

# ClassNK

MAGAZINE

68TH EDITION

- *ClassNK acquires NAPA*
- *ClassNK-NAPA GREEN*
- *Achieving goals together*
- *NAPA Steel appeal*



# A pioneering move



Welcome to the 68<sup>th</sup> edition of ClassNK Magazine.

ClassNK's landmark acquisition of NAPA, the world's leading maritime software house, has been hailed as one which will benefit the entire shipping industry by improving vessel design and operational efficiency.

The pioneering deal, announced on 18 March 2014, marks a major new step in the 10-year association between ClassNK and NAPA; it is a chance to expand and improve the wide range of services we offer to shipowners and shipyards, as well as provide NAPA with the necessary tools and resources to accelerate expansion of existing operations and software development activities.

Safety and efficiency are the most important issues for both shipyards and shipowners, and from our joint work on ClassNK NAPA Manager to our work on ClassNK-NAPA GREEN, NAPA has consistently demonstrated the importance it places on creating high quality, innovative tools for the maritime industry. We are confident that this new partnership will ensure that innovation in maritime software benefits the entire industry and that new solutions are made available to stakeholders all around the world.

This edition of ClassNK Magazine will highlight the importance of NAPA and the NAPA acquisition for the global maritime industry, as well as discuss the future of both organizations following the acquisition. ClassNK Magazine 68 includes interviews with ClassNK Executive Vice President Yasushi Nakamura, who has worked with NAPA over many years and has seen first-hand the incredible benefits ship designers and operators can achieve with innovative software solutions, as well as NAPA Group President, Juha Heikinheimo, who has helped oversee NAPA's growth into the world's leading maritime software house for both ship design and operation.

This edition will also look in-depth at how NAPA's software is helping shipyards and owners achieve ever greater safety and efficiency, featuring interviews with users of ClassNK-NAPA GREEN such as Stena and Wan Hai, as well as users of NAPA's extensive suite of design software tools at Sanoyas Shipbuilding and Samsung Heavy Industries.

“ *ClassNK is dedicated to supporting the growth and development of the maritime industry* ”

ClassNK is dedicated to supporting the growth and development of the maritime industry and ensuring the safety of ships, crews and protecting the marine environment. This is paramount. The cooperation between ClassNK and NAPA has marked, and will continue to deliver, innovation in the development of operational efficiency software to the benefit of the entire maritime industry.

**Noboru Ueda**  
**Chairman and President of ClassNK**

**ClassNK**

ClassNK Executive Operations Division,  
4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan  
Tel: +81-3-5226-2047 Fax: +81-3-5226-2034  
E-mail: eod@classnk.or.jp

**MAGAZINE**  
**68TH EDITION**

Published by JLA media



**2** *A pioneering move*

Welcome message from Noboru Ueda, Chairman and President of ClassNK

**5** *ClassNK news*

ClassNK streamlines decision-making

**6** *Setting new standards*

NAPA acquisition will add to value

**7** *An unrivaled partnership*

NAPA - a natural choice

**9** *Exceptional commitment*

A large and positive step forward

**11** *Industry partnership*

Stena Line to install ClassNK-NAPA Green

**12** *A green future*

The key questions answered

**14** *Achieving goals together*

Taiwan's Wan Hai Lines the first commercial operator to use ClassNK-NAPA GREEN

**16** *The Appeal of NAPA Steel*

The preferred package

**18** *Customer always comes first*

Sanoyas endorses ClassNK-NAPA

**20** *NAPA Steel user*

Samsung Heavy Industries case study

**22** *ClassNK events in 2014*

An international agenda



**ClassNK**

# ClassNK news

## DESIGN SUPPORT TOOLS FOR EEDI VERIFICATION

ClassNK has released the new PrimeShip-GREEN/MinPower software. PrimeShip-GREEN/MinPower was developed to help shipyards comply with the EEDI requirements of the Amendment to MARPOL Annex VI by calculating minimum propulsion power requirements in compliance with the IMO 2013 *Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*. To evaluate minimum propulsion power requirement, added resistance in irregular waves should be calculated based on ship's lines. As calculating added resistance in waves can be difficult, particularly at the initial design stage, ClassNK developed a simplified formula to calculate added resistance in waves using only basic information such as main ship specifications, allowing designers to easily

evaluate the minimum propulsion power requirement for their ships. In addition, ClassNK has released an updated version of the PrimeShip-GREEN/PSTA software, released in June 2013 to provide shipyards with an easy means of calculating progressive speed trial analysis in compliance with the ISO 15016:2002 standard recognized in IMO 2012 Guidelines on survey and certification of the energy efficiency design index (EEDI). In order to support the industry's smooth application of this future standard, ClassNK has released a new version of PrimeShip-GREEN/PSTA to help familiarize users with the new software and future requirements of this draft. PrimeShip-GREEN/MinPower and PrimeShip-GREEN/PSTA are provided to shipyards free of charge.

## EXECUTIVE VICE PRESIDENT APPOINTED TO GREEN AWARD FOUNDATION BOARD OF EXPERTS

ClassNK Executive Vice President Tetsuya Kinoshita has been selected to serve on the board of experts of The Netherlands-based Green Award Foundation, advising the committee on the composition of the award requirements. The independent, non-profit organization promotes safety of life at sea and the prevention of marine pollution by issuing its 'Green Award certificate' to ships and shipping companies which comply with safety and environmental standards going beyond the national and international regulations. Those receiving the award are entitled to incentives including reduced port fees.



## SUPER-EFFICIENT FILLET WELDING CONSUMABLE APPROVED

ClassNK has granted type approval to the new MX-200F welding consumable developed by Kobe Steel to greatly improve welding efficiency and coating quality in commercial vessels. To date, shipbuilders using conventional fillet welding consumables have had to make two welding passes for the required weld leg lengths of around 8mm or above. IACS Common Structural Rules require the use of 8mm leg lengths in some structural members and this has meant that the relevant welding time for oil tanker and bulk carrier new buildings has virtually doubled. IMO's Performance Standard for Protective Coatings, applicable to vessels over 500 gross tons and double-sided skin spaces in bulk carriers over 150m in length,

also substantively requires welding beads to have a smooth profile in order to ensure the required paint film thickness, further increasing the difficulty of welding work. A joint research and development project by Kobe Steel, Shin Kurushima Dockyard and ClassNK investigating the relationship between the profile of welding beads and paint film thickness resulted in the development of KOBELCO's new MX-200F fillet welding consumable. MX-200F allows one pass welding with the leg lengths of around 8mm and ensures welding beads have a smooth profile in line with IMO requirements. Application of the consumable is expected to greatly reduce man-hours required for this kind of work.

