

# MPV UPDATE

2017



MPV trends

Ecolift F900

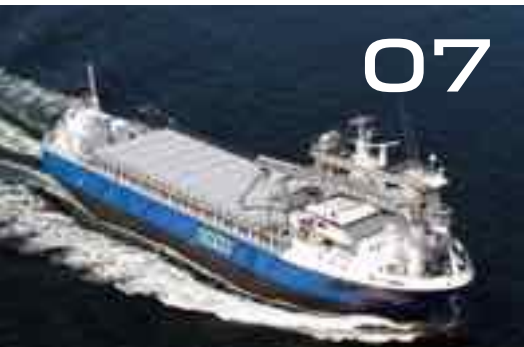
Rules & regulatory

Arctic shipping

# CONTENT

Quo vadis, MPV? .....	04	Route specific lashing .....	20
Next-generation coasters .....	07	Widen the weather window .....	21
The fleet of the future .....	10	Navigating the north .....	22
Preparing for MRV compliance .....	14	Attention required .....	26
Saving coastal ecosystems .....	16	Flexibility makes the difference .....	27
Clarity for open-top transport .....	19	Trusted forum for heavy-lift .....	31

Cover photo: Intermarine





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## DEAR READER,

The MPV market remains tense, and efficiency and flexibility are of paramount importance. Financing newbuilding projects remains difficult. The average age of the MPV fleet has risen to roughly 23 years, higher than in any other segment. A thorough rejuvenation of the global fleet is overdue for technical, economic and ecological reasons. This is especially true for the coaster sub-segment where the average age is above 27 years. In most situations modern, flexible, efficient vessels can beat cheap second-hand tonnage.

In the heavy-lift segment, Intermarine has begun renewing its fleet, ordering a series of eight new F-Class 900 vessels. The first one will be delivered in spring 2018. DNV GL is supporting the newbuilding process.

The Ballast Water Management (BWM) Convention enters into force in 2017. The staged implementation process requires applicable vessels to be equipped with a treatment system, and retrofitting can be costly. DNV GL is helping customers find practical and efficient solutions.

The EU MRV regulation requires owners to implement solutions for collecting relevant emission data and to prepare and get approval for their monitoring plans, before reporting starts in 2018. DNV GL is offering assistance with plan approvals and emission data verification. DNV GL's "Navigator Insight", a practical reporting application, has already been implemented on more than 1,000 ships.

When a vessel is to trade in Arctic waters it must comply with the new IMO Polar Code which entered into force on 1 January 2017. DNV GL can help owners meet the requirements on both new and existing vessels and obtain appropriate certification. DNV GL is also participating in an international study which aims to develop a basis for more extensive and efficient shipping in the Arctic while enhancing safety and sustainability.

In this issue we are also taking a closer look at our new rules for open-top transport, and highlighting other services related to smooth and efficient MPV operation.

Enjoy the read!

## MPV UPDATE

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# QUO VADIS, MPV?

The MPV market remains tense. Efficiency and flexibility are key. The different subsegments face specific challenges these days. DNV GL knows the ropes and is ready to support.

The multi-purpose vessel segment covers a wide range of vessel types split into several subsegments - it comprises roughly 15,000 ships, from small coasters to high-tech heavy-lift specialists. The market of active MPV owners and operators is fragmented, a lot of owners possess one or two ships only, but few of the global players have a portfolio of more than 100 ships. Competition is fierce: charter and freight rates in the MPV segment have been under pressure since the beginning of the financial crisis, and persistent overcapacities are aggravating the problem. Contrary to other shipping segments, MPVs have not experienced a recovery period. To make matters worse, markets for certain cargoes have virtually collapsed; for example, the low crude oil prices have caused a dramatic drop of orders from the oil and gas industry, in particular on the offshore side.

Furthermore, operators from other segments are pushing into the

market: "Container ships, bulk carriers and even ro-ro ships are trying to win attractive contracts for project cargo, which these ship types can carry without having to make major modifications on board," says Jost Bergmann, MPV Business Director at DNV GL. "Therefore the ability to use ships flexibly and efficiently is our customers' top priority," he adds.

Among the symptoms of the difficult market situation is an ongoing wave of consolidation initiatives with shipowners merging or selling their business. Those remaining are working hard to attract new business and better utilize their fleets.

Since the persistent economic slump has made it very difficult to finance newbuilding projects, the average age of the MPV fleet has risen to roughly 23 years, which is higher than in any other segment. A thorough rejuvenation of the global fleet is overdue for technical, economic and ecological reasons, in particular in the coaster subsegment, where the average age of the fleet is even

1,400  
vessels

Size of the current  
DNV GL-classed  
MPV fleet





Multi-purpose project carriers must be capable of handling cargo with extreme dimensions.



Coasters can navigate rivers and canals in addition to coastal waters.

27 years. Because of their operating profile, these ships could take the lead in introducing innovative, cost-efficient and low-emission technologies (refer to page 7).

**Cargo-related requirements**

MPVs are workhorses of the seas - there is almost nothing short of liquid cargo they cannot haul from point A to point B. Whether general, bulk or heavy-lift cargo, most of these vessels are able to carry whatever the market demands, including containers. Because of their great flexibility regarding the choice of cargo

they can usually avoid ballast voyages, which do not generate any revenue.

There is growing demand for longer cargo holds because some project cargo, such as wind turbine rotor blades, rails and pipes, are getting longer and longer, and individual pieces measuring in excess of 100 metres will soon be quite common. Cargo holds that can be subdivided flexibly using grain bulkheads and tween deck panels allow ships to be more versatile when carrying mixed cargoes.

There is an increasing consideration to equip heavy-lift MPVs with a heavy-lift stern ramp to allow very heavy or voluminous cargo to be loaded by ro-ro operations. Designing vessels to be able to operate "hatchcoverless" is becoming a standard requirement on modern heavy-lift MPVs (refer to page 19).

Another determining factor for the design of an MPV is the size of the ports along its prospective routes, which may limit the size of the vessels that can access them. Environmental conditions also play a major role: some vessels must be equipped to navigate in icy conditions, others may have to meet particularly strict emission limits to operate in sensitive regions. Shipowners and their customers must work together to identify the right ship type for a specific trade.

DNV GL subdivides the MPV segment into five major categories:

- Coasters: Smaller, shallow-draught vessels for short-sea operation between ports belonging to the same region, in some cases including rivers and canals; coasters typically carry bulk and general cargo. Only about one-sixth of coasters are equipped with cranes (average combined lifting capacity: 25 tonnes). At an average age of 27.5 years the fleet is well past its prime. In particular, vessels equipped with cranes average as much as 39 years.
- General dry cargo ships: Dry cargo, craneless carriers in excess of 5,000 dwt designed to carry any kind of non-containerized general cargo such as wood or steel products as well as non-packaged or packaged bulk, the latter using bags, drums or boxes. Often built as "tween deckers" in the past, they feature a double-hull design today. Possible tween decks can be arranged at different height positions. The average age of the fleet is 14 years.
- Multi-purpose vessels: Dry cargo carriers equipped with cranes with a combined capacity of up to 100 tonnes, capable >



"Due to low freight rates in their native markets, container ships, bulk carriers and even ro-ro ships are trying to win attractive contracts for project cargo, which these ship types can carry without having to make major modifications on board."

**Jost Bergmann**, Business Director MPV at DNV GL

The ability to operate "hatchcoverless" is becoming a standard requirement for modern heavy-lift MPVs.

Photos: Hasenpusch, Frank Vincenz/GFDL - CC BY-SA 3.0, RollDock Shipping

**AGE DISTRIBUTION OF MPV FLEET**

More than half of the MPV fleet in the market is older than 20 years. New environmental regulations could force shipowners and operators to renew older tonnage.

