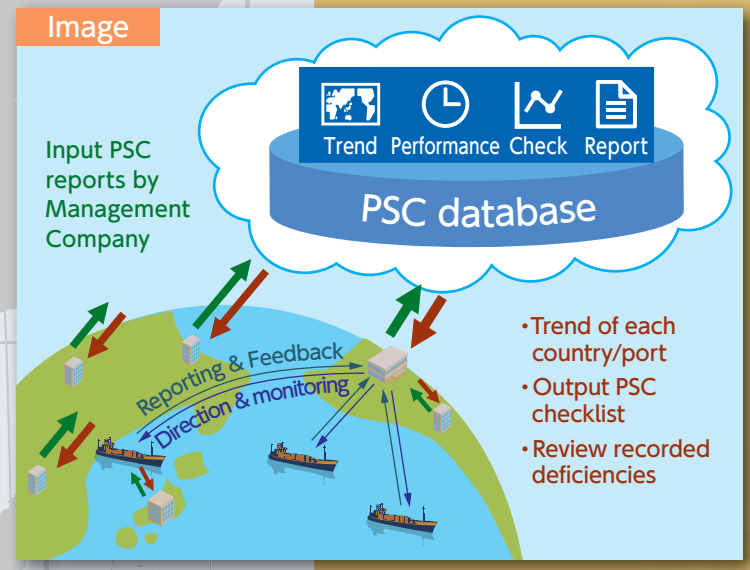
PSC Intelligence

Support System for PSC Performance Improvement



Key Features

- ◆Easy visual checking of a trend in the number of detentions and deficiencies at each port or country on world-map with frequent deficiency examples
- ◆Output 1) PSC checklists for each port or country based on the trend and 2) a summary report for PSC performance of managing ships
- ◆Analysis of the trend of deficiencies recorded on managing ships on a real-time basis through the managing company's input of PSC reports
- ◆Easy registration for ships using a data link with NK-SHIPS
- ◆Free of charge

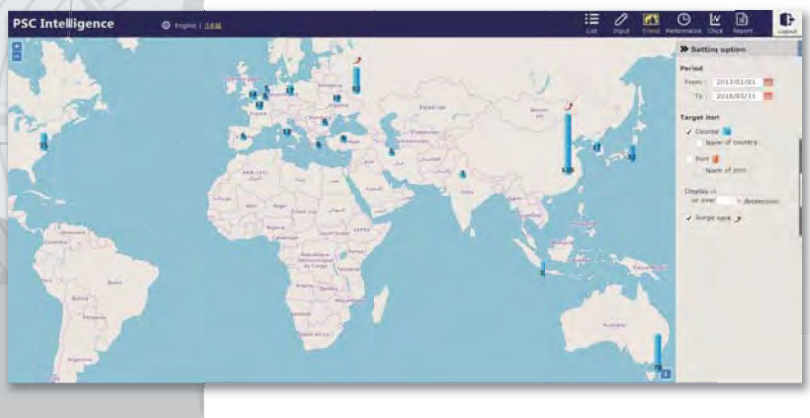
PrimeShip-PSC Intelligence is a support system for improvement of PSC performance as well as a ship management system providing: 1) trend analysis of deficiencies recorded at each port or country 2) output of PSC checklists for each port or country based on the trends 3) clarification and review of frequently recorded deficiencies for managing ships

Main Functions

Research on the trends of ports and countries on world-map

◇Perceive a trend of detention numbers and recorded deficiencies

◇Perceive common deficiencies, particular deficiencies of each country/port and newly recorded deficiencies for new conventional requirements



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Output PSC checklists for each port/country

◇Checkpoints corresponding with PSC deficiencies

◇Output checklists based on the trends during a user-designated period

◇Output checklists based on trends focused on detainable deficiencies

◇Selectable numbers of checklist items by users

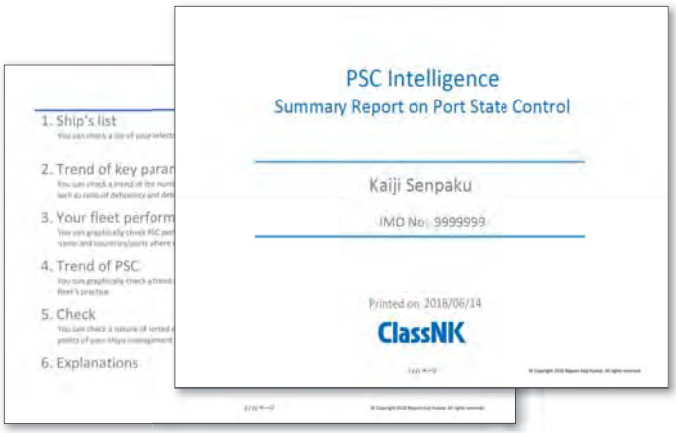
Analysis of recorded deficiency trends

◇Easy review of ship management systems by checking the sorted deficiencies recorded in frequent order

◇Trend analysis of the combination of deficiency amounts or detention of multiple ships, countries and ports selected by users

◇Trend analysis focused on detainable deficiencies

Summary report



◇Output a summary report for PSC performance, content of deficiencies frequently recorded on managing ships and in the trends of frequently visited ports or countries

Free to use

This system is provided free of charge. Users with a user ID and password for our “NK-SHIPS” service can access it via ClassNK’s web service portal. Users without a user ID and password can access it via ClassNK’s web service portal after applying to use the system. Please access the PSC-Intelligence section of ClassNK’s web service portal for the application(https://portal.classnk.or.jp/portal/indexj.jsp).

PrimeShip-PSC Intelligence System requirements

Browser	Software
Internet Explorer 10.0 or later Google Chrome, Firefox	Microsoft Excel 2007 or later

Contact address : Ship Management Systems Dept.
Nippon Kaiji Kyokai Administraion Center
4-7, Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan
E-mail: psc-intelligence@classnk.or.jp Tel: +81-3-5226-2173 Fax: +81-3-5226-2174

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CHEMISYS

Integrated Database System for Chemical Products

Key Features

PrimeShip-CHEMISYS (Search & Data)

- ◆Cargo suitability search system
- ◆Up-to-date information on ship COF status
- ◆Additional data services for Chemical Products

PrimeShip-CHEMISYS is a convenient and powerful tool for the design and operation of chemical carriers.

PrimeShip-CHEMISYS (Search & Data) consists of two specialized applications. For designers, PrimeShip-CHEMISYS (Search & Data) provides an easy search and reference system for determining chemical loading suitability. For owners, PrimeShip-CHEMISYS (Search & Data) provides a tool to easily assess the present status of the ship and determine the loadability of potential cargos.