## EXECUTIVE REORGANIZATION UNDERSCORES GLOBAL COMMITMENT

ClassNK has streamlined its decision-making process and speeded up administrative procedures by reducing its Board of Directors from eight to five members. Noboru Ueda continues to serve as Chairman and President and as a Representative Director of the Society. Executive Vice President Yasushi Nakamura continues in this role and is now a Representative Director of the Society. Koichi Fujiwara continues as Executive Vice President while Tetsushi Agata and Tetsuya Kinoshita have been promoted from Managing Director to Executive Vice President. Former Executive Vice Presidents Toshitomo Matsui, Shosuke Kakubari and Takuya Yoneya have been appointed Advisors to the Society. In other moves, Toshio Kurashiki has become Regional Manager of South Asia and Oceania and M. Abdul Rahim, has been named Regional Manager of Europe and Africa, and has also become the first non-Japanese member of the Society to be appointed an Operating Officer. ClassNK's Survey Department has also been expanded into a Survey Operations Headquarters with two new General Managers in Europe and North America. The new positions have, for the first time, final decision-making authority related to sur-

vey operations throughout Europe and North America. Deputy General Manager of the Survey Department in Hamburg, Akizumi Miura, has become General Manager of the Survey Operations Headquarters (Europe) in Hamburg. Seiichi Gyobu, General Manager of the ClassNK Hull Rules Development Department, is now General Manager of the Survey Operations Headquarters (North America) in New York. In addition to these announcements, ClassNK has established a new Certification Operations Headquarters at its head office in

Tokyo to coordinate activities and promote the development of new certification systems.



*Noboru Ueda serves as Chairman and President and as a Representative Director of the Society*

## OCEAN ENERGY RESOURCES INITIATIVE WITH KYUSHU UNIVERSITY

ClassNK is supporting the establishment of a new Department of Ocean Energy Resources at Kyushu University for two years from 1st April 2014. The department is part of the university's Graduate Faculty of Engineering and is the result of collaboration between ClassNK and Kyushu University to create an education hub to promote research into new technologies to develop ocean energy sources. Research will cover new ocean energy sources including the exploitation



of methane-hydrates and the design, installation and operation of production platforms as well as research into technology for renewable energy sources such as floating offshore wind power generation. ClassNK's Wind Turbine Division will provide the program with insight into technical issues surrounding wind energy technology. ClassNK's Wind Turbine Division will provide the program with insight into technical issues surrounding wind energy technology.

## NEW EXCLUSIVE SURVEY OFFICE IN BELEM

ClassNK has established a new exclusive survey office in Belem, the second largest city in northern Brazil. The Belem Office will operate alongside the Society's exclusive survey

offices in Rio de Janeiro and Santos. With the establishment of the Belem Office, ClassNK now operates a global service network of 130 exclusive survey offices.

# Setting new standards

***NAPA, which has been developing software for almost 40 years, has always been and remains committed to making 3D product modelling a standard in the ship design industry and translating innovative software solutions into genuine added value for clients.***

NAPA first came to the attention of the market through its work at Wärtsilä's yards in Helsinki and Turku where in-house systems for naval architectural tasks had been in use since the 1960s and were in need of replacement.

Wärtsilä required its new system to model and accurately analyze any type of ship. It had to be product-model oriented, an efficient tool for project design analysis, not merely for final delivery documents, and easy to convert for use in new computers. It had to offer a modular program structure for maintenance reasons, application-independent functions for data management, geometric operations, graphics and dynamic input and output formats.

“ *NAPA went global for many good reasons and Japan was always at the top of the agenda* ”

None of the existing systems on the market met these demands and in 1976 Wärtsilä decided to develop NAPA's Naval Architectural Package, with the significant stipulation that it must be possible to sell the system to other companies.

After being introduced at Wärtsilä's yards in 1982 it was delivered to the first customer, Hollming, in Rauma in January 1984. Sweden's Kockums became the first international client in November that year and NAPA also developed a system for Meyer Werft in Papenburg, Germany, directed at the cruise market but suited to other types of complex vessels.

In 1987, the development group was organized as the NAPA Business Unit of the Wärtsilä-owned information technology company Witec Oy. In 1989, when Wärtsilä Marine went bankrupt, the unit became an independent company, Napa Oy (Ltd) through a management buyout.

“NAPA's managers were brave enough to take their destiny in their own hands and continue developing innovative solu-

tions to the benefit of the industry,” says Juha Heikinheimo, NAPA Group President.

ClassNK certified NAPA in 1994 and by 2000 most leading European yards, class societies and consultancies were using NAPA. The turn of the millennium marked a significant breakthrough in Southeast Asia with the company's first office in Japan established in 2001, resulting in many new clients in the region and particularly in Japan, China and South Korea.

“NAPA went global for many good reasons and Japan was always at the top of the agenda,” says Mr. Heikinheimo. “Natural development through Japan into other Asian markets followed; managing well in Japan was the key to extending services to other markets.”

A milestone was reached in 1992 with the launch of On-board-NAPA. The system started operation in 1995 and was certified by Germanischer Lloyd and Det Norske Veritas in 1996, by Lloyd's Register in 1997 and by the Maritime and Coastguard Agency and Russian Maritime Register of Shipping in 1998.

The highly innovative product NAPA Steel was initiated in 1998 followed in 1999 by the launch of a new safety concept for damage control and decision support, NAPA Power and NAPA CBT (a computer-based training software package).

NAPA's representation office in Japan started operations in 2001 followed in 2002 by the Chinese and in 2005 by the South Korean representation offices. The new product line, NAPA Ship Performance Solutions, was also launched in 2005.

NAPA Japan KK was founded in 2007 followed by NAPA Software Services India Pvt Ltd and NAPA Romania SRL in 2008 and by NAPA Korea Ltd in 2009. NAPA-DSME Power was launched in 2011, followed in 2012 by ClassNK-NAPA GREEN. The representation office in Singapore started operations the same year.

# Interview: Yasushi Nakamura

## An unrivaled partnership

**The NAPA acquisition will build on the cooperation between ClassNK and NAPA over the last decade, to the benefit the global maritime industry.**

Taking the opportunity to speak further on the acquisition of NAPA in March 2014, ClassNK Representative Director and Executive Vice President Yasushi Nakamura explains the reasoning behind the acquisition, and why it is good for the industry.

“We have enjoyed a long and excellent working relationship with NAPA, and the innovative software developed during this period, ClassNK-NAPA GREEN and NAPA Steel are the fruit of this cooperation,” says Mr. Nakamura.

“We have worked with a number of IT companies across the world but only NAPA provides these two solutions, and their importance cannot be understated. ClassNK-NAPA GREEN is the most sought-after solution for owners seeking to cut fuel costs and the NAPA Steel software is an unrivaled element in ship design.”

“These solutions are an important addition to the classification services we provide to owners. On our own, we did not have sufficient capability to develop IT technology of this level, and we recognized that NAPA the ideal partner for us to better serve our clients’ requirements. This is why we took the decision to acquire the company.