MPV segment	Number of vessels per age group										Grand total	Average age (years)
	<0	0 < 5	5 < 10	10 < 15	15 < 20	20 < 25	25 < 30	30 < 40	40 < 50	> 50		
Coasters	75	451	1,049	811	492	1,210	1,121	1,854	799	342	8,204	25.2
Coasters/ geared	3	34	49	39	72	151	139	455	360	397	1,699	39.0
General dry cargo ships	92	168	457	295	119	87	67	94	76	10	1,465	14.0
MPVs	11	138	389	200	280	192	138	290	87	10	1,735	19.2
Heavy-lift MPVs	4	110	212	84	85	37	17	30	2		581	11.6
Premium HL MPVs	45	66	159	44	40	7	5	4			370	8.0
Open-hatch GDC ships	30	73	96	26	40	29	5	16			315	10.2
Deck carriers	47	164	85	35	23	7	32	88	30	7	518	14.8
<b>Grand total</b>	<b>307</b>	<b>1,204</b>	<b>2,496</b>	<b>1,534</b>	<b>1,151</b>	<b>1,720</b>	<b>1,524</b>	<b>2,831</b>	<b>1,354</b>	<b>766</b>	<b>14,887</b>	<b>23.3</b>

- > of carrying both break and dry bulk including bales, and frequently containers; typically featuring adjustable tween decks and pontoon-type or foldable hatch covers. The average fleet age is 19 years.
- Multi-purpose project carriers (MPP) also called heavy-lift MPVs and premium MPPs (also known as premium heavy-lift MPVs or premium project carriers): MPVs designed specifically for carrying project cargo. A typical project carrier has only one or two box-shaped cargo holds and several powerful cranes capable of operating in tandem to handle heavy-lift cargo. Ships with cranes with a combined lifting capacity between 100 and 250 tonnes are referred to as MPPs (average age: 11.6 years), those with a higher lifting capacity are called premium project carriers (average age: 8.0 years). This group also includes larger liner ships which often have several cargo holds, in some cases subdivided by a longitudinal bulkhead.
- Open-hatch general dry cargo ships: Large dry cargo vessels featuring several U-shaped cargo holds designed to carry wood and paper products or other general and bulk cargo as well as project cargo, and traditionally equipped with gantry cranes, more recently however also with jib cranes. The fleet, which comprises roughly 300 vessels, has an average age of 10.2 years.

**Support from DNV GL**

With 1,400 MPVs classed and a tonnage market share of approximately 21 per cent, DNV GL is the leading classification society for this segment. What is more, DNV GL offers a broad range of advisory services. "Our top priorities are to assist our customers increasing efficiency, profitability and sustainability," says MPV expert Bergmann. In particular, DNV GL focuses on four disciplines:

- Design: Ensuring loading flexibility by basing ship design on relevant load assumptions; optimizing the hull form for the intended operating profile; enabling open-top transport of project cargo; selecting the best fuel type; and identifying route-specific cargo securing measures. All of these items increase a vessel's flexibility and efficiency.
- Equipment: Optimized design and arrangement of the cargo system, such as hatch covers including handling, seals and supports; tween decks; grain bulkheads; crane selection, placement and tandem operation as well as topped-up stowing position; and efficient loading system operation are all key criteria for MPVs.

- Propulsion: Efficient propulsion solutions, ranging from efficient 2-stroke engines to geared 4-stroke configurations when lowest engine room height is required, to suit the intended use of the ship. Customized rudder and propeller combinations maximize efficiency. Auxiliary engines may be supplemented or replaced by battery-packs used for optimization of the ships's auxiliary power management system.
- Regulatory environment: Safety and a small environmental footprint are core concerns. An advanced vessel should not only meet the existing emission, ballast water and stowage requirements but be prepared for more stringent future ones as well.

Backed by internal analyses, R&D projects and many years of experience with this ship type, DNV GL experts can assist customers in preparing for future market demand when planning new-builds. To ensure future-proof investments in new MPVs, DNV GL has developed its "Ready" approach: "The goal is to design and build ships bearing in mind potential future modifications," says Bergmann. This can include alternative fuels, retrofitting battery packs, cranes and direct positioning (DP) systems, or accommodating additional staff on board. Prudent planning can enable a ship to remain adaptable to changing requirements over its entire lifetime. ■ HSG



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Open-hatch general dry cargo ships are often equipped with gantry cranes.

Photos: DNV GL, Saga Weico/FotoFile

# NEXT-GENERATION COASTERS

With a high average vessel age and tougher challenges to operate than ever, the coaster segment has some catching-up to do. Developing the right design for needed newbuilds is a key success factor.

With almost 10,000 vessels in service, the coaster segment is by far the largest subcategory of the MPV segment, which comprises 15,000 ships in total. Comparatively small in size, these ships can carry up to 5,000 dwt according to the DNV GL definition, and are typically deployed on local trade routes. They account for roughly 66 per cent of all MPVs, but only for 23 per cent of the segment's tonnage. Their average age is 27.5 years, while geared coasters are more than 39 years old on average, which means many ships are outdated both technically and in terms of performance. There is an urgent need for fleet renewal.

Higher expectations from transport customers and tougher regulations such as those concerning ballast water management are increasing the pressure on owners to invest. "Installing a ballast water treatment system on a coaster can easily cost 300,000 euros to 400,000 euros, almost half of what a 20-year-old coaster is worth," says Jost Bergmann, Business Director MPV at DNV GL.

Such an investment does not make sense for an older ship, not to mention the challenge of finding sufficient space in the confined engine room to install the required equipment, and providing enough electrical energy to power the additional system. This means that retrofitting these older vessels often involves all kinds of compromises. As a consequence the ship may end up wasting time with ballast treatment operations, having to sacrifice five or six voyages per year that would have earned its owners money.

In view of all this Bergmann doubts that the current order book for this class, which lists 78 ships or approximately 0.8 per cent of the fleet, is all the industry can expect. "There is an urgent need to replace ageing vessels. But as long as freight and charter rates remain at the current

10,000  
vessels

or 66 per cent of  
the global  
MPV fleet are  
coasters.



Advanced coaster designs must bear in mind future trends in cargo streams and types.

The DNV GL project ReVolt, a concept design for an all-electric, autonomous coaster, has been greeted with great interest.



“We are currently discussing hybrid solutions incorporating batteries with our customers, and not only for coasters.”

Jost Bergmann, Business Director MPV

> low level, owners will hold back on new orders, not least because financing them hasn't become any easier.”

### Ships and cargo

As in all MPV categories, the design of a ship is determined by its future operating profile, cargo profile and operating area. Coasters operate primarily in coastal waters, as their name suggests. Since they frequently enter fjords, rivers and canals, their main particulars must account for the resulting limitations in addition to efficiency criteria. This mainly affects their draught but also their length and breadth.

Designs for smaller ships must strike the right balance between compactness and cargo capacity since the minimum crew size and outfitting requirements as well as the pilot, port and tugboat fees are major cost items influenced by the main particulars and tonnage.

Furthermore, the combination of main dimensions and hull form has a major effect on the required propulsion power and hence, fuel consumption. Accounting for the expected operating parameters (speed and draught distribution) is of paramount importance during the design process to make sure the required engine power output can be minimized, which will determine the ship's fuel economy and operational expenditures (OPEX).

“In confined, heavily frequented operating areas, good manoeuvrability is a key asset,” says MPV expert Bergmann.

Generally, he strongly advises designers of newbuilds to include foreseeable trends into their considerations at the earliest time possible, especially with regard to cargo streams and types. From lowering operational expenditures to maximizing efficiency, it can always pay off to take advantage of DNV GL expertise. Bergmann believes the ability to carry larger quantities of bulk cargo will be important for coasters in future, so an appropriately designed cargo hold will increase flexibility.