Main functions

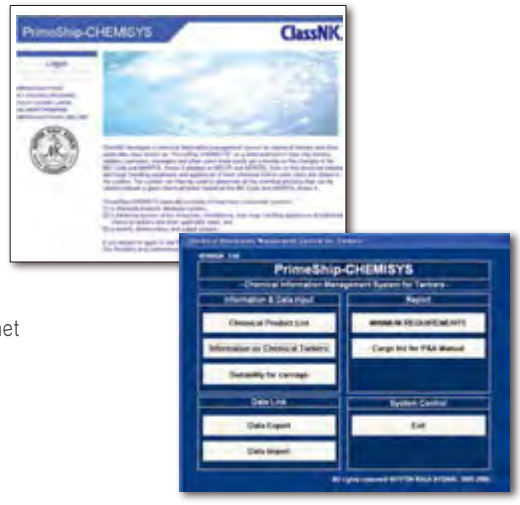
PrimeShip-CHEMISYS (Search & Data)

Design Support System (for designers)

◇Chemical cargo database system
◇Vessel database system (construction and installations)
◇Cargo Suitability Search System (compliance with IBC Code)

Information Service (for owners)

◇Ship Status/Cargo Loadability service accessible via the Internet



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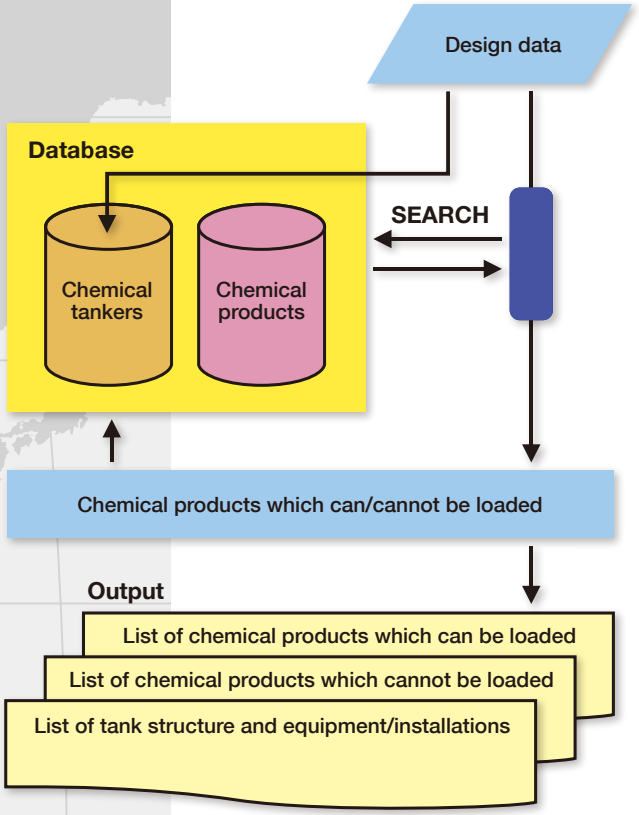
Overview of Design Support System [for designers]



Information Service - Cargo Loadability Service [for owners]

Ship List

Loading Status List

Additional Data Services for Chemical Products

In addition to the above service, the PrimeShip-CHEMISYS (Search & Data) website also provides users with reference data on the typical properties of a wide variety of chemical products.

System requirements for use

■CHEMISYS (Search & Data) [Design Support System]: Microsoft Office Access 2003 or 2010
■CHEMISYS (Search & Data) [Information Service]: Microsoft Internet Explorer ver.9 or higher

Contact address : Hull Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: hld@classnk.or.jp Tel: +81-3-5226-2017 Fax: +81-3-5226-2019

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DG/ BulkCargo

IMDG/IMSBC Loading Requirement Program

Key Features

- ◆Loadable cargo lists
- ◆Easy to use loading requirement search
- ◆Applicable for solid bulk cargoes
- ◆Easily create ship feature databases

PrimeShip-DG/BulkCargo is a software search application for loadable cargoes based on SOLAS and the IMSBC Code.PrimeShip-DG/Bulk Cargo not only makes it easy to understand the loading requirements for each type of cargo, the program also features a reverse search function, which displays the construction and equipment requirements for transportation of dangerous cargoes.

Main Features

Loadable cargo search based on the following requirements

◇Special requirements of SOLAS Chap.II-2/54 (Chap.II-2/19, on or after 2000 amendments) “Carriage of dangerous goods”

◇Special requirements for construction and equipment defined the IMSBC Code

Loading Requirement Search

Ship Database Creator

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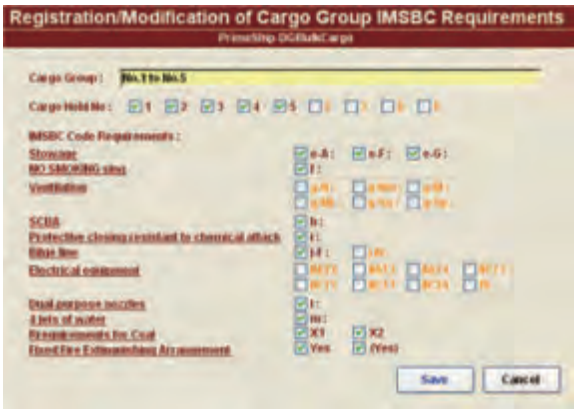
Using PrimeShip-DG/BulkCargo

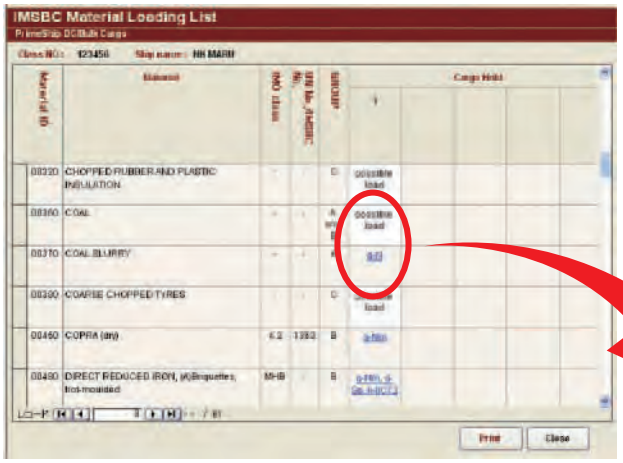
(1) Input vessel particulars including construction and loading equipment information.

Particulars

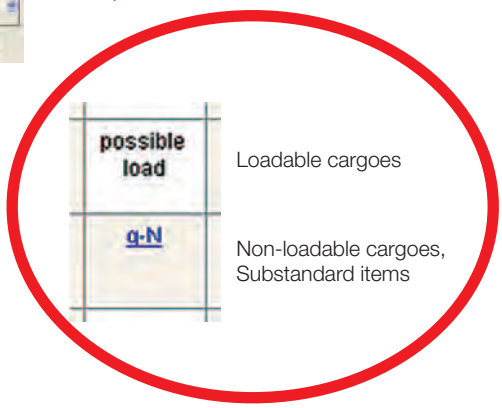


Check construction and equipment details

(2) Results



Loadable Cargo List



Notice

Document examination and an onboard survey are required for issuance of Documents of Compliance for dangerous goods and IMSBC Code Fitness Certificates.

Contact address : Material and Equipment Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: eqd@classnk.or.jp Tel: +81-3-5226-2020 Fax: +81-3-5226-2057

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HULLCare

Hull Maintenance Information Service

Key Features

- **A wealth of survey information at your fingertips, 24/7 via the internet**
- **Support for Enhanced Survey Program (ESP) Ships**

PrimeShip-HULLCare is a specially designed information service created to organize and categorize the staggering volume of information collected from classification surveys all over the world, and to provide owners and managers with hull maintenance information for individual ships. The wealth of information available through PrimeShip-HULLCare helps make ship maintenance planning an easy process.

Extensive and up to date

PrimeShip-HULLCare provides users with the most up-to-date information available, including:

◇Thickness measurement records and measurement points
◇Photographs for condition assessment
◇Specifications and plans for repairs
◇Specifications for paint maintenance
◇Condition Assessment Scheme (CAS) reports
◇IACS S31 Requirements (Hold frame replacement requirements for existing bulk carriers)

A wide variety of search options make searching PrimeShip-HULLCare's extensive database quick and easy.