“*We have enjoyed a long and excellent working relationship with NAPA, and the innovative software developed during this period, ClassNK-NAPA GREEN and NAPA Steel are the fruit of this cooperation*”



*ClassNK Executive Vice President and Representative Director, Yasushi Nakamura*

“Choosing NAPA as our partner was a natural decision,” says Mr. Nakamura. “NAPA is the only company producing these first-class products. And a particularly important factor is that we trust each other.”

From the outset Mr. Nakamura has been adamant that maintaining NAPA’s independence and neutrality and protecting client confidentiality is vital to the success of the acquisition. “NAPA is one of the most important assets to the global maritime industry and we guarantee one hundred per cent that this will continue to be the case. While we will support NAPA’s development of new solutions for the industry, ClassNK will not be directly involved in NAPA operations.

Mr. Nakamura continues “We fully understand NAPA’s position in regard to confidentiality and independence, and have no intention of changing anything about NAPA.

NAPA will continue to provide the same services to the maritime industry and NK fully supports this. NAPA's capability in ship design is the key to our relationship now and in the future and this is a very important message.

"Moreover, we have made it clear to design companies and other classification societies that NAPA will maintain its independence and neutrality. By neutrality we mean that NK will have no influence on NAPA's activity in the design field. NAPA will continue to operate as an independent company.

“  
*The acquisition of NAPA is about much more than money. It is about developing the company and introducing solutions and practices which will benefit the entire global shipping industry*  
”

"As mentioned, we have enjoyed a long collaboration and partnership together. Now we have the chance to further develop and market our solutions together and further expand our business."

Elaborating on the impact of the acquisition on ClassNK's operations, Mr. Nakamura says "Does the acquisition mean NK's role as a classification society has changed? Absolutely not. For instance, NK will continue to provide the IPCA vessel stability technology developed by Japanese yards to the industry as and when it is requested but we do not have any influence on the software itself.

"Our classification business is to be a service provider and if we have any requests pertaining to ship design from owners we try our best to support them. But I must stress that we will not touch anything to do with design. Our mission is to provide the tools to help ship designers, and we have no intention to begin to designing ships or concept vessels.

"This approach to business demonstrates the clear difference between us and other societies. We will continue to focus one hundred percent on vessel and maritime inspections.

"NAPA is a very large IT company in the maritime industry and the *de facto* standard, particularly for design companies. The opportunity to further the development and provision of NAPA-STEEL software was a strong reason for the acquisition and we hope to expand our business through NAPA-STEEL and IT software."

ClassNK is active in the passenger market but has to date enjoyed little experience with non-Japanese cruise ship owners. This is expected to change as the business expands through NAPA's strong association with the European and US passenger shipping sectors where there is huge potential.

The circumstances regarding ClassNK-NAPA GREEN are different in that there is concerted competition from other IT companies. "But this competition can only serve to strengthen our resolve to better serve this crucial segment of the market," says Mr. Nakamura.

"The ClassNK-NAPA GREEN solution is at the top of owners' agendas as fuel costs are very high and owners are rightly demanding the software to assist them in their operating practices. The stakes could not be higher."

Mr. Nakamura says he was hugely impressed when he met other members of the NAPA team for the first time. "I sensed immediately that they had great affinity with NK and with our working practices and this can only prove of immense benefit as we move ahead together.

"NK is a marine engineering and naval architecture company and safety is our first priority, whereas with others the main priority is technology and making money.

"The acquisition of NAPA is about much more than money. It is about developing the company and introducing solutions and practices which will benefit the entire global shipping industry."

# Interview: Juha Heikinheimo

## Exceptional commitment

***ClassNK's acquisition of NAPA reflects the growing importance that owners, operators, insurers, classification societies and other major stakeholders in the global maritime industry place on software technology improving ship design and operational efficiency.***



The acquisition was the culmination of collaboration between ClassNK and NAPA over many years, the most recent being the development of ClassNK-NAPA GREEN in 2012 and its subsequent use when Taiwan-based Wan Hai Lines selected it for the *Wan Hai 516*, a 4,680 teu vessel delivered by CSBC in April 2013.

This marked the first time that ClassNK-NAPA GREEN had been installed commercially on an existing vessel.

More recently, ClassNK-NAPA GREEN generated fuel savings of 3.8% during sea trials on an 8,000teu container-ship deployed by Kawasaki Kisen Kaisha ('K Line') on a standard Mediterranean/Europe route.

NAPA Group President, Juha Heikinheimo, who has been at the helm since 2011, says the acquisition was a great boost to everyone in the company and he describes it

as the "biggest and most pleasant happening" for NAPA after 25 years as an independent company. "The acquisition," he says, "was welcomed by everybody at NAPA and it also brings value to the entire maritime industry."

Despite the widespread uptake of NAPA systems by the industry, the company had reached a crossroads, he says. Greater resources in terms of finance and personnel were needed beyond the reach of NAPA's longstanding private ownership, to make sure that the next step was the right step.

"This is a key point," says Mr. Heikinheimo. "We were aware that, if we stayed as we were, the company's longevity might become a subject for speculation. Coming to an agreement with ClassNK ensures that there will be no such uncertainty.

"The deal brings together two marine-specific entities whose interests are directed solely at the maritime sector. It brings a long-term partner we can trust to provide a secure future for NAPA with hugely experienced maritime support resources, a wide network and access to customers whose needs we can now really meet even better.

"The acquisition means we will be able to develop services for the benefit of the entire global maritime industry. As part of a bigger family, our new link with ClassNK gives us indirect links to a wide range of owners and we will be able to provide even better services to customers."

However, Mr. Heikinheimo also emphasizes that the acquisition will allow NAPA to follow the path of its choosing. "A French or US company acquisition, for instance,

might have brought a new culture,” he says. “ClassNK understands our working culture and the importance of taking into consideration the customers we serve. I understand this from my time at STX from South Korea, my six years working and living in France and several years for a US company and I am convinced ClassNK’s role here is another positive.

“ClassNK also understands the important opportunities that qualitative and innovative software and global services present to the maritime industry and there will be no negative change to the way in which NAPA conducts its business.”

Mr. Heikinheimo makes explicit NAPA’s commitment to continue developing new solutions and services while maintaining its neutrality and confidentiality towards all stakeholders.

“This is a strong point and it has always been important as far as NAPA is concerned. We have huge volumes of customer information and we use this to benefit our customers, including leading classification societies, who we intend to retain in our client portfolio. This information is not distributed and this policy will continue. Our entire business has been built on earning trust and this is how ClassNK wishes us to go forward and maintain our business relationships.

“*We have taken a very large and positive step forward*”

“Moreover, the fact that ClassNK is a non-profit organisation is good news for our customers. It means that any profits NAPA accrues will be re-invested in developing better and more advanced systems. NAPA will continue to operate independently, bringing flexibility to its customer-oriented services and the new arrangement means we will be better equipped to do so.”