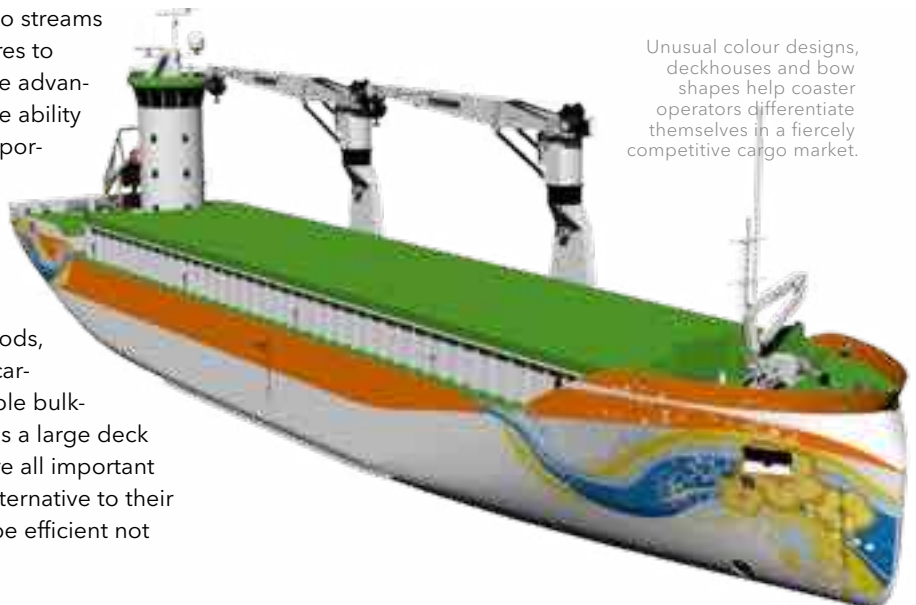
Versatility is essential for all MPV categories, including the smallest sizes: from ore to grains, and from wood, steel and paper products to packaged, palletized, boxed or containerized goods, customers' wish lists contain a great diversity of cargoes. Large, box-shaped cargo holds with movable bulkheads and efficient hatch cover systems as well as a large deck area for ships intended to carry cargo on deck are all important criteria. To position themselves as an attractive alternative to their main competitors - road trucks -, coasters must be efficient not

only at sea but also in port. Fast and flexible loading and unloading operations enabled by optimized hatch cover designs and handling systems, as well as rapid, effective cargo hold cleaning are major advantages.

### Alternative fuels and propulsion systems

There are various options regarding future propulsion energy sources: because of the strict environmental regulations in effect in ECAs, diesel (MGO) has fully replaced HFO in northern European and North American waters. Since ships travel at relatively low speeds, and coasters rarely cover very long distances, LNG might be considered rather an attractive ship fuel because the quantity of fuel needing to be bunkered is comparatively limited. Containerized tank systems could be a cost-efficient and flexible bunkering solution in terms of LNG tank arrangements, construction and bunkering infrastructure. Development and testing of related technologies has started and will be available on a larger scale soon.

“We are currently discussing hybrid solutions incorporating batteries with our customers, and not only for coasters,” says Bergmann. Combined with a shaft-driven generator and motor, or a diesel- or gas-electric propulsion system, battery packs on board can enable ships to operate in electric-only mode in regions that are especially sensitive to emissions, or to power their electric systems emission-free when in port. The batteries could then be recharged while operating on the open sea, or through a cable connection by shore power while in port.



Unusual colour designs, deckhouses and bow shapes help coaster operators differentiate themselves in a fiercely competitive cargo market.





An ageing coaster fleet is struggling to meet the requirements of modern transport. Advanced designs fare considerably better.

The right choice of fuel and propulsion concept makes sure all regulatory requirements are met and the ship can operate in a cost-efficient manner. What is more, it will satisfy cargo owners' increasing interest in a sustainable logistics chain.

Sometimes desired investment cannot be made because the commercial or political conditions are not totally clear when ordering a newbuild. However, ignoring opportunities may backfire in the future - this is where the "Ready" concept offered by DNV GL comes into play: "Ideally, newbuilds should be designed to allow retrofitting LNG systems or battery packs at a later time without having to make any major modifications," says Bergmann. "This maximizes investment value while leaving the options open for future developments."

### Working towards the fully automated ship

Apart from fuel, personnel is the most important OPEX factor. Simplified propulsion concepts and smart technologies can increase the degree of automation, for example to benefit from a reduced maintenance effort in the engine room. Jost Bergmann expects the most significant progress towards autonomous shipping to occur in the coaster segment: "Depending on the degree of automation of on-board machinery, we will probably see remote-controlled ships eventually, and in the long term even fully automated vessels on sea legs. The crews needed for berthing and mooring off as well as for cargo operations would then go aboard and come off together with the pilot."

Coasters would be an ideal ship type for this technological development since operating in coastal waters, they would always be within reach in an emergency. "True fully automated operation will not be realized until there is sufficient experience in these fields," says Bergmann. Much attention has been given to ReVolt, a DNV GL study into a fully electric autonomous coaster design

for short-sea shipping that demonstrates the future potential of this concept.

### Beating the competition

Future newbuilds will have to differentiate themselves from the existing fleet, not only by being more efficient and sustainable, but increasingly by making an aesthetic difference as well: "In this highly competitive market, shipowners want their vessels to be conspicuous, so it won't hurt if they look good as well," says MPV expert Bergmann. With attractive colour schemes, preferably predominantly green, as well as unusual deckhouse contours and bow shapes, there are all kinds of ways to enhance the looks of the ship beyond its pure functionality.

The biggest competitor of short-sea shipping, land transport by truck, has major disadvantages regarding its environmental impact. Like many other industry stakeholders, Jost Bergmann says he would like to see politics taking a more active role in this respect: "Truckers and hauliers have a pretty strong lobby; but in terms of emissions per unit of cargo transported, shipping is much more eco-friendly." The European "Road to Sea" initiative has not really achieved much in this respect, he adds. By comparison, the Norwegian NO<sub>x</sub> fund, which provides support for investments in eco-friendly ships, is a truly progressive initiative, says Bergmann.

The transport market continues to be challenging for coasters, those small multitaskers. Only a fleet of state-of-the-art, flexible and efficient ships will make a difference. ■ HSG



#### DNV GL Expert

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# THE FLEET OF THE FUTURE

Success in the fiercely competitive global MPV market hinges upon flexibility, efficiency, reliability and the ability to handle whatever cargo the market offers. A new design is leading the way.



“Something is bound to happen there,” says Frank Fischer, Managing Director of Tonnage and Procurement at Intermarine, a ship operator based in Houston, Texas. Ship operators and charterers are still holding back on ordering new ships. But the MPV fleet in the market is now relatively old while the trend towards more valuable and larger-sized cargo continues. Flexibility, efficiency and reliability are key, and new environmental regulations are driving up the cost pressures. “Older tonnage is going to disappear from the market in the medium term,” Fischer assures.

But Intermarine did not want to wait that long and the company is steadily modernizing its fleet to keep up with future standards while providing a stable capacity to its clients. The first in a series of eight new F-Class 900 vessels will be delivered in spring 2018. Classed DNVGL, the 13,300 dwt Ecolift F900 vessels will be equipped with two cranes with a 900-tonne combined lifting capacity. DNVGL provided pre-project support, annotating the specification documents and draft designs to ensure operational flexibility and flawless interaction of the entire on-board ecosystem of cranes, holds, hatch covers, tween decks and sea fastening equipment.

The newbuilds will operate under a long term bareboat with China’s CSSC Leasing. Hamburg-based Hammonia Reederei is overseeing the construction process and will provide technical ship management services. The vessels are being built at CSSC’s shipyards in Hudong and Huangpu Wenchong.