Accessible 24 hours a day via the internet

PrimeShip-HULLCare uses a secure encrypted network accessible anywhere in the world, at any time via the internet.

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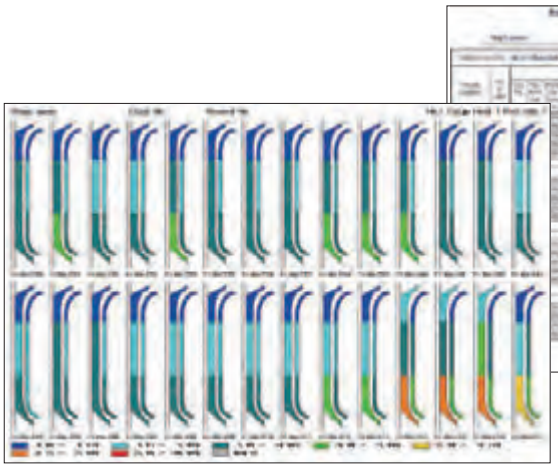
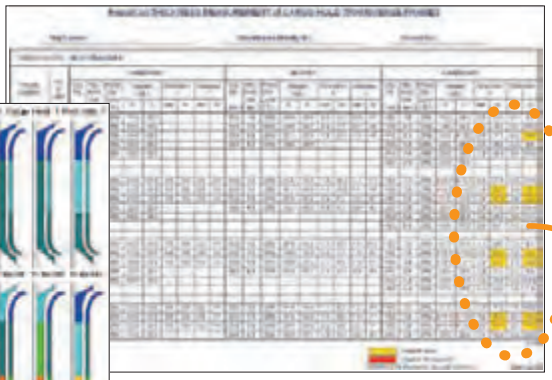
Multi-Format information display

The information contained in PrimeShip-HULLCare is designed to help users better understand a ship's actual condition. Information is available in a number of different formats including tables, photographs, and drawings. Images are shown as organized thumbnail images, and can be enlarged for better viewing.

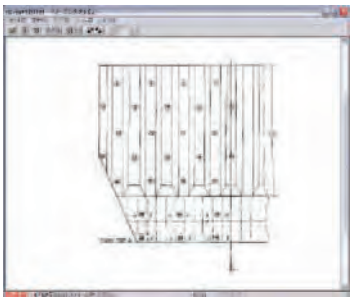


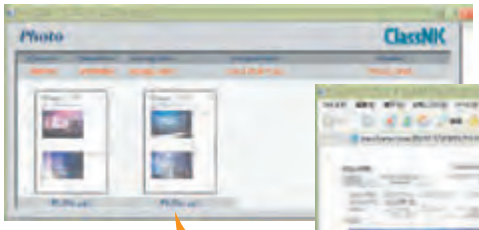
Color-coded diminution of measured points



Measurement record table

Highlighted cells show substantially corroded parts.

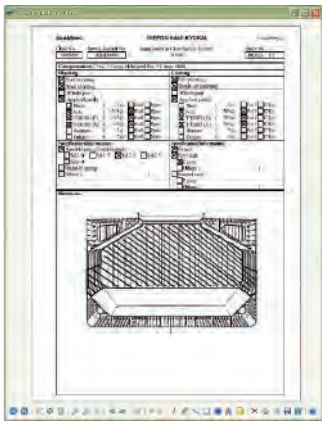




Thumbnails

Photographic image

Repair plan/paint maintenance/
CAS report images



Contact address : Classification Department
ClassNK Information Center

1-8-5 Ohnodai, Midori-ku, Chiba 267-0056, Japan
E-mail: cldji@classnk.or.jp Tel: +81-43-294-6940 Fax: +81-43-294-6924

ClassNK

PrimeShip
Total Ship Care

CAP

Condition Assessment Programme

Key Features

- **Provides owners with a thorough understanding of the actual condition of their vessel**
- **Easy to understand vessel condition rating from level 1 (highest) to 4 (lowest), based on the results of an onboard inspection.**
- **Makes planning vessel maintenance easier and more efficient**

PrimeShip-CAP (Condition Assessment Program) is a quality assessment tool for certifying and documenting the condition of aging vessels that goes beyond the scope of regular classification & statutory regulations.

Purpose & Benefits

◇Condition Assessment Programs (CAP) offered by reputable classification societies have become the standard methodology for assessing the condition of a ship's hull structures and PrimeShip-CAP meets the requirements of major oil charterers.

◇PrimeShip-CAP provides an independent evaluation of a ship's condition based on onboard inspections. Ships are provided with comprehensive reports and certificates, and given a rating from level 1 (highest) to 4 (lowest)

◇PrimeShip-CAP reports provide comprehensive descriptions, photos and analyses of necessary upgrades or repairs. Suggestions for further maintenance are also provided based on damage history and fatigue strength assessments.

◇A favorable PrimeShip-CAP rating level, e.g. CAP 1 or 2, provides objective evidence of good maintenance, a useful tool during charter negotiations.


Sample for Rating

No. 3 W.B.T. (S)

Level: 2	Sub Level	1	2	3	4	Photo Report No.H-15
Structure						
Overhead Deck		☐	☒	☐	☐	See Note 1
Side Shell		☐	☒	☐	☐	See Note 2
Bottom		☒	☐	☐	☐	
Stringers		☒	☐	☐	☐	
Bulkheads		☒	☐	☐	☐	
Internals		☐	☒	☐	☐	See Note 3
Bottom Pitting		☒	☐	☐	☐	

Notes:
1. Coating Condition : Good with anodes (IACS rating level)
2. Cracked side shell Longitudinal SL41, SL42, SL43 at Fwd. T.Bhd. Fr.77 were cropped and renewed. Additional Brackets were fitted on Side shell Longitudinal, SL34 to 44, as reinforcement.
3. Wastage /Thin downed internal members were cropped and renewed as follows:
   a) Upper deck longitudinal face / web plates
   b) Side longitudinal face plates
   c) Slot openings / Web plates / Stiffeners / Brackets / Lightning holes on transverse rings and bulkheads.
   d) Stiffeners / Web plates / Lightning holes on vertical web (center girder)

As to detailed repair works, please refer to repair plan.

Reference H19

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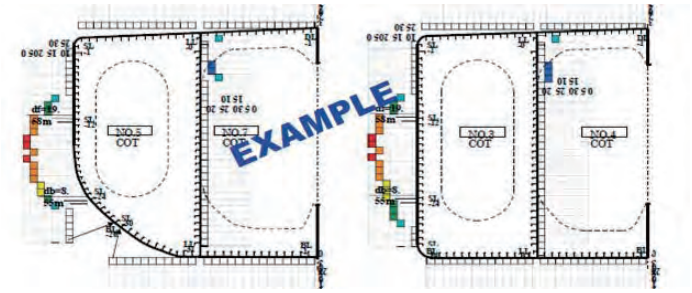
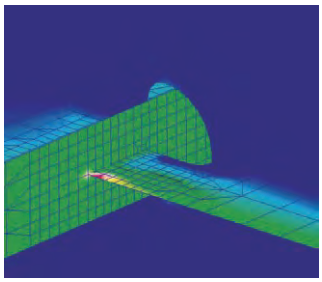
Implementation

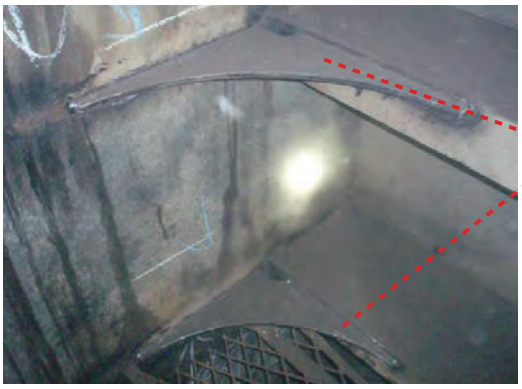
CAP ratings are given for each structural member in each hull compartment based on comprehensive visual inspection, thickness measurements, and hull longitudinal strength analysis. Overall ratings levels are based on the lowest rating level of any structural member.