While NAPA’s connection to shipyards is unrivalled, and it has more than 1,600 installations on vessels all over

## JUHA HEIKINHEIMO

- ◆ MSc (Eng). Naval Architecture and Industrial Economics, Helsinki University of Technology, 1983.
- ◆ MSc (Econ). Finance and Business Law, Helsinki School of Economics, 1988.

2011 -	President, Napa Group
2010 - 2011	President, STX Finland Oy
2008 - 2010	Executive Vice President, STX Europe Group
2007 - 2008	President, STX Europe, Cruise and Ferries Business Area
2007 - 2008	Senior Vice President, STX Europe (Aker Yards), Cruise and Ferries, Sales and Marketing
2000 - 2005	Metso Automation, Senior Vice President, Sales and Marketing
1998 - 2000	Santasalo Group, President
1989 - 1998	Metso Automation, General Manager, Finland, France and Singapore
1982 - 1989	Metso (Rauma-Repola), Shipbuilding and Marine Technology Division

the world to its name, ClassNK brings a new dimension to the venture.

“ClassNK’s totally different level of access to owners will allow us to open new doors with regard to decision-making from the owners’ point of view,” says Mr. Heikinheimo. “With the help of ClassNK and its customers we will certainly understand better the needs and opportunities for new solutions and services for our customers.

Mr. Heikinheimo is fully aware of the competition and the challenges ahead. “There are always too many competitors in such a bustling and fast-developing marketplace but competition keeps you on your toes and, as the only major provider combining operations and design, we will allocate more resources to fully understanding and meeting customer needs and requirements.

“The acquisition has been well-publicised and has drawn huge interest from the global shipbuilding and shipping industry. I would stress that the change of ownership brings greater opportunities, not fewer, and we will continue working together to develop products which will be of benefit to the entire maritime industry. We have taken a very large and positive step forward.”

# Industry partnership: **STENA LINE**

***ClassNK-NAPA GREEN is set to become a vital element of Stena Line's energy saving programme. Europe's leading freight and ferry company is to install the system on the ro-pax vessels Stena Ask and Stena Urd, operating between Travemünde and Leipaja in the Baltic and the Stena Mersey, deployed on the Belfast to Liverpool run.***

The decision to implement ClassNK-NAPA GREEN builds on the relationship Stena has enjoyed with NAPA since 2005 when the carrier launched its Energy Saving Programme. Lars-Erik Hellring, Project Manager, Energy Saving Programme, says Stena's close relationship with NAPA will continue unchanged under the new ownership structure.

Mr. Hellring joined Stena in 2004 after working with Wallenius Lines for 16 years and took responsibility for the Energy Saving Programme which was introduced with the intention of realizing 5% savings in fuel volume between 2005 and 2007 and 2.5% savings thereafter.

"As one of the largest ferry operators in the world, we realize that it is our social responsibility to do everything possible to protect the environment through energy conservation techniques," says Mr. Hellring.

Stena's six goals for creating a better environment are: increasing awareness about environmental improvement, reducing energy usage, reducing air, water and chemical emissions and increasing the percentage of recycled waste. More than two hundred individual environmental projects

Stena Line currently operates 39 modern and flexible ro-ro, ro-pax, combi and high speed ferries on 23 routes covering Sweden, Denmark, Norway, Latvia, Poland, Germany, the Netherlands, France, the United Kingdom and Republic of Ireland, carrying 1.9 million freight units, 3 million cars and 14.5 million passengers annually.

encompass eco-driving for masters, new propellers, electrical connection of ships in port and fitting cabin windows with sun film which has resulted in savings of approximately 247,000kWh per year / Ship

Mr. Hellring says: "We have worked a lot together over many years to get a system up and running for logging and visualizing energy consumption for our fleet. We now have a system that is very easy to use and shows results in a very good way, all to be overviewed easily onboard ship and in the office server and the best thing is that all signals and values are inserted automatically into the system.

"There are still some elements that could be improved as we continue to develop our relationship, our ways of working further and finding more energy saving projects. I believe we can continue working together and become a leader in this field.

"Starting new projects with ClassNK-NAPA GREEN system and seeing the results will be very interesting and also an indication of what we should aim for with these types of projects in our organisation."

Lars-Erik Hellring, Project Manager, Energy Saving Programme, Stena



# A green future

***In March this year ClassNK acquired NAPA in a deal worth €53 million. The acquisition was welcomed universally as a pioneering move that will improve ship design and operational efficiency. It was the culmination of nearly a decade of collaboration between ClassNK and NAPA, the most recent in 2012 being the development of ClassNK-NAPA GREEN operation optimization software.***

## ***Question: What does the acquisition mean for NAPA?***

NAPA, headquartered in Helsinki, is one of the world's leading maritime software houses. It has developed innovative software for almost 40 years, emerging as a major player on the global stage when asked to replace Wärtsilä's outdated in-house systems for naval architectural work at the group's shipyards in shipyards in Helsinki and Turku.

The software was introduced at Wärtsilä's yards in 1982 and today NAPA products are utilized by shipyards designing over 90% of the world's newbuildings as well as by owners, operators, charterers, designers, classification societies, research institutes, authorities, consultancies and universities. NAPA has approximately 700 user organisations and nearly 1,600 onboard installations.

As the global leader in supplying software solutions for ship design and operation, NAPA is committed to making 3D product modelling a standard in the ship design industry and ensuring innovative software solutions add real value for clients.

NAPA's mission is to improve safety and eco-efficiency in the maritime industry. With a solid track record in setting new standards for 3D modelling of ships and ship performance monitoring and optimization, NAPA's philosophy is that eco-efficiency starts with the building process and continues through the operational lifecycle of a vessel.

## ***Question: What does the acquisition mean for ClassNK?***

*Yasushi Nakamura, ClassNK Executive Vice President: "It provides the opportunity to expand and improve the Society's wide range of services to shipowners and shipyards*

and reflects the Society's continuing commitment to research and development and, specifically, to the growing importance of software technology in improving ship design and operational efficiency.

*"For both shipyards and shipowners, safety and performance have never been more important. Over the many years we have worked with NAPA, we have seen first-hand the incredible benefits that ship designers and operators can achieve with innovative software solutions.*

*"From our work on ClassNK NAPA Manager to our work on ClassNK-NAPA GREEN, NAPA has shown us time and again the utmost importance they place on creating high quality, innovative tools that directly contribute to the development of the maritime industry. This gives us full confidence that the team will go on to reach even greater success with ClassNK.*

*"Moreover, as a classification society that sees safety and performance as paramount, we want to ensure that innovation in software benefits the entire maritime industry – and make new innovations available to everyone. Through this agreement we can ensure that NAPA's ship design and operation solutions remain available to the entire maritime industry, while also providing NAPA with necessary tools and resources to further expand its innovative development work."*

## ***What does the acquisition mean for NAPA?***

*Juha Heikinheimo, President of NAPA Group: "After 25 years of growth into a company of 170 employees, with presence in nine countries, NAPA has grown into the world's leading maritime software house. After years of organic growth, we see this as a huge opportunity to continue to expand NAPA in a way that reflects the increas-*

ing demand for software design and operational solutions that we are seeing in the maritime market.