## Versatility and good utilization

Since 2011, Intermarine and Hammonia have been gaining operational experience with a wide range of heavy-lift/MPV vessels since

2011. The new Ecolift F900 is the logical and innovative follow-up to this ship type. It is designed for maximum efficiency and cargo flexibility - whether handling break-bulk, dry bulk, project or heavy-lift cargo. Notably, the Heavy-Lift Box-Hold MPV Tween-decker (as this vessel type is officially called) measures 150 metres in length and 25.6 metres in breadth with an 8.3-metre draught and can transport a broad variety of cargo anywhere in the world. This includes less-travelled routes, remote areas and small ports without advanced infrastructure.

The most likely scenario for future deployment of these ships is a well-filled cargo hold without utilizing their full cargo capacity every time. Hammonia, the developers of the new F-Class focused on maximizing cargo space and ensuring cargo flexibility. “One of our key objectives was the ability to load and unload cargo

## ABOUT INTERMARINE

Intermarine is a global leader in the transport of project, break-bulk and heavy-lift cargoes. Founded in 1990, the company, through its subsidiaries and worldwide network of 20 offices, controls an international fleet of more than 50 vessels with lifting capacities of up to 1,400 metric tonnes.

Intermarine provides ocean transportation and marine logistics services with regular sailings in the Americas, West Africa, Europe, Asia, and the Middle East, plus inducement voyages to Australia and other international ports. For more information please visit: [www.intermarine.com](http://www.intermarine.com)



The new Ecolift F900 series is optimized for cargo versatility and fast in-port cargo handling.

## MAIN PARTICULARS F-CLASS 900

### General info

- Type: Heavy-Lift Box-Hold MPV Tweendecker
- Class: DNV GL
- DWT: 13,300 mt
- Draught: 8.30 m
- Length overall: 149.99 m
- Breadth: 25.60 m
- Speed: ~15.5 knots

### Capacities

- Cargo holds: 23,200 m<sup>3</sup> bale
- Containers: 844 TEU
- Cranes: 2 × 450 mt = 900 mt combined
- Strengths: 20 mt/m<sup>2</sup> on tank top
- 5 mt/m<sup>2</sup> on tween deck
- max. 8 mt/m<sup>2</sup> on hatch covers

### Special features

- Highest ice class
- CO<sub>2</sub>-fitted
- IMO-fitted
- Australia-fitted

without using stabilization pontoons," says Captain Rochus Schneider, Fleet Manager at Hammonia. "Pontoons occupy valuable cargo space on board, and handling them takes precious time." Speedy port operations are a key concern for all parties involved.

### Maximizing cargo flexibility

Break-bulk and project cargo, such as power stations, wind turbines and reactors, is typically shipped in modules or sized as big as the available means of transport will allow, which often requires the cargo hold to remain open. "The Hatchcoverless class notation was a must for these new ships," says Schneider. The tank top can bear deck loads of up to 25 tonnes per square metre, and the cargo holds and access openings offer the greatest possible flexibility. "We can combine the tween deck levels in hatches as

needed," says Fischer. The weather deck hatches are aligned with the tween deck hatches so the slots are directly accessible down to the tank top at any time. "This is important for stowing containers – it allows us to unload part cargo as needed," says Fischer.

Of course, every cargo hold has its limits. While an Ecolift is able to carry items such as wind turbine rotor blades up to 105 metres in length on tween decks, longer ones have to be placed on the weather deck, possibly extending beyond the ship's stern. To avoid additional class or flag state conditions being imposed upon the F900 fleet for open-hatch operation or overlength cargo, Intermarine, CSSC and Hammonia agreed to place the deckhouse near the bow. "Doing so avoids blind sectors when carrying tall cargo that would require an additional fore mast radar unit," says Schneider. The deckhouse, which features integrated lateral



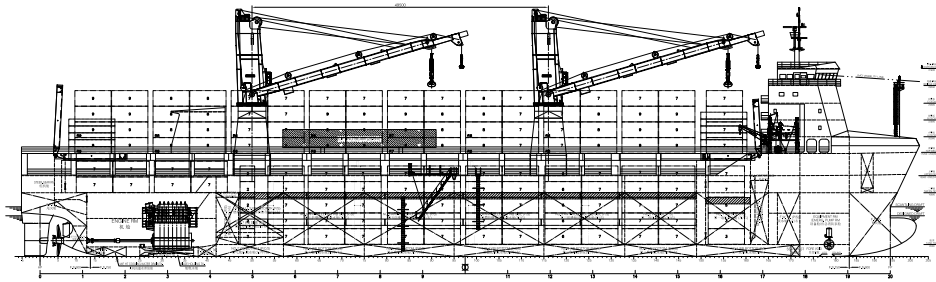
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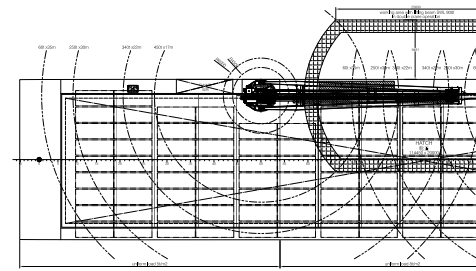


Operators have to prove their capability of loading, transporting and discharging project cargo.

The tween decks can accommodate items such as wind turbine rotor blades that are up to 105 metres long.



The cargo hold layout ensures rapid, efficient loading and unloading.



> wave bays, doubles as a breakwater. To accelerate cargo loading the project partners opted in favour of a combined hatch cover system by TTS. The forward and aft cargo holds use hydraulic folding covers. The amidships main tandem-lift working area is equipped with reinforced pontoon covers that can support up to eight tonnes. "This means we can place heavy objects such as a 4,000-tonne cable carousel on these covers," says Fischer. Pontoon-type hatch covers are also low-weight and easy to maintain.

**Innovative cranes**

The most important equipment on board a heavy-lift cargo vessel is its cargo lifting gear. "For the time being we decided in favour of proven electro-hydraulic cranes," says Schneider. But that might change as Hammonia is involved in an EU project for the development of all-electric cranes. This would promise a number of benefits including: a more straight-forward design, lower weight, easier maintenance and improved environmental compatibility.

Typical MPV ships have two large cranes and an auxiliary crane. McGregor custom-developed a crane with an extended jib for the new F-Class to maximize the accessible stowage area and enable the more flexible placement of cargo. "This makes the auxiliary gear redundant," explains Schneider. Capable of lifting up to 450 tonnes each, these cranes have a 17-metre outreach under

maximum load and can lift up to 900 tonnes in tandem operation. Both can provide high lifting capacity across the entire deck area. The long jibs also allow oversized pieces of cargo to be loaded. During sea transport the jibs can be topped up to maximize the usable deck area. The two cranes can be operated in master-slave mode by a single operator. A remote control system could be retrofitted at a later time, but for now, crane operation, and especially heavy lifting jobs, will be the job of experienced crews.

Fast, independent loading and unloading is essential, especially in small ports lacking adequate lifting infrastructure. As MPVs carry more and more containerized cargo, speedy loading and unloading is essential. Competition across the segment and beyond is fierce amid overcapacities and low freight rates across the market. "Today every major container ship operator has a specialized heavy-lift department," Fischer points out.

The volume of traditional MPV cargo in the market is no longer sufficient to keep the fleet busy. Even large car carriers compete for project and heavy-lift cargo. "Trades in our market have changed," Fischer remarks. Bulk cargo is an important source of income, so a Bulk certificate is very important for the new F-Class ships. As for the traditional MPV segment, coordinating jobs is getting more challenging. Nowadays, major industrial customers tend to put a single general contractor in charge of all transport tasks. Fischer

**ABOUT HAMMONIA REEDEREI**

Hammonia Reederei is a ship management company and an experienced project developer in international shipping.

A joint venture between three companies, all leading entities in their respective business segments, enables Hammonia Reederei to profit from the resources and know-how of its parent companies.