Visual inspection

Visual inspections are carried out based on fatigue strength assessments and thorough analysis of damage histories to ensure that critical areas are inspected thoroughly and effectively.



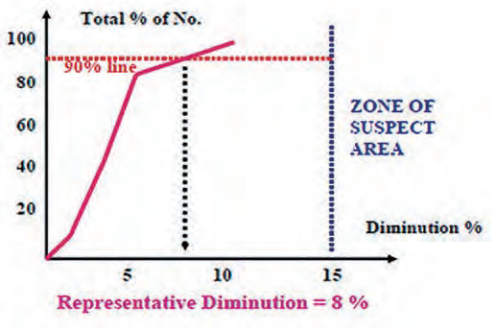




Reinforcement has been applied to critical points based on damage history & FSA results.

UTM (Ultrasonic Thickness Measurement)

General wastage is evaluated via S-Curve based on thickness measurement with a 90% relative diminution distribution.
Hull longitudinal strength is evaluated by using actual thickness gauging data.



Scope of application:

■PrimeShip-CAP covers the hull, machinery and cargo systems.
■PrimeShip-CAP is designed for older tankers and bulk carriers, but may be applied to any type of ship regardless of age.

Contact address : Survey Department
Nippon Kaiji Kyokai Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: svd@classnk.or.jp Tel:+81-3-5226-2027/2028 Fax: +81-3-5226-2029

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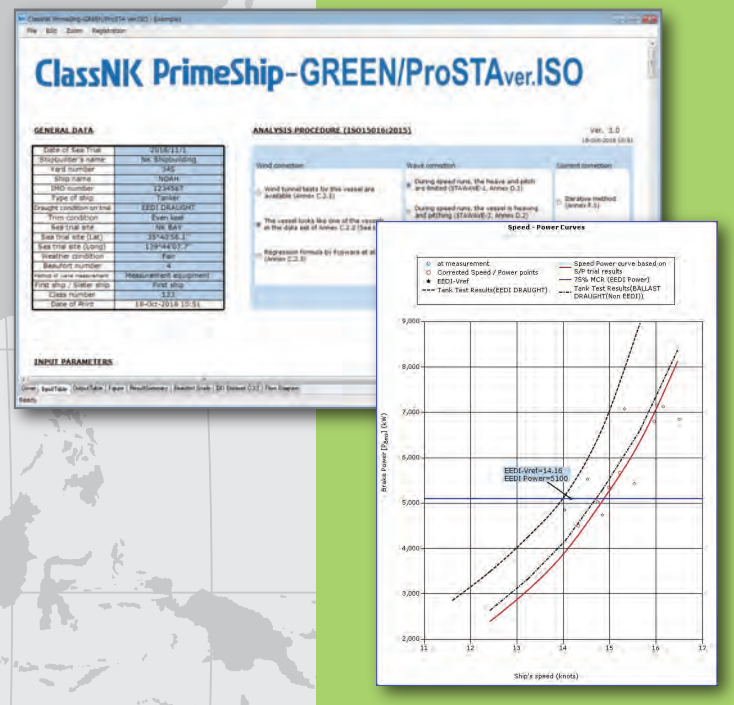
Total Ship Care

GREEN / ProSTA ver. ISO

Software for Progressive Speed Trial Analysis



Key Features

- ◆Speed-Power performance analysis of progressive speed trial in compliance with ISO 15016:2015
- ◆User-friendly interface
- ◆Transparent and easy-to-understand output
- ◆Auto-generation of output results and figures for class approval

PrimeShip-GREEN/ProSTA ver.ISO is a software used for the speed correction for wind, current, wave, shallow water, displacement, water temperature and water density at progressive speed trial in compliance with ISO 15016:2015

Structure of the software

Input

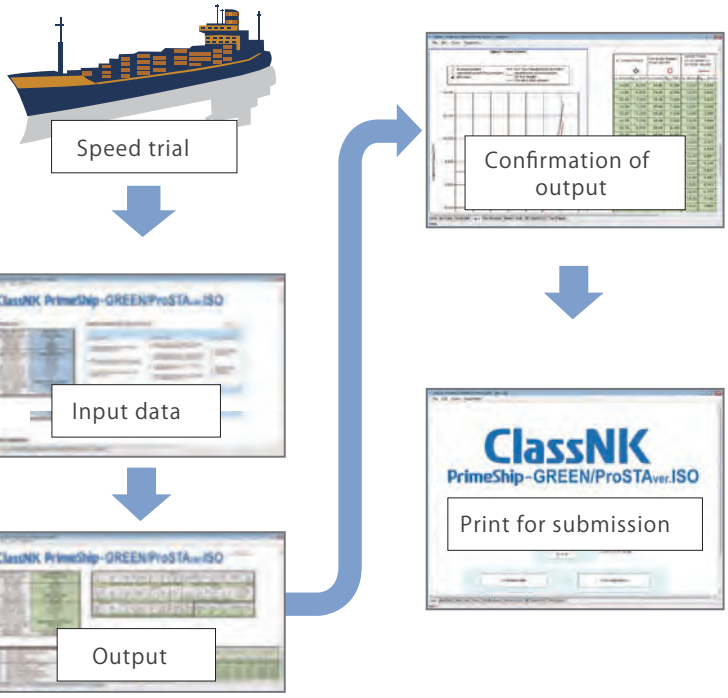
- ◇Ship's principal particular
- ◇Measured data on speed trial
- ◇Weather conditions
- ◇Self-propulsion factors, etc

Analysis steps

- ◇Correction for resistance increased by wind, waves, water temperature and water density
- ◇Correction for current
- ◇Correction for displacement
- ◇Correction for shallow water

Output

- ◇Calculation details
- ◇Current curve
- ◇Speed-rpm curve
- ◇Speed-power curve



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PrimeShip
Total Ship Care

Estimation of the reference ship speed (Vref)