“In partnering with ClassNK over recent years, we have found it to be an organisation that understands the important opportunity that qualitative and innovative software, and global services presents to the maritime industry. Going forward together, NAPA will develop new solutions and services for the maritime industry, whilst maintaining its neutrality and confidentiality towards all stakeholders.

“Today, reducing fuel costs and attracting charterers are the predominant concerns for shipowners and operators. Through this acquisition, the development of clean-tech solutions for optimising fuel costs, planning and monitoring will be accelerated. In addition, continuously improving software solutions to enhance the safety of both merchant and passenger vessels, both at the design phase and during operation, will remain a core focus for NAPA.

“ClassNK and NAPA are marine-specific entities whose interests are directed solely at the maritime sector. The acquisition means we will be able to develop services for the benefit of the entire global maritime industry. ClassNK’s different mode of access to owners will open doors for NAPA. As part of a bigger family, our new link with ClassNK

gives us indirect links to a wide range of owners and we will be able to provide even better services to customers.”

**Question: Will the acquisition effect NAPA’s independence and reputation for confidentiality?**

*Juha Heikinheimo, President of NAPA Group:* No. NAPA possesses huge volumes of information and uses this to benefit customers, including a number of leading classification societies, who NAPA intends to retain as clients. NAPA will continue to operate independently and the acquisition will better equip the company to do so.

*Yasushi Nakamura, ClassNK Executive Vice President:* “ClassNK will not touch NAPA’s confidential information and NAPA will operate as an independent company. This is a very important message to the maritime industry.”

**Question: Because ClassNK is a non-profit organisation and NAPA is a commercial entity, what will happen to any profits?**

*Yasushi Nakamura, ClassNK Executive Vice President:* Any profits will be reinvested by NAPA in developing better and more advanced systems to benefit the global maritime industry.



# Achieving goals together: Wan Hai Lines

**Leading Taiwanese carrier Wan Hai Lines chose ClassNK-NAPA GREEN ship efficiency software for WAN HAI 516, a 4,680teu vessel delivered by China Shipbuilding Company (CSBC) in April 2013.**

**How and why did Wan Hai Lines become the first commercial operator to install the system?**

“At Wan Hai Lines, we are always striving to offer our customers with a competitive and comprehensive service, which means operating at the highest levels of efficiency,” says Sanders Jong, Vice President Marine Division, Wan Hai Lines.

“It is our mission to provide the best possible service and we are constantly seeking ways to improve our business,” he says. “The early adoption of innovative technological solutions such as ClassNK-NAPA GREEN has seen us take a leading position in the Asian container market.

“With 72 vessels operating on an extensive range of routes stretching across Asia, fuel efficiency presents both our greatest challenge and greatest opportunity. In order to take advantage of this, we chose to install ClassNK-NAPA GREEN on WAN HAI 516 to see if we could improve our fuel efficiency. I am pleased to say that results to date have been most favourable and this has certainly given us an edge over the competition.”

Established in 1965 and headquartered in Taipei, Taiwan, Wan Hai Lines employees around 2,700 people on shore globally and 2,300 crew personnel. The company’s fleet comprises 72 vessels ranging in size from 700teu to 6,000teu, aged from one to twenty five years. Some 93% of Wan Hai vessels are deployed in coastal, inter-Asia services and the rest operate in cross-Pacific and Middle East services.

Why did Wan Hai Lines opt to use ClassNK-NAPA GREEN? Were others under consideration and what were the specific parameters of ClassNK-NAPA GREEN that persuaded Wan Hai Lines to opt for it?

“We examined a variety of technologies before ultimately choosing ClassNK-NAPA GREEN,” says Mr. Jong. “Many new efficiency systems make various claims of great savings. However, few of these are actually backed up by proven results. ClassNK-NAPA GREEN on the other hand was already installed on an operating vessel as part of verification testing and the claims made by the system are backed up with proven results.

“ *It is our mission to provide the best possible service* ”

“The trim optimization and voyage planning features combined with weather routing has just been conducted and we hope this will allow us to achieve highly efficient and economical operations.

“In addition, the ability to create a performance model based on both a generic hull form and actual hull allowed us to carry out propulsion resistance management, which is vital for both efficient operations including speed optimization for just-on-time arrival.”

Wan Hai Lines chose to deploy WAN HAI 516 in the tests because the vessel is just a year old with everything on-board in particularly good order and because the company considered its voyage pattern to be most beneficial. In addition to trim, route and speed optimization, the project involved other elements related to the vessel’s superstructure and design.

“We retrofitted the vessel’s bow at the end of 2013 and although the trim optimization function appears reduced

we still believe it could help the crew to adjust the most effective trim at different speeds and draft and in different sea conditions,” says Mr. Jong. “The vessel’s crew can refer to voyage and speed optimization when the vessel encounters the worst sea conditions or whenever required once 16-day weather forecast data has been received.

“They know how to adjust both speed and the route required ahead of ETA in order to save fuel consumption. Different functions can be used by the crew in different ways and how best we use the system is our most important consideration.

“Crews need to be educated and convinced that they should and can use this type of efficiency tool when they serve with Wan Hai Lines and we are continually seeking ways of combining our own systems with ClassNK - NAPA systems.

How easy to use is the software? “ClassNK-NAPA GREEN is both comprehensive and user-friendly,” says Mr. Jong. “With its intuitive design it is easy to analyze and track the vessel’s performance and fuel saving activities, which can be used for reports for future actions.

“As the system can be used to plan, monitor, and follow-up operations we are able to increase eco-efficiency and reduce fuel consumption. The data collected automatically

from voyages can then effortlessly be used to create reports as well as graphs for easy analysis,” he adds.

ClassNK-NAPA GREEN helps owners and operators reduce fuel costs and CO<sub>2</sub> emissions and smoothly comply with IMO SEEMP requirements. Had, in Mr. Jong’s judgment, results met or exceeded Wan Hai’s expectations?

“Our main hope for the system was to optimize our fuel efficiency and fulfill Ship Energy Efficiency, Management Plan (SEEMP) regulations,” he says. “While various new indexes such as the Energy Efficiency Operational Indicator (EEOI) are good indicators of energy efficiency, they generally lack other important parameters such as the ability to take weather conditions into account.

“However, ClassNK-NAPA GREEN has the technology to monitor weather to provide optimal routes, making it a great indicator of actual performance.

“Wan Hai Lines has had a long and fruitful partnership with ClassNK, and it is a relationship that we are eager to build on. Adopting ClassNK-NAPA GREEN gave us the opportunity not only to work closer with ClassNK but also to become more familiar with ClassNK-NAPA’s innovative solutions. I believe that by working together we can achieve our goals.”