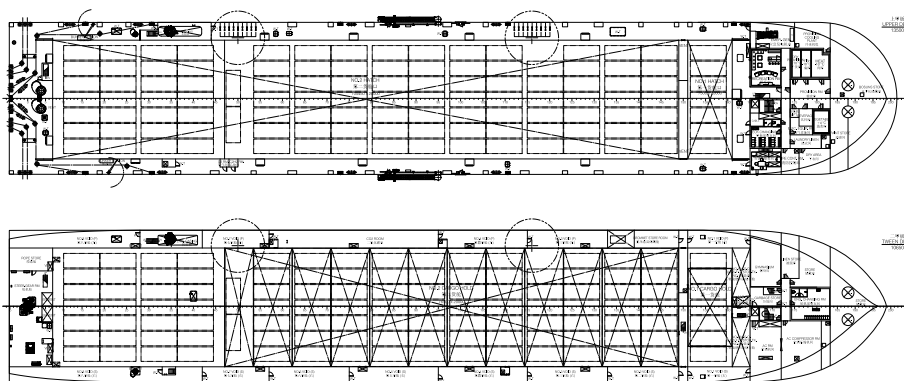
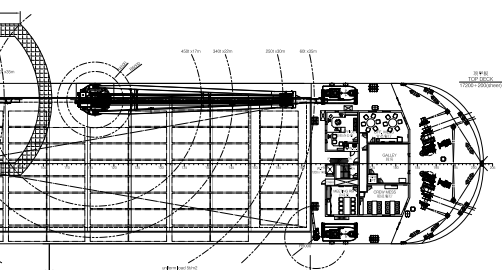
Hammonia Reederei manages vessels for closed-end retail funds, for the Hamburg stock exchange-listed HCI Hammonia Shipping AG, for institutional investors (hedge funds, private equity and family offices) as well as the ships owned by Hammonia Reederei. [www.hammonia-reederei.de](http://www.hammonia-reederei.de)



"Close collaboration with the yard and the designers is easier when class provides support at an early stage."

**Cpt. Rochus Schneider**, Fleet Manager, Hammonia Reederei

Maximizing cargo space and flexibility were key concerns for the designers of the Ecolift F900 series.



provides an example: "If a customer wants to build a new factory overseas, the chosen carrier may have to handle as much as 350,000 cubic metres of mixed cargo." Jobs such as these must be planned at least six months in advance. Customers want to know how their cargo will be transported and lifted, and demand appropriate documentation and calculations. The ship operator's Transport Engineering department provides this information, and subsequently chooses the ship type to use. The actual vessel will be picked at a later time. "You have to have a large fleet of compatible ships to carry out these kinds of orders efficiently," says Fischer.

### Backed by class

From the start, class has played a key role in innovative newbuilding projects; this is not an exception especially when speaking of the new F-Class. "Close collaboration with the yard and designers is easier when class provides support at an early stage," says Schneider. The outcome is an entire bundle of optimization measures. For example, the hull of the Ecolift F900 has an entirely new lines plan optimized for the assumed operating profile. The fully balanced twisted leading-edge rudder with a propeller cap customized by Wärtsilä was developed specifically for this vessel type. Trim optimization, stability and stowage software are all part of the standard package. DNV GL created a global finite-element (FE)

model of the vessel to analyse the structural integrity of the ship under the high and complex loads acting on the hull with its long cargo hold which helped identify where the ship needed structural reinforcement. This was especially important when the two heavy-lift cranes operate in tandem. The design accounts for the standard load cases specified by the new DNV GL rules to ensure flexibility and transparency.

The same FE model can be later used for supercargo calculations. Customers demand detailed proof that the ship is capable of handling their cargo. "Reusing the FE model lowers costs and delivers highly accurate results quickly over the entire lifetime of the vessel," says Jan Råde, Ship Type Expert MPV, Ship Structures and Outfitting at DNV GL.

Optimizing the cargo space was a key criterion when selecting the propulsion system. The two-stroke 7S40 ME-B9.5 was chosen for its efficiency and its lower overall height. Certified by DNV GL, it cranks out 4,800 kW at 105 rpm at 85 per cent of maximum continuous rating (MCR). Three diesel generators provide electricity. Intermarine and Hammonia decided against using battery packs, due to the belief the technology has not reached sufficient maturity.

In early 2018, once commissioned, the first ship will immediately begin transmitting performance, monitoring and other operational data to shore. The experience gained with the first of the new F900 class vessels will be crucial for the remainder of the series.

Nothing will be left to chance: the future crews will train at headquarters while the ships are still under construction. There is no question that Intermarine will be a strong competitor in the MPV liner and chartering shipping market. The fleet of the future will soon be ploughing the seas. ■ PL



Lessons learned with the F800 series inspired the design of the new generation of F-Class vessels. The *Industrial Faith* was built in 2011.

Photos: Intermarine, Hammonia Reederei, Hasenpusch



### DNV GL Expert

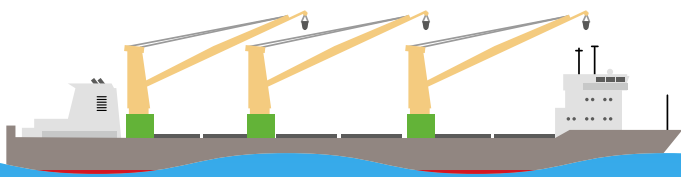
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# PREPARING FOR MRV COMPLIANCE

The EU MRV requirements apply for vessels over 5,000 GT calling at any EU and EFTA port. Accordingly, coasters and smaller general dry cargo ships and MPVs are exempted. For all applicable MPVs, monitoring plans have to be submitted to an independent verifier by 31 August 2017 at the latest.



## YOUR FOCUS/ CHALLENGES

**Study the EU MRV regulation** – familiarize yourself with the “M” (monitoring) and “R” (reporting) in particular. Identify challenges such as how to monitor cargo for particular vessels etc.

Assess your **reporting system** and decide whether it satisfies the MRV regulation. In case the system needs an extension or

replacement, allocate resources to decide on the right system, its distribution and implementation on board your vessels.

Gain confidence in data reported by your crew by assessing the related data quality. This enables you to take corrective measures before reporting commences in 2018.

## DNV GL SUPPORT

DNV GL has published an MRV guidance paper and offers webinars, regional meetings and seminars throughout 2017.

Should you have specific questions or need clarification on the regulation, please see the FAQs at [www.dnvgl.com/mrv](http://www.dnvgl.com/mrv) or contact your local DNV GL office directly.

**DNV GL’s MRV Readiness Check app** provides a first assessment of whether you are EU MRV-ready or not. It guides you through a condensed checklist covering all aspects of the regulation, giving you a clear picture of your present preparation status and leaving you with a to-do list to plan your next steps. The app is available to our customers through *My DNV GL* free of charge.

Should more detailed support be required, DNV GL offers a tailored **MRV Ready service** through our Advisory department.

**Navigator Insight** is the DNV GL solution for ship-to-shore reporting. It comes with an on-board reporting tool for manual input of all the parameters required by the MRV regulation and can be extended to cover all aspects of daily ship operations. More than 450 plausibility checks enhance data quality before the data is sent ashore. More information can be found at [www.dnvgl.com/navigator-insight](http://www.dnvgl.com/navigator-insight).

### MY DNV GL APP: MRVMP

#### The app

- The application will help users generate an MRV monitoring plan and hand it in for approval



#### Features

- Provides an easy-to-use, step-by-step template that helps with pre-filled technical information of the particular vessel to generate the MRV monitoring plan
- Smooth 1-click transition from plan to approval with discounted pricing for verification

#### Benefits

- Informs about the upcoming MRV regulation
- Saves time and effort on both the customer and DNV GL side
- All relevant vessel data is stored and accessible via *My DNV GL*
- Avoids the need for iterative clarifications

The upcoming EU MRV (monitoring, reporting, verification) regulation requires careful attention. As a very first step, companies should assess whether tools already in place today will suffice for the MRV regulation and its reporting needs or whether they need to be extended or maybe even replaced by a new solution. Important questions to ask include:

- Is my system capturing all the required data? Is it also capable of differentiating between EU ports and non-EU ports, while reflecting on the different fuels and emissions at berth as well as many additional details such as anchoring time? Does it allow for repair calls in ports not subject to reporting requirements and so forth?