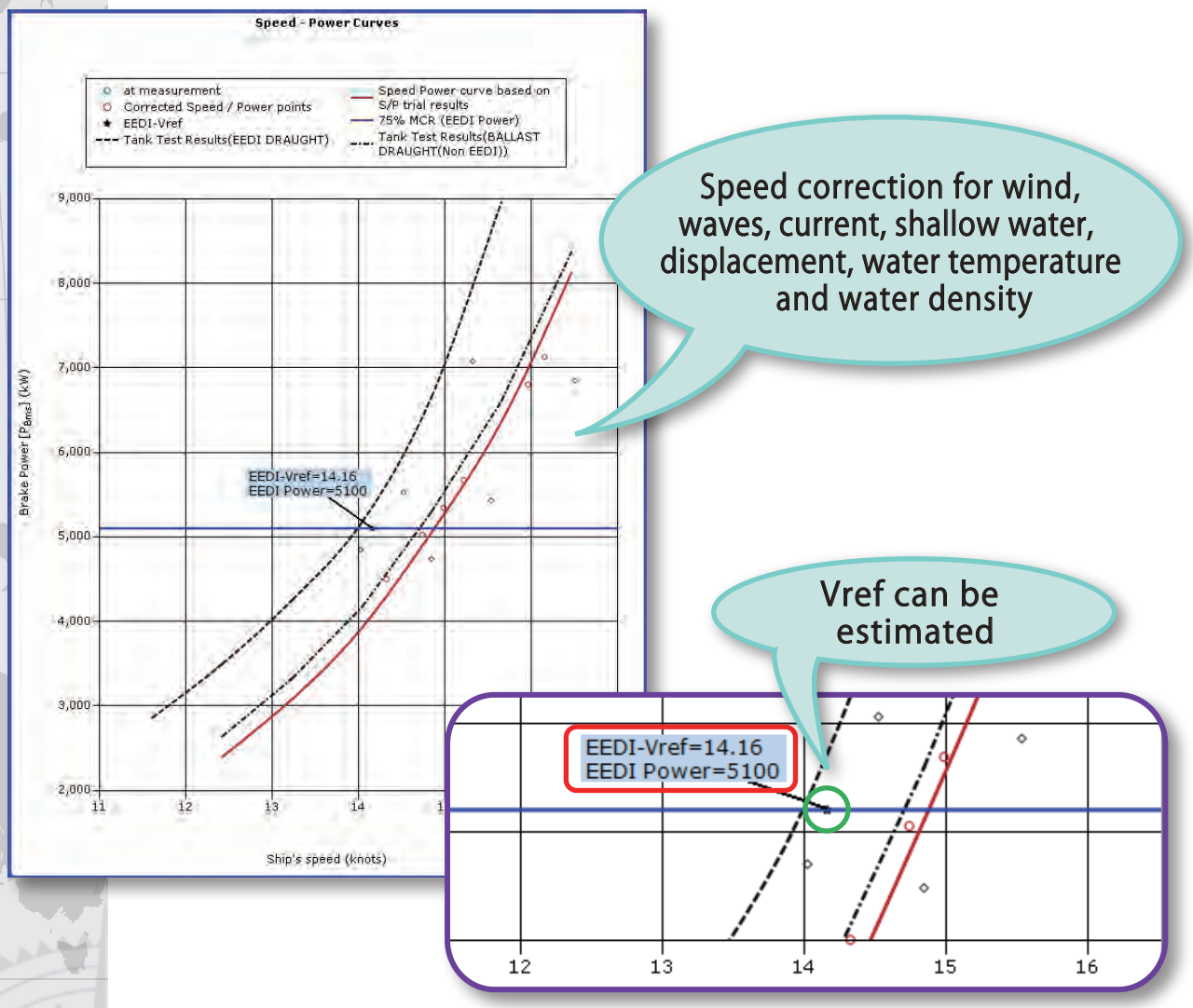
◇The reference ship speed (Vref) required for EEDI calculation can be estimated on the basis of analysis results.

◇Vref is the ship speed in EEDI loaded condition*2 at 75%MCR assuming calm weather with no wind and no waves. *2 EEDI loaded condition: 70%DWT for Container ships, summer full load draft for other types of ships.

◇For ships for which sea trial cannot be conducted under EEDI loaded condition, Vref is estimated by the following procedure:

①Power curves under EEDI loaded condition and sea trial condition should be determined by conducting tank tests.

②Vref should be adjusted taking into account the speed trial results.



PrimeShip-GREEN/ProSTA system requirements

Hardware requirement	Software requirements
Print function of Microsoft Windows	• Windows 7 SP1 and above • NET Framework 4.5.2 and above

Contact address : EEDI Section
Hull Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: eedi@classnk.or.jp Tel:+81-3-5226-2018 Fax: +81-3-5226-2019

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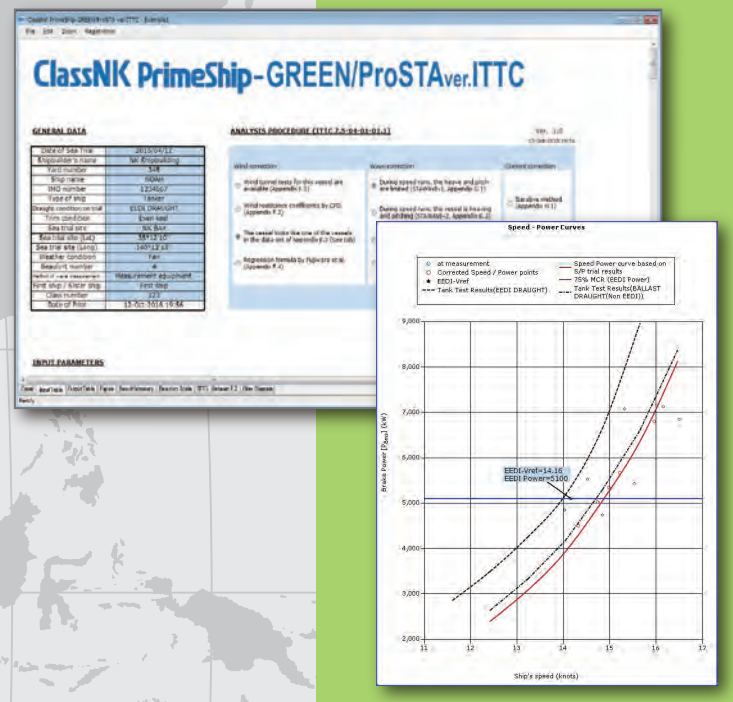
Total Ship Care

GREEN / ProSTA ver. ITTC

Software for Progressive Speed Trial Analysis



Key Features

- ◆Speed-Power performance analysis of progressive speed trial in compliance with ITTC 2017 Guidelines (ITTC Recommended Procedures and Guidelines 7.5-04-01-01.1 Preparation, Conduct and Analysis of Speed / Power Trials; 2017)
- ◆User-friendly interface
- ◆Transparent and easy-to-understand output
- ◆Auto-generation of output results and figures for class approval

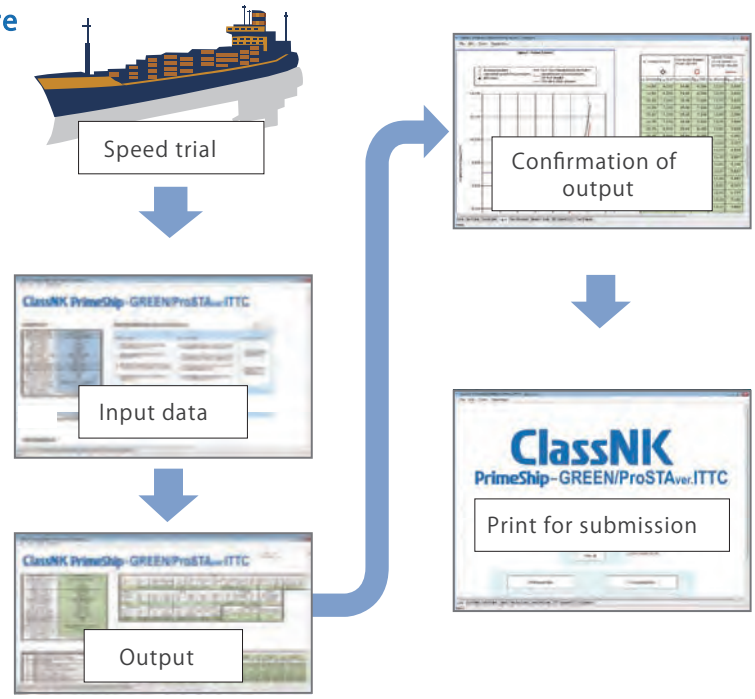
PrimeShip-GREEN / ProSTA ver.ITTC is a software used for the speed correction for wind, current, wave, shallow water, displacement, water temperature and water density at progressive speed trial in compliance with ITTC 2017 Guidelines