*WAN HAI 501, sister ship to WAN HAI 516*



# The appeal of NAPA Steel

***First unveiled in 1998, NAPA Steel has become the early stage structural design package of choice for designers and shipbuilders worldwide, as a 3D modelling and calculation tool that is central to making a ship concept a reality.***

The NAPA Steel 3D model remains unique as a means of developing a ship concept through to the end of the basic design stage. In taking practical constraints into the design process at the drawing stage, including weights, welding lengths and part quantities, NAPA Steel provides an excellent basis on which to develop detail design and even out-fitting work.

Using NAPA Steel modelling tools is now a routine part of naval architecture and shipbuilding worldwide, but the product's evolution over 16 years means that it continues to reap efficiency gains for some of the most forward-looking shipbuilders and design houses in the industry.

For designers, NAPA Steel unlocks the ability to model variations quickly through automated drawing generation, saving time and minimizing error risk, even in the case of the most complex structures.

**“ SHI believes that NAPA Steel is an effective solution to improve our design process ”**

For shipyards, taking a systematic approach to structural design and interfacing to production software enhances planning, so that builders can consider available production cost-efficiencies at the early design stage.

Asked to sum up, Byeong-Seog Kang, Executive Vice President of Engineering Division 2, Samsung Heavy Industries, says simply: “SHI believes that NAPA Steel is an effective solution to improve our design process.” Mr. Kang address-

es the benefits of using NAPA Steel at SHI in greater depth elsewhere in this issue (see **P20**).

Meyer Werft holds the distinction of being the first shipyard outside Scandinavia to use NAPA software, with relations between the two organizations extending back to 1986. An early adopter of NAPA Steel, the German company consistently uses the package in preparation to build complex cruise vessels for owners including Aida Cruises, Celebrity Cruises, Disney Cruise Line, Norwegian Cruise Line and Royal Caribbean Cruises.

In fact, a number of leading European builders involved in the construction of complex cruise ships have been long-standing users of NAPA Steel. Several have systematically developed its use, integrating it into their design processes from initial modelling to drawing and finite element modelling. Elsewhere, NAPA Steel's benefits in overall design efficiency and quality have been considered sufficient to persuade at least one yard to adopt changes in its 3D design process to accommodate its adoption.

Its selection has allowed yards to streamline processes by creating a 3D model of the steel structure, which is the basis for estimating steel weights, preparing general classification drawings and creating global finite element models. The 3D model is based on an extraction of a 2D general arrangement plan.

In addition to speed, the model's improved degree of detail is another benefit of the automatic import routine. Of equal importance to the import of data for the effective model generation is the export of data for an effective engineering process. Using NAPA Steel enables yards to pro-

duce structural and attribute drawings, weight and material lists and outputs with geometric attributes for FEM and class calculations. In some cases, the builder can include the plate thicknesses and profile sections in the export macro, yielding additional tools for a model setup.

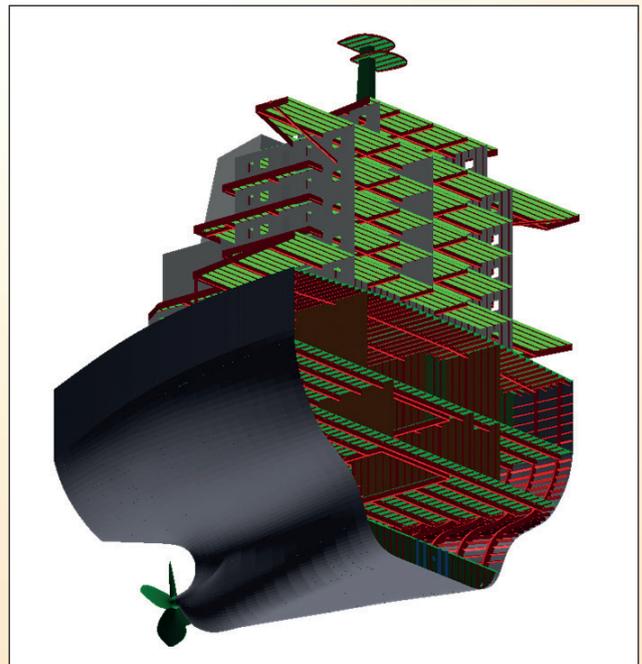
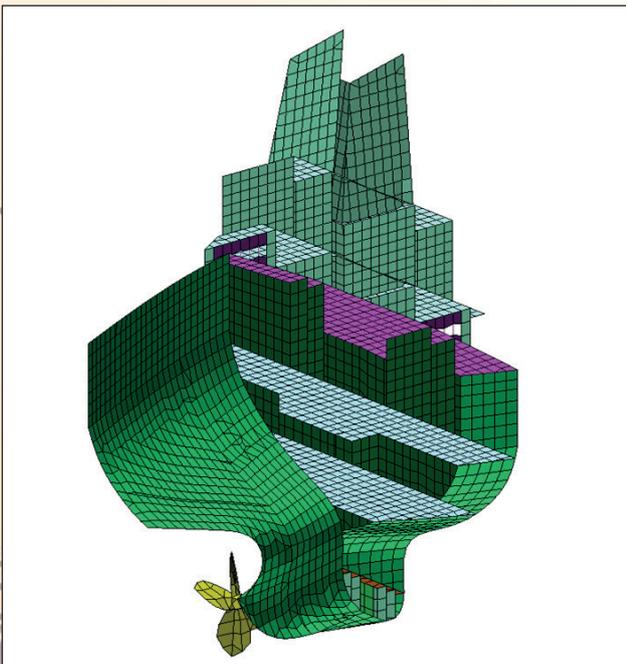
ClassNK has long been an advocate for the benefits of using NAPA Steel. “NAPA Steel enables both speeding-up and enhancing the design process,” says Mitsuhiro Kidogawa, Operating Officer, General Manager of Hull Department, ClassNK. “Thanks to many useful functions, designers can create approval drawings and FE-models and carry out design optimization in the early design phase. In addition, NAPA Steel has a big potential for design innovation by linking with class rules. ClassNK sees NAPA Steel as the most advanced design system available today.”

In considering what it is about NAPA Steel that has prompted widespread uptake, it is worth exploring Mr. Kidogawa’s reference to the package’s ‘linking’ capability a little further. After all, one of NAPA Steel’s key attributes is that it serves as a database for numerous design levels, integrating seamlessly with production and outfitting systems. As Mr. Kidogawa suggests, classification drawings can be created entirely within NAPA Steel, finite element meshes can be defined and exported to analysis programs, and finally the design can be exported to detail and production design systems.