- Will I be able to efficiently extract and aggregate all the required data as necessary for the emissions report and corresponding verification?
- Is the system sufficiently implemented within the company to ensure a certain data quality which matters for MRV reporting, as data will be made publically available?

Once assessed and decided, companies will need to establish management procedures to ensure successful implementation of their monitoring systems and their proper usage on board. On the way towards compliance, we propose the following actions:

Summer  
2017

Beginning  
2018

Beginning  
2019

Companies have until 31 August 2017 to create and submit a ship-specific **monitoring plan** to the contracted verifiers indicating the method chosen to monitor and report emissions and other relevant information for each vessel over 5,000 GT that calls at EU and EFTA ports.

Preparing the monitoring plan can be a time-consuming task. Its content is specified in detail by the EU MRV regulation. Requirements include ship-specific data, such as emission sources, as well as information about the development and implementation of additional management procedures.

The first **reporting** period commences at the start of 2018. Based on your individual monitoring plans, your vessels will collect all the necessary data and transfer them ashore.

We suggest you initiate the processing of data in 2017 so there is still time to take corrective action in case any system or process shortcomings are discovered.

Prepare the emissions report and submit it to the contracted verifier. DNV GL has incorporated the guideline on verification for its verification activities.

**DNV GL's MRV monitoring plan app** supports you in preparing your monitoring plans for your entire fleet – semi-automatically and efficiently. The app pre-populates technical input fields in advance where data is already available from external data sources such as vessel particulars. It supports the definition of management procedures by offering predefined text blocks. Upon completion it compiles all information gathered in the correct format. The app is available to our customers through *My DNV GL* free of charge.

#### DNV GL's monitoring plan verification

We will verify whether your company has compliant monitoring plans and is ready to submit plausible emissions reports. DNV GL will design the verification process as digital as possible to reduce the additional work for you.

**Navigator Insight** is our suggested tool for ship-to-shore data collection and reporting.

#### DNV GL's emissions report verification

Verification of your emissions report(s) starts in January 2019. DNV GL will design the verification process as digital as possible to reduce the additional work for you. We will check your emissions report against your voyage log abstract and the external data we require.



Please refer to [www.dnvgl.com/mrv](http://www.dnvgl.com/mrv) for a comprehensive overview of all topics regarding the EU MRV regulation.



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# SAVING COASTAL ECOSYSTEMS

With the Ballast Water Management Convention coming into force in September, shipowners and operators have little time left to ensure compliance. DNV GL provides comprehensive support.

It has taken the International Convention for the Control and Management of Ships' Ballast Water and Sediments (in short, Ballast Water Management or BWM Convention) more than ten years to reach this point, but following the accession of Finland last autumn, the percentage of global shipping tonnage covered by ratifying nations finally crossed the required 35 per cent threshold. The BWM Convention, a crucial measure to protect marine ecosystems against invasive aquatic species, will take effect on 8 September 2017.

With only a few months to go, shipowners must take action as soon as possible to implement the convention. All affected vessels – which includes most ships travelling international waters and using ballast water – will be required to carry on board an approved Ballast Water Management Plan (BWMP) as well as the International BWM certificate ensuring compliance with the so-called D-1 standard, the first phase of the convention. A Document of Compliance (depending on flags' convention-signing status and authorization of the class society) will be issued and carried on board to avoid challenges of documenting compliance in foreign ports.

Furthermore, all ballast water operations must be documented in a BWM record book. Since approval activities are expected to intensify as the deadline draws nearer, it is advisable to submit the BWMP for approval as soon as possible. Shipowners and operators should begin the process by identifying the affected vessels still lacking this documentation.

Where required, they should order and perform the Initial BWM Survey in due time before 8 September. Most practically initial surveys can be performed in conjunction with other due periodical surveys. The D-1 standard relates to the first, transitional

implementation phase of the BWM Convention, during which all ships not equipped with compliant ballast water treatment systems are required to exchange their ballast water in mid-ocean, at specified distances from the nearest shore, using one of several approved methods.

## BW treatment systems

The next step for owners and operators will be to review the International Oil Pollution Prevention (IOPP) certificate renewal date for each particular vessel. The first IOPP renewal date after 8 September 2017 is the deadline for installation of a ballast water treatment system, the second phase of the convention, which requires the treatment of ballast water according to the so-called D-2 standard. All relevant ships should be fitted with a type approved BW management system (BWMS) by the end of 2022 in principal.

There are various treatment technologies available, all of which have their pros and cons. Documents relating to the retrofit should be forwarded to class for plan approval as early as possible. According to the D-2 standard, ships must carry on board the type approval certificate for the BW treatment system as issued by the responsible administration, the updated BWM Plan (now covering



## MY DNV GL APP: BWMP

### The app

- The application will help users to generate a Ballast Water Management Plan and hand it in for approval

The customer portal My DNV GL provides access to the web application.

### Features

- Easy-to-use step-by-step template that helps with pre-filled technical information of the particular vessel to generate the Ballast Water Management Plan
- Smooth 1-click transition of plan to approval with discounted pricing

### Benefits

- Saves time and effort on customer and DNV GL side
- All relevant vessel data is stored and accessible via My DNV GL
- Avoids the need for iterative clarifications



D-2 compliance) and the BWMS operation manual. Newbuilds with keels laid down after 8 September 2017 will be required to be delivered with a BW treatment system installed. Newbuilding projects begun before that date should be retrofitted accordingly.

Which treatment system is the best option for a particular vessel depends on a number of factors: What ship type is it? Does the vessel have to operate in fresh or brackish water? Does it operate in cold waters or in temperate conditions? Will the system have to work in high turbidity conditions, meaning water that contains a lot of clay, algae or silt? All these questions are very important for making the right choice.

Accordingly, the selection of BW treatment technology / nominal system capacity / maker for MPVs will differ significantly depending on the ship-type sub-segment, especially when talking about retrofitting.

A general challenge for MPVs is to find sufficient space for the BWMS – MPVs often have little or no spare space in the engine room nor on the aft deck on top of ER where such systems could be retrofitted. Installation in the cargo hold area is hardly possible either as it will interfere with requirements from the cargo side for a hold that is unobstructed and as large as possible.

The spreading of invasive species through ballast water is causing enormous damage to biodiversity.

A containerized system, which is connected to the ship's systems when needed or a "distributed" design, where components are placed in the engine room, where space is available (which however involves additional costs for connecting the individual parts) are possible solutions.

As for coasters, the required treatment system capacity is naturally much lower compared to larger MPVs or open-hatch general dry cargo ships which may have multiple times the BW capacity of a coaster. On the other hand, coasters are often challenged by the fact that they need systems that can handle both salty sea water and brackish or even fresh water when operating in coastal areas, on rivers, in canals or in sea areas such as the Baltic Sea.

### Same risk area approach

The BWM Convention provides an escape clause for vessels operating in "same-risk areas", such as within a single country or area, for example the Baltic Sea, to avoid costly BW treatment.

"Same-risk area" means that ecosystems in the area are to a large degree similar so there is little risk of harming ecosystems by transferring organisms.

For vessels trading internationally, however, no agreement has been reached by port states on such areas so far, so for the time

being there is no alternative to treatment unless the vessel can follow a "no discharge" regime or make use of shoreside reception facilities.