Structure of the software

Input
- ◇Ship's principal particular
- ◇Measured data on speed trial
- ◇Weather conditions
- ◇Self-propulsion factors, etc

Analysis steps
- ◇Correction for resistance increased by wind, waves, water temperature and water density
- ◇Correction for current
- ◇Correction for displacement
- ◇Correction for shallow water

Output
- ◇Calculation details
- ◇Current curve
- ◇Speed-rpm curve
- ◇Speed-power curve



ClassNK

PrimeShip
Total Ship Care

Estimation of the reference ship speed (Vref)

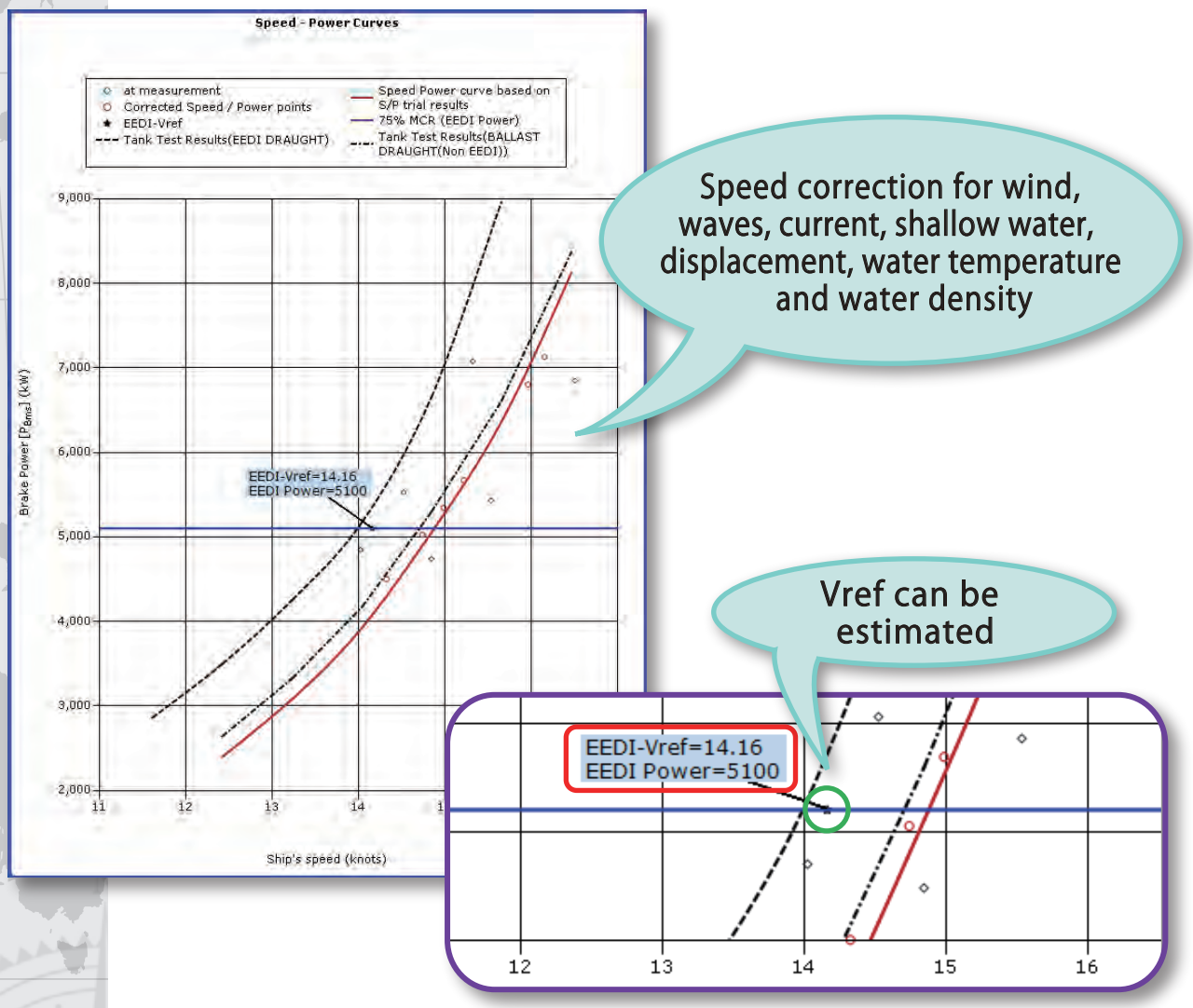
◇The reference ship speed (Vref) required for EEDI calculation can be estimated on the basis of analysis results.

◇Vref is the ship speed in EEDI loaded condition*2 at 75%MCR assuming calm weather with no wind and no waves. *2 EEDI loaded condition: 70%DWT for Container ships, summer full load draft for other types of ships.

◇For ships for which sea trial cannot be conducted under EEDI loaded condition, Vref is estimated by the following procedure:

①Power curves under EEDI loaded condition and sea trial condition should be determined by conducting tank tests.

②Vref should be adjusted taking into account the speed trial results.



PrimeShip-GREEN/ProSTA system requirements

Hardware requirement	Software requirements
Print function of Microsoft Windows	• Windows 7 SP1 and above • NET Framework 4.5.2 and above

Contact address : EEDI Section
Hull Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: eedi@classnk.or.jp Tel:+81-3-5226-2018 Fax: +81-3-5226-2019

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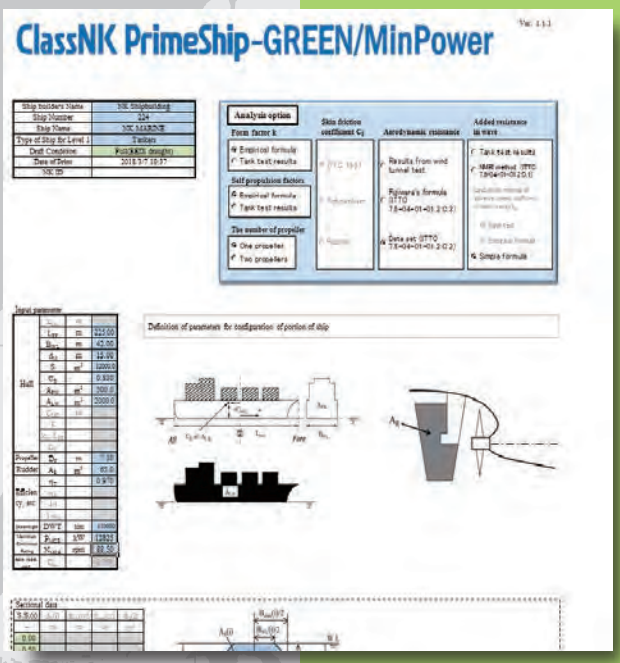
PrimeShip
Total Ship Care

GREEN / MinPower

Software for Assessment of Minimum Propulsion Power



Key Features

- ◆Easy to assess the minimum propulsion power to maintain the manoeuvrability in adverse conditions according to the "minimum propulsion power interim guidelines"
- ◆Assessment Level 2 in the guidelines is available
- ◆Stand-alone software base on Microsoft Excel
- ◆User-friendly interface
- ◆Auto-generation of output results and figures for class approval
- ◆Free to use

This software is intended to conduct assessments of required minimum propulsion power in adverse conditions for bulk carriers, tankers and combination carriers with the size of equal or more than 20,000DWT by means of methods defined in MEPC.1/Circ.850/Rev.2 of IMO "2013 INTERIM GUIDELINES FOR DETERMINNING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIP IN ADVERSE CONDITIONS".