At the basic design stage, then, the model starts from the conceptual basis and is extended with inner molded structures and the next level of structural details: frames, plates, seams, cut-outs, notches, etc. Drawings are generated as intersections from the 3D NAPA ship model, and can range from section drawings to drawings for shell and other structures. However, NAPA Steel then interfaces with the shipbuilding industry’s standard construction engineering software, including Aveva Marine and Nupas-CADMATIC, as part of a continuous design process.

Numeric information, such as stiffener lengths and plate areas, can be grouped according to various subjects like a building block, material or structure type. Automatic calculation of the quantities based on the 3D product model increases accuracy and reduces errors compared to manual calculations. Painting calculations can be made utilizing both the compartments and the structural parts of the 3D product model to get detailed reports of the painting areas, cost and weights.

Enhancements in NAPA Steel over time cover, among others, a more versatile Drawing Manager application for drawing generation, a Material Manager application for material and weight estimates, Modelling Managers for bulk carriers and container ships and a Rules Manager for Class.



*The automatic idealization and generation of FEM mesh*

# Customer always comes first:

## Sanoyas

**Leading Japanese shipbuilder Sanoyas uses innovative NAPA systems to improve vessel design and operational efficiency to benefit the entire maritime industry.**

Sanoyas is widely recognized for its use of the most modern technology for energy conservation and carbon dioxide/pollution reduction in its shipbuilding program. The company makes customer satisfaction its overriding priority.

“We use NAPA Statutory for ship lines from the initial design stage and through to the specific design stage,” says Keisuke Mizutani, General Manager Research and Development Department, Technical and Design Division of Sanoyas Shipbuilding Corporation. “We also use NAPA Statutory when formulating the basic plan to determine the general positioning of equipment, trim calculation and longitudinal strength calculation.

“NAPA Steel is used for determining the structural positioning when creating the Key Plan and Yard Plan, as well as creating ship drawings, determining block partitions, estimating weight, outputting cross-section shapes to ClassNK’s PrimeShip-HULL program and outputting Finite Element (FE) Mesh.”

*Sanoyas believes its cooperation with ClassNK-NAPA will further benefit both design and operational capabilities, smoothly incorporate the needs of the industry, and allow users to verify and feedback information to achieve improved vessel design and operational efficiency for the entire maritime industry.*

The NAPA system integrates line plans, general calculations for basic plans and structural design, and with its centralized database it means Sanoyas can achieve a highly accurate and efficient initial design stage. In addition, the software allows Sanoyas to create complete 3D product models for drawing plans, hatch definitions, structural definitions and others, as well as run visual simulations while creating the actual design. “It is why Sanoyas chooses to use NAPA solutions,” says Mr. Mizutani.

Sanoyas first installed NAPA software in August 2001, with NAPA Steel installed in October 2001. Company employees then spent almost two years familiarizing themselves with the systems, learning how to use and customizing the software to match its own environment and working practices. All in all, Sanoyas has now been using NAPA solutions for just over 10 years.

“The products are unique in that the software can create complete 3D product models and that it has the advantage of being able to run visual simulations while creating the actual design,” says Mr. Mizutani. “And, as models can be made for the planned vessel with relative ease using the data from a similar vessel, many case studies can be carried out. This greatly streamlines the entire design process allowing for optimal lead times.



“Compared with other 3D tools, NAPA Steel can create models even with incomplete information, and afterwards the model can be easily be modified during the building process. This feature makes it a perfect tool for the initial design stage which requires repeated trial and error. In addition, the ability to output various types of value information and shape information from just one 3D model is another of the major advantages of the software.

In comparison with other vendors, Mr. Mizutani says that NAPA’s response time is very quick and that in recent years improvements have been made to the functions with every version update, removing any notable imperfections.

“The results of adopting NAPA software have been most impressive,” says Mr. Mizutani. “In using NAPA Steel it has been possible to achieve highly accurate hull weights from the time of the Key Plan and Yard Plan drawing release.

“Another advantage is the ability to interactively determine structural positioning using a 3D base. The software has allowed the company to greatly streamline the work required for the longitudinal landing of the outer bilge plate through the macro developed by Sanoyas.

“Through the development of PrimeShip-NAPA Manager, producing the material required for the various approved books and completed drawings (Loading Manual, Grain Loading Booklet, Sounding Table etcetera) necessary for the prescribed output forms has become simple. Even users who are not familiar with NAPA systems can carry out work with relative ease using NAPA Manager, making it very useful in terms of operational efficiency.”

In addition to NAPA Steel and NAPA Statutory, Sanoyas is also using ClassNK-NAPA GREEN in vessel trials to monitor vessel performance in actual seas to understand operational conditions and capabilities. “We aim to feed these results back into the design to develop an even more fuel-efficient vessel,” says Mr. Mizutani.

“We believe our continuing cooperation with ClassNK and NAPA will further benefit both design and operational capabilities, smoothly incorporate the needs of the industry, and allow users to verify and feedback information to achieve improved vessel design and operational efficiency for the entire maritime industry,” Mr. Mizutani says.

*The 83,207dwt Key Light was delivered from Sanoyas Mizushima Works & Shipyard in Kurashiki in 2012. The Panamanian flag bulker is classed by ClassNK*



# NAPA Steel user: Samsung Heavy Industries

**South Korea's Samsung Heavy Industries (SHI) has become a global leader in the high-tech high-value shipbuilding, notably in the liquefied natural gas (LNG) and floating production, storage and offloading (FPSO) sectors.**

In January 2014 SHI won a 621 billion won (\$580 million) order to build five containerships for a European carrier and in April SHI announced it had concluded a 1.3 trillion won (US\$1.2 billion) deal with a company in Oceania to build two drill ships, to be delivered by the end of June 2017.

A crucial component of the group's shipbuilding program is its use of NAPA Steel, as Executive Vice President Byeong-Seog Kang explains.

**Question: Why did Samsung Heavy Industries opt to use NAPA Steel?**

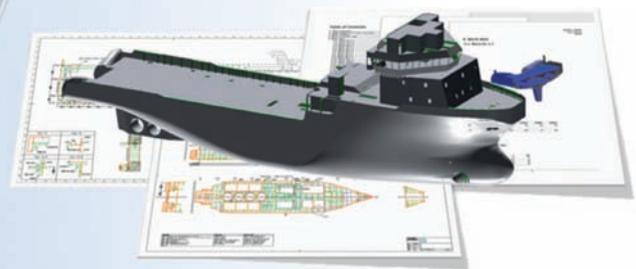
*Byeong-Seog Kang:* NAPA Steel, as the initial engineering tool, provides a compact solution extracting engineering data for the majority of structural calculation and analysis work during the basic structural design stage with only one 3D Model. NAPA's stability model, during the initial stage, can sequentially lead to the structure design, which is of major benefit as it shortens working time and speeds up the entire design process.

**Question: How long has SHI used NAPA Steel?**

*Byeong-Seog Kang:* SHI analyzed and examined the product fully before introducing it into the design process in 2010 and applying it to an actual building project in 2011. We now use NAPA Steel for all commercial newbuildings including LNG carriers and cruise ships and are testing it on offshore products.