### Decoupling

Because owners across all segments lack experience with treatment technologies and are confronted with difficult market conditions, many hesitate to invest in BW treatment and have decided to postpone installation by decoupling the IOPP certificate from the harmonized survey system. This option has been accepted by most flag states. Decoupling could give relevant vessels up to five more years until a treatment system must be installed. DNV GL is prepared to support shipowners with the related tasks which typically include:

- Correspondence with the flag state in question
- Changing the survey scheme in DNV GL's production system to reflect decoupling
- IOPP renewal survey for decoupling
- Issuance of the decoupled IOPP certificate

However, for vessels operating in US waters this option doesn't appear to be viable since the U.S. Coast Guard (USCG) has implemented different requirements and schedules for the implementation of D-2, which is linked to the next dry-docking of vessels.

Since USCG-approved BW treatment systems are now available, it is difficult to receive new extension letters from the USCG to prolong the time period during which a vessel's non-compliance is accepted.

### USCG performance requirements

The first USCG approvals of ballast water treatment systems were announced at the end of 2016. Alfa Laval, Optimarin and Ocean-Saver became the first suppliers in the world to be awarded USCG type approval and DNV GL is proud to point out it had supported the type approval testing phase of all three successful applicants. During the first quarter of 2017, DNV GL submitted two additional applications to the U.S. Coast Guard for manufacturers Sunrui and Ecochlor, respectively.

The USCG had officially appointed DNV GL as an Independent Laboratory (IL) to perform type approval testing of ballast water treatment systems in 2013.

As an interim solution, the USCG Alternate Management System (AMS) had temporarily accepted type approvals for individual vessels based on IMO standards for a period of five years after installation. Owners who installed such systems should encourage their suppliers to obtain USCG approval before their AMS-based approval expires.

### DNV GL a respected authority on BWM

DNV GL has been involved in ballast water treatment technology, testing and type approvals as well as the development of the BWM Convention itself for many years. As a Recognized



> Organization of most flag states, DNV GL can approve BWM plans, perform surveys, and issue international BWM certificates. DNV GL has published a Retrofitting Guide and a Regulatory News issue that give a concise overview of BWM requirements, and a Web-based application on *My DNV GL* helps owners accelerate the BWMP approval process. DNV GL stands ready to give comprehensive advice and support for all questions on the subject, including the best timing of surveys in view of the given time frame for retrofits. ■ AK

More information on ballast water management is available at [www.dnvgl.com/bwm](http://www.dnvgl.com/bwm)



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## SELECTED BWT SYSTEMS AT A GLANCE

### UV SYSTEMS

- **How it works:** With a market share of 50 per cent, UV systems are the most popular option at present. They use a two-step process of filtration and ultraviolet (UV) irradiation to sterilize organisms and stop their reproduction.
- **Suitable for:** UV systems are suitable for any vessel in theory, but primarily for those which do not take in too much ballast water and have flow rates of up to around 1,000 m<sup>3</sup> per hour.
- **Advantages/challenges:** UV systems are easy to install and retrofit, and have few safety concerns from a class point of view. They also operate independently of water salinity and temperature. However, they are dependent on water transmittance (UV-T) and work less well in turbid water. The U.S. Coast Guard's interpretation that any organisms released into US waters should be dead before leaving

the vessel, rather than just made infertile, means that a type-approved filter+UV system becomes more sensitive to water turbidity and may require longer holding times to ensure mortality.

Alfa Laval received USCG type approval for its PureBallast system in 2016.



### ELECTROLYTIC SYSTEMS

- **How it works:** Electrolytic treatment systems have a market share of around 35 per cent and therefore come second in the ranking of treatment systems. Many of these systems also use a filter as a pretreatment. By passing electric current through a small side-stream of seawater, they use the salt and the water molecules in a chemical reaction to generate sodium hypochlorite, a disinfectant, which is then re-injected into the ballast water to kill all organisms.
- **Suitable for:** Electrolytic treatment systems are more suited for larger vessels which have large ballast water volumes and high flow rates in the range of up to 8,000 m<sup>3</sup> per hour.
- **Advantages/challenges:** As well as being able to handle large capacities, electrolysis-based systems are very efficient and the treatment of the water is done on the intake only (possible neutralization on discharge). This means they provide on-board disinfection and some systems even provide

in-tank circulation treatment during the voyage, when treatment in the port is not feasible. One of the disadvantages is that the electrolytic reaction generates small amounts of hydrogen gas, a factor which needs to be accounted for in safety considerations. In addition, electrolytic systems are sensitive to low salinity and low temperatures, so salt or a heating system may have to be added where necessary. Finally, they are more complex to install, control and maintain compared to UV filter systems.

### CHEMICAL INJECTION SYSTEMS

- **How it works:** These systems are often used in combination with filtration. A chemical solution is injected into the ballast water to ensure disinfection. The disinfectant may be liquid or granular and will sometimes require neutralization prior to discharge overboard. Some of the active substances which are commonly used include sodium hypochlorite, peracetic acid and chlorine dioxide.
- **Suitable for:** Chemical injection systems are deemed appropriate for most ballast flow capacities ranging up to 16,000 m<sup>3</sup> per hour and are mostly used to treat ballast water on vessels with larger capacities and flow rates. The technology also makes it suitable for infrequent usage and is also good for disinfecting tanks that have been used without treating the ballast water during ballasting and deballasting in local waters.
- **Advantages/challenges:** Chemical injection systems generally have low power requirements because their only energy consumption comes from distributing the chemicals into the ballast water. With the dosing pump as their main component these systems require

less space on board, making them easier to install than other technologies. However, the chemicals which are used, such as Peraclean or Purate, are trademarked, and supply might be limited to specific ports. In addition the chemicals must be stored on board in closed containers and may be hazardous. The use of chemicals requires implementation of strict safety provisions and crew training. Having to stock up chemicals regularly also generates additional operational costs compared to UV or electrolysis systems, which have electricity as their main cost item.



HHL Valparaiso was the first vessel to sail the Northern Sea Route open-hatch, carrying two gantry cranes.

# CLARITY FOR OPEN-TOP TRANSPORT

Promoting safety and efficiency, DNV GL presents rules for open-top transport of extremely large cargo on board multi-purpose vessels (MPVs).

When multi-purpose vessels carry extremely large cargo that is too large to fit into cargo holds and cannot be placed on top of the hatch covers either, such as cranes or wind turbine towers and foundations, open-top transport is the only option. "Open-top" means that the vessel is operating with open hatch covers – a practice normally prohibited by freeboard regulations. The exemption for open-top container ships documented in MSC/Circ. 608 cannot be applied directly to multi-purpose vessels since MPV cargo holds are arranged quite differently. To close this gap, DNV GL engaged in an open dialogue with industry and flag state representatives, which led to the development of a new set of rules specifically for MPV open-top transport. These voluntary rules will enter into force on 1 July 2017. MPVs built according to these new rules will receive the "Hatchcoverless" class notation. Nevertheless, in every such case it will be necessary to liaise with the responsible flag state in a timely manner to request an exemption.

A number of key elements of the rules originally developed for container ships had to be modified for MPV operations:

**1 Seakeeping model test**  
Model tests are required to establish how much green water can enter the open-top cargo hold under extreme wave conditions. To ensure meaningful test results, the number of test runs and the ambient conditions were adapted to reflect the specific properties of MPVs.

**2 Intact stability at flooded cargo hold condition**  
Large quantities of rainwater can accumulate in an open cargo hold, which can severely affect ship stability and cause the vessel to capsize in extreme cases.

The rules for container ships require examination of a scenario where one of the open cargo holds is completely filled with rainwater, which is an extremely conservative assumption. Since MPVs frequently have just one very large cargo hold, this rule cannot be applied. Based on an analysis of global weather data, DNV GL proposed to limit the assumed fill level to a maximum of 2 metres. Where lower levels of water are found to have a significant negative impact on stability, that scenario must be accounted for as

well. As part of the new rules a tailored approach for accounting for the effect of free liquid surfaces on intact stability has been established.