Main Functions

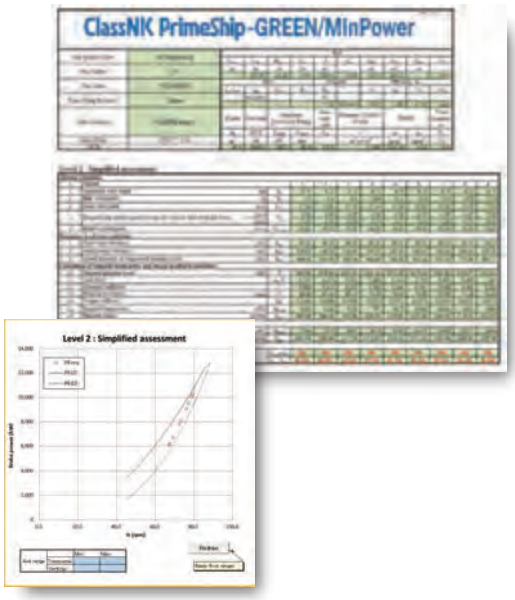
◇Assessment Level2 in the guidelines is available. (The ship should be considered to have sufficient power if it fulfills assessment Level1 or Level2.)

◇Level1 : The ship under Level1 must have installed power not less than the power defined by the minimum power line for the specific type of ship.

◇Level2 : This assessment procedure is based on the assumption that, if the ship has sufficient installed power to move with a certain advance speed in head waves and wind, the ship will also be able to keep course in waves and wind from any other direction. It is necessary to input self-propulsion factors, aerodynamic resistance, added resistance, etc. for the assessment.

◇Easy to estimate the added resistance in waves used for the assessment using a simplified formula with the principal particulars.

◇The added resistance in waves can estimate based on ship's lines using NMRI method.



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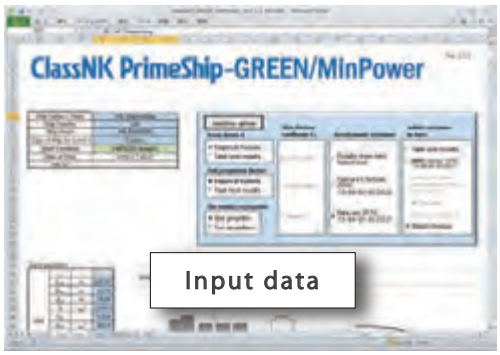
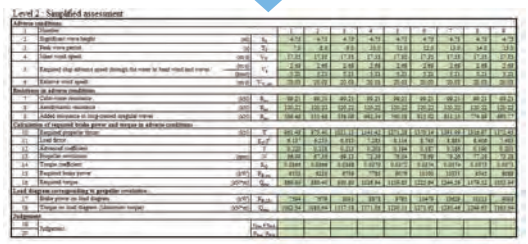
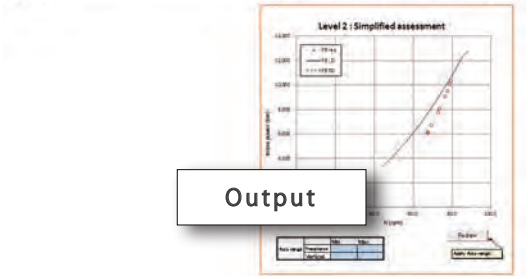
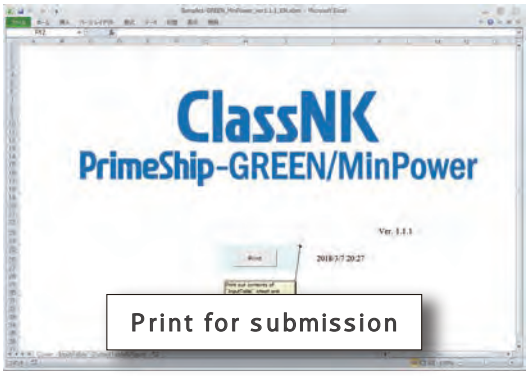
PrimeShip
Total Ship Care

Structure of the system









Input

◇Ship's principal particulars
◇Self-propulsion factors
◇Frontal and side windage area of hull and superstructure, Actual rudder area
◇Propeller open water characteristics
◇Torque-speed limitation curve of the engine provided by the engine manufacturer
◇Ship's Lines
◇Added resistance in long-crested irregular waves, etc.

Analysis options

There are selectable options below.
◇For the form factor k and the self-propulsion factors
①Empirical formula
②Tank test results
◇For the aerodynamic resistance coefficient
①Results from wind tunnel test
②Fujiwara's formula (ITTC 7.5-04-01-01.2:C.3)
③ITTC data sets (ITTC 7.5-04-01-01.2:C.2)
◇For the added resistance in long-crested irregular waves
①Tank test results
②NMRI method (ITTC 7.5-04-01-01.2:C.2)
③Simplified formula

Output

◇Results of the assessment for submission

Free to use

This software is provided free of charge.

PrimeShip-GREEN/MinPower system requirements

Hardware requirements	Software requirements
Print function of Microsoft Windows	OS：Windows 7 (64bit) Office：Microsoft Excel 2010、2013 (32bit)

Contact address : EEDI Section
Hull Department
ClassNK Administration Center Annex
3-3 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: eedi@classnk.or.jp Tel:+81-3-5226-2018 Fax: +81-3-5226-2019

ClassNK

PrimeShip
Total Ship Care

GREEN/ SRM

Ship Recycling Management

Key Features

- ◆Inventory development software compliant with the Ship Recycling Convention* requirements
- ◆Exchange Material Declaration (MD) data electronically

PrimeShip-GREEN/SRM is an essential software tool for the development of the Inventory of Hazardous Materials (IHM) required for all ships greater than 500GT by the Ship Recycling Convention adopted in May 2009. PrimeShip-GREEN/SRM allows suppliers and shipbuilders to exchange information electronically to reduce paperwork related to IHM development.

In order to substitute the client/server based IHM development software: PrimeShip-INVENTORY, NK has developed the web-based software “PrimeShip-GREEN/SRM”. Utilizing cloud computing, PrimeShip-GREEN/SRM will certainly improve the productivity of users.

【For Suppliers】

PrimeShip-GREEN/SRM enables suppliers to consolidate the responses for shipbuilders’ requests to submit Material Declaration and Supplier’s Declaration of Conformity. In addition, suppliers can post their MD on MD Library so that the shipbuilders can find the MD by themselves.

【For Shipbuilders】

PrimeShip-GREEN/SRM allows shipbuilders to develop the IHM (Excel format) by requesting MD/SDoC to suppliers in the system and setting locations for MDs containing Hazardous Materials. PrimeShip-GREEN/SRM eliminates the need to post MD data and automatically calculates the amounts of Hazardous Materials at each location.