**Question: What makes the product unique and how has it been tailored to SHI's specific requirements?**

*Byeong-Seog Kang:* For SHI, NAPA Steel's most significant characteristic and greatest merit is in providing important



data at the initial design stage, specifically regarding hull form and compartments. This basic database including hull form helps to build the 3D model for structural work more quickly even though SHI makes the initial stability calculation through NAPA. In so doing, and swiftly, the 3D NAPA Steel model can be applied to most structural design work required during the basic design stage and the model can be transferred to our engineering software and class society rule-checking systems.

**Question: How superior to other after-sales services are those offered with NAPA Steel?**

*Byeong-Seog Kang:* One of the major reasons for using NAPA Steel is NAPA's consumer response, i.e. after-sales services. We had anticipated some difficulty in introducing NAPA Steel to our design process but this has not proved to be the case thanks to the excellent service we have received from the company's head office in Helsinki and from its site office in South Korea. We have been hugely impressed with the NAPA team which always responds quickly and actively to any unexpected events or potential problems and this service underscores our intention to unhesitatingly use NAPA Steel at all times.

**Question: Can you comment please on what has been achieved through the use of NAPA Steel?**

*Byeong-Seog Kang:* The most important and significant benefit is the fact that the product allows us to drive the

integrated design environment through one 3D model. By sequentially developing one DB, we can carry out a series of relevant calculations while reducing the likelihood of having to repeat working tasks and avoiding any errors. NAPA Steel makes a major contribution to improving efficiency and designer job satisfaction.

**Question: Has SHI used other NAPA products and does it intend to do so?**

*Byeong-Seog Kang:* To date SHI has mainly used NAPA Stability and Steel.

**Question: Are there other disciplines in the work SHI does to which the NAPA portfolio is suited or might be targeted?**

*Byeong-Seog Kang:* In addition to the Structural Engineering Team, the Production Engineering Team also uses NAPA Steel. This team's main role is to control and manage hull block lifting and transportation. It utilizes NAPA Steel for calculating the weight and center of gravity of the module/block established during the early stages of design work. The team is also analyzing and ex-

amining additional fields of operation to which it might apply NAPA Steel.

**Question: How does SHI view its professional relationship with ClassNK and can the global industry expect to see more cooperation between SHI, ClassNK and NAPA?**

*Byeong-Seog Kang:* We have innovatively altered our hull design process by using the system created by the ClassNK – NAPA joint development project and have achieved significant results. These notable achievements reflect well on our reputation as a shipbuilder in an extremely competitive global market and we expect to continue this close and most positive cooperation with ClassNK-NAPA. Our current workload includes commercial ship construction and various offshore projects including a central processing facility (CPF), semi-submersible, jack-up rig, drill-ship, floating liquefied natural gas (FLNG) work and an FPSO. We anticipate an increase in the volume of our offshore work and prepare ourselves for this through working closely with ClassNK-NAPA.



## NAPA STEEL IN A NUTSHELL

### Key features

- ◆ Numeric outputs: Weight and center of gravity, bill of materials, welding lengths and painting areas
- ◆ Generating data for production planning and cost estimation
- ◆ Section modulus and radius of gyration
- ◆ Generation of drawings and visualizations for plan approval
- ◆ Data exchange with classification societies' systems for scantling analysis and FEM
- ◆ Export of the 3D structural model to outfitting and production design systems
- ◆ Automatic idealization and generation of FEM mesh, export to FEM solvers such as Nastran and Ansys
- ◆ IGES and DXF interfaces for linking to a wide variety of general CAD systems such as AutoCAD

### Output example

- ◆ Weight reports (Improved steel weight estimations)
- ◆ Painting areas
- ◆ Material lists

### FEM Meshing

- ◆ NAPA FEM is a state-of-the-art FE pre-processor converting 3D ship product models into finite element models.
- ◆ The FE-models are generated based on the geometry of the 3D ship model. Global, local and fine level FE-models can be created by excluding the unnecessary details of the 3D model from the meshing process. Automatic mesh creation based on the control parameters enables fast creation of mesh which can be finalized with the manual tools. The mesh can be exported to most common FE-solvers.

# ClassNK events in 2014

◆ **MARINTEC SOUTH AMERICA - 11TH NAVALSHORE, RIO DE JANEIRO, 12TH – 14TH AUGUST**

Use of routing and trip optimization software and the new technology and strategies to promote maximum fuel saving

*by Mitsuhiro Kidogawa, Operating Officer, General Manager of Hull Department, ClassNK and Esa Henttinen, Executive Vice President, NAPA for Operations*

Please visit ClassNK at booth 499

◆ **DIGITAL SHIP JAPAN, TOKYO 2ND – 3RD SEPTEMBER**

Please visit ClassNK at booth 04

◆ **SMM, HAMBURG, 9TH – 12TH SEPTEMBER**

Please visit ClassNK at booth B2.EG.208

◆ **SHIPTEC CHINA, DALIAN, CHINA, 21TH – 24TH OCTOBER**

Please visit ClassNK at booth 1D12

◆ **SEATRADE MIDDLE EAST MARITIME, DUBAI, 28TH – 30TH OCTOBER**

Please visit ClassNK at booth K7

## FOR MORE INFORMATION ON CLASSNK-NAPA GREEN, PLEASE CONTACT:

ClassNK Consulting Service Co., Ltd, 4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, Japan

Tel: +81-3-5226-2290

Fax: +81-3-5226-2034

E-mail: [consulting@classnkcs.or.jp](mailto:consulting@classnkcs.or.jp)

NAPA Group, PO Box 470, FI-00181 Helsinki, Finland

Tel: +358 9 22 8131

Fax: +358 9 22813 800

E-mail: [sales@napa.fi](mailto:sales@napa.fi)



# 24/7 Worldwide Full Support

As the world's leading classification society, ClassNK maintains a global service network of over 130 exclusive surveyor offices. ClassNK's surveyors work in shipyards and ports around the world, wherever they may be called upon to assess the condition of a ship, to ensure that all of our services are available to clients 24/7, worldwide. To learn more about how our commitment to service has earned the trust of clients worldwide, visit us at [www.classnk.com](http://www.classnk.com)

**ClassNK**

[www.classnk.com](http://www.classnk.com)

**Global Authority in Maritime Standards**



# As maritime needs grow, ClassNK has solutions.

As the world's economy grows and changes, the maritime industry is faced with ever greater challenges. With roughly 20% of the world's merchant fleet under class, we understand the requirements for the future of safe shipping, and we're working to develop new tools and technologies to meet the changing needs of the maritime industry. Learn more about our efforts to advance maritime safety and protect the marine environment at [www.classnk.com](http://www.classnk.com)

Global Authority in Maritime Standards

**ClassNK**

[www.classnk.com](http://www.classnk.com)