**3 Damaged stability**  
The rules for container ships assume that, given the properties of the hypothetical container cargo, no more than 70 per cent of the cargo hold can be filled with water. Project load on an MPV, however, may have very large external dimensions but comparatively little displacement. Damaged-stability calculations must therefore assume the cargo hold to be filled to 90 per cent of capacity at both partially and fully loaded draught condition.

**4 Firefighting systems**  
Standard CO<sub>2</sub>-based firefighting systems will not work with the cargo hold open, and systems required for open-top container ships will not work on MPVs because of their different cargo hold arrangement. The new rules recommend fixed fire monitors at both ends of the cargo hold ensuring sufficient coverage of the cargo hold area.

**5 Dangerous goods**  
The requirements of MSC.Circ. 608 for the carriage of dangerous goods in packaged form in and above open-top cargo holds apply to MPVs as well. The carriage of dangerous solid bulk cargoes without weathertight hatch covers is normally not permitted but exceptions may be possible on a case-by-case basis.

With the new "Hatchcoverless" class notation DNV GL has developed a standard that carefully balances safety and commercial considerations, giving practical guidance and predictability. ■ SM



## DNV GL Expert

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# ROUTE SPECIFIC LASHING

The securing of heavy project cargo on board is a hotly debated issue. The current CSS code falls short of addressing all relevant aspects. DNV GL contributed to an IACS proposal for practicable amendments, which will give a sound basis for route specific acceleration factors.

Complex cargo demands a reliable sea fastening strategy.



Transporting project cargo by ship is a complex task that requires specific expertise. "The way the cargo is secured to the ship is a key aspect," says Daniel Abt, Senior Approval Engineer at DNV GL. A sea fastening concept is prepared that aims to prevent cargo from shifting and compromising vessel stability, especially when the cargo is very heavy. Needless to say, it is in the best interest of all parties involved to make sure the vessel and cargo - which is often very valuable - reaches its destination intact.

The key physical quantity is the acceleration acting upon the cargo as the ship moves about. The magnitude of this acceleration determines what means the crew will use to secure the cargo - additional stoppers, chains or other fastening material. The most important factor is the expected significant wave height. "There are various approaches to deducing the underlying load assumptions," explains Abt.

## Conservative basis

In essence, all non-containerized cargo is subject to the IMO Code of Safe Practice for Cargo Stowage and Securing (CSS code). This global standard defines the basics of cargo sea fastening and describes common devices to use. Its Annex 13 provides a relatively simple calculation methodology. The software application Lashcon, which is used around the globe, relies on it.

However, this methodology bases its rules for all global routes on the conditions in the North Atlantic Ocean, which has comparatively high waves. "That is a rather conservative basis," says DNV GL expert Abt. While the CSS code includes an escape clause allowing for reduced acceleration assumptions for a "restricted area, taking into account the season of the year and the duration of the voyage", the clause unfortunately fails to provide more specific guidance.

An additional challenge is that there are more and more cases where a ship's design limits are reached, for example when transporting very heavy cable drums or huge offshore structures. "The

CSS code does not address such cases, which means that it is difficult to design a fastening acceptable for marine warranty surveyors," says Abt. Even when the cargo is less demanding the CSS code is at times extremely difficult to apply, requiring cargo to be secured with huge numbers of steel ropes, chains or polypropylene straps or even to be welded directly to the ship structure to ensure compliance, although the intended sea area and voyage duration are rather harmless.

## Clear rules are needed

Ship operators therefore sometimes resort to other methods of calculating the proper sea fastening strategy, such as the DNV GL-ST-N001 standard for the offshore sector. Owners planning to ship extremely valuable cargo sometimes order a special motion analysis such as those offered by the DNV GL Maritime Advisory Service. Such an analysis can demonstrate that the ship structure will not be subjected to excessive stresses by the cargo. If this approach is chosen, it will make sea fastening more manageable; but the analysis only applies to the given case.

"We think there should be clear stipulations ship operators can rely on," says Abt. Safety is always the top priority, he stresses, but rules need to be flexible enough to make sense for a specific transport situation and be understandable and practicable for the people executing them. An appropriate proposal has been submitted by the International Association of Classification Societies (IACS). The responsible IMO committee will meet next September and may further discuss the proposal. As always, DNV GL will support these efforts by providing expertise. ■ HSG



### DNV GL Expert

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# WIDEN THE WEATHER WINDOW

The time window for challenging project cargo jobs can be unreasonably narrow when using the standard method to compute design loads. DNV GL offers fast and precise motion analysis services.

Ship motion in seaway is important input information when calculating design loads for ship structures and cargo, including sea-fastening elements. Traditionally the industry has been satisfied using the empirical loads specified by regulations which cover all possible scenarios encountered during ship operation. However, these design loads may be too conservative for a given transport project, region and season. The industry increasingly performs direct computations, which in some cases expand the usable weather window and can unlock added efficiency potential. Ship motion analyses are complicated because they involve nonlinear physics as well as consideration of viscous effects and the complex interaction between ship and waves. CFD (computational fluid dynamics) analyses need to be carried out for many combinations of ship speeds, heading angles and wave conditions, typically within a very short period of time. Thus, highly sophisticated numerical simulations as used in R&D or model tests cannot be used, as they take too much time or are too costly. It is industry practice to use simpler computational methods – at the cost of introducing unknowns, uncertainties or possible errors. To compensate for these factors it is customary to apply conservative empirical estimates, which unfortunately reduce the potential gains of direct analysis.

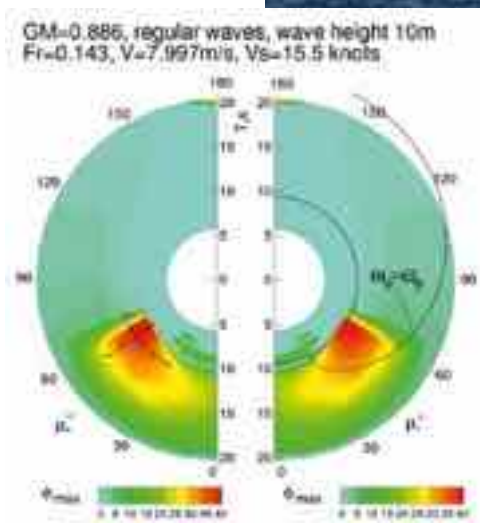
## Enabling a wider range of projects

DNV GL has developed the technology and capabilities for rapid, yet more accurate predictions of motion, acceleration and loads without compromising safety standards or vessel performance. DNV GL's scientific approach will not only help expand the operational window for a project but may in some cases even be the enabler of a project that would not be possible otherwise. Applying this also demonstrates to external parties, such as cargo owners and marine warranty surveyors, that a non-standard transport job is planned and conducted in a responsible manner.

The DNV GL approach is based on the application of cutting-edge CFD software combined with parallel simulations, based on our own ongoing research and development work as well as practical application within the scope of maritime advisory work.



Project-specific motion analysis can enhance operating flexibility.



Graphic representation of a ship motion analysis in waves.

The typical workflow for developing operational limits for a specific transport project comprises several steps. Usually the customer submits the relevant project information and available models DNV GL is setting up an analysis model from. Preliminary results are presented to the customer to allow for adaptations within the process before the final results are provided.

A project may take one to four weeks, depending on the available time, the scope of work and the required accuracy.

The project team consists of two to four engineers and a project manager, depending on the scope of work. Regular status meetings with the customer have shown to be an efficient way to ensure that the time and budget limits and the customer's expectations are all met.

DNV GL is always ready to assist customers with timely ship motion analyses and design load calculations for specific project cargo jobs. ■ VS



### DNV GL Expert

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# NAVIGATING THE NORTH

Arctic sea ice is at a record low and industrial development projects are underway in certain Arctic areas. Shipping activities involve both trading along the Northern Sea Route and delivery of goods to ports in the Arctic region