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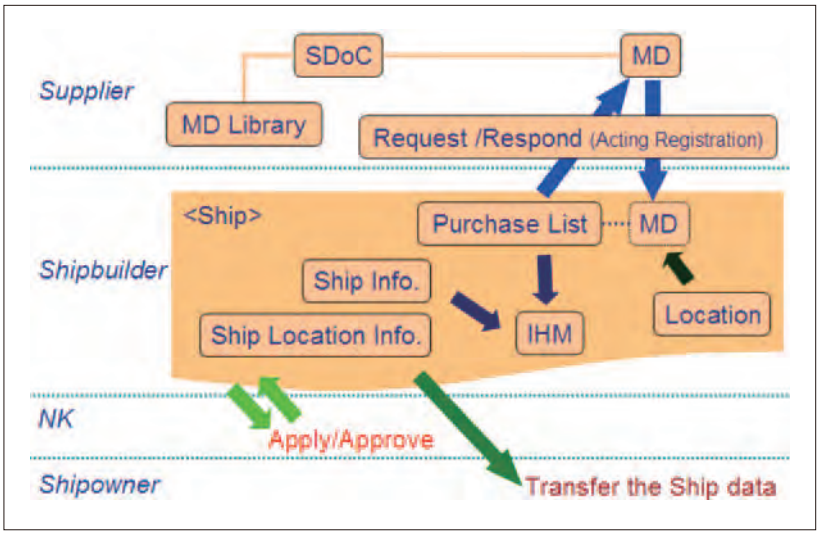
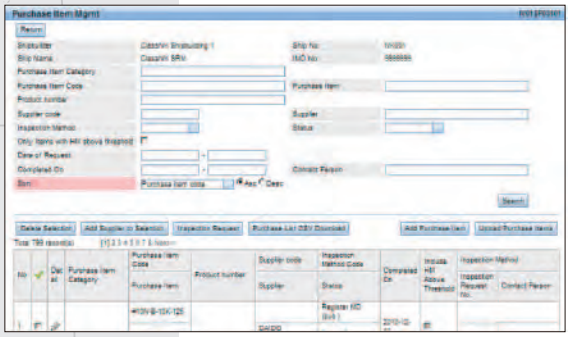
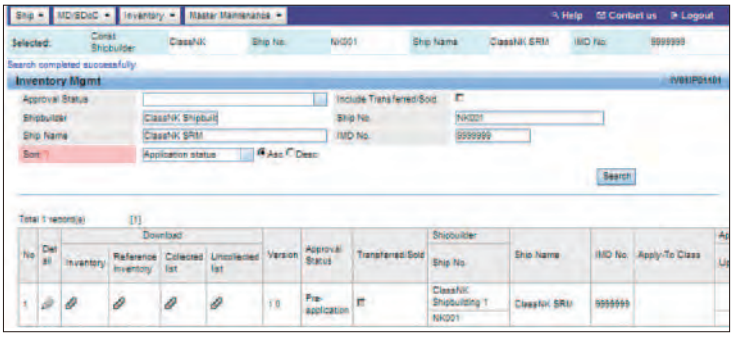
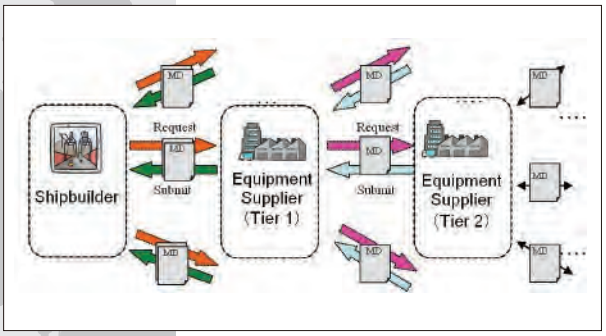
Concept of PrimeShip-GREEN/SRM



Screenshots







Ship Recycling Convention

Ship Recycling Convention* was adopted by the IMO in May 2009. Once the convention enters into force, all ships 500GT and greater, excluding those scrapped or recycled in their flag states, will be required to carry an Inventory of Hazardous Materials on board the ship.

IHM Development for New Ships

Shipbuilders develop an Inventory by the following steps:
<Step 1> Record submitted Material Declaration (MD) and Supplier's Declaration of Conformity (SDoC) for all procured products.
<Step 2> Screen all products containing Hazardous Materials above the threshold levels.
<Step 3> Identify the location of these products and calculate the amounts of Hazardous Materials at each location.
<Step 4> Prepare properly formatted Inventory.

Access to PrimeShip-GREEN/SRM

The requirement for using PrimeShip-GREEN/SRM is a web browser such as Internet Explorer or Firefox. Please access the following top page for user registration.

https://www.psgreensrm.com

Contact address : Ship Management Systems Dept.
Nippon Kaiji Kyokai Administraion Center
4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan
E-mail: smd-env@classnk.or.jp Tel:+81-3-5226-2076 Fax: +81-3-5226-2174

ClassNK

PrimeShip
Total Ship Care

GREEN/ EEOI

EEOI Calculation and Analysis System

Key Features

- ◆EEOI calculations performed in compliance with IMO guidelines (MEPC.1/Circ.684)
- ◆Easy visual checking of the energy efficiency of ships in service
- ◆Easy registration of ships by using a data link with NK-SHIPS
- ◆Free to use

PrimeShip-GREEN/EEOI is a system used for the calculation and analysis of EEOI (Energy Efficiency Operational Indicator) of a ship in order to check GHG (CO_2) emission levels during ship operation.

PrimeShip-GREEN/EEOI consists of two specialized applications: “EEOI-Onboard” for data input, and “EEOI-Web” for EEOI calculation and analysis.

Main Functions

EEOI-Onboard

Exclusive software for data input onboard
◇Registration of voyage information
◇Entry of operational data
(Distance sailed, Fuel consumed)

EEOI-Web

Web-based software for EEOI calculation and analysis
◇Trend chart/data display
◇EEOI target setting
◇EEOI comparison of ships in fleet
◇EEOI comparison with EEOI average curve

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Data link with NK-SHIPS

Easy registration of ships under NK class to the system is available by using a data link with NK-SHIPS. In addition, ships classed with other classification societies can be registered just by entering the ship's basic information.

Analysis of calculation results

◇The calculated CO2 emission levels, CO2 index (CO2 emissions per a mile) and load index as well as EEOI are displayed in a trend chart. Users can visually confirm variations in energy efficiency and its contributing factor.

◇Data analysis suitable for ship operation characteristics can be performed by setting different kinds of calculation and display conditions.

◇Base data and calculation results can be downloaded as a CSV file for easy data utilization and data import to other systems.

Compatible with other systems

Separately from data entry by EEOI-Onboard as basic specifications, a function to import data from existing electronic log systems is also available.

Free to use

This system is provided free of charge. After submitting an application to register to use the system, users will be able to access the system via ClassNK's web service portal. (https://portal.classnk.or.jp/portal/)

PrimeShip-GREEN/EEOI system requirements

	Hardware Requirements	Software Requirements
EEOI-Onboard	Memory: 1GB or greater (recommended) HDD: 600MB hard drive space (recommended)	OS: Windows 7 / Vista SP2 or later / XP SP3 Browser: Internet Explorer 8 / 7 / 6 Microsoft .NET Framework 3.5
EEOI-Web	————	OS: Windows 7 / Vista SP2 or later / XP SP3 Browser: Internet Explorer 8 / 7 / 6 Adobe Flash Player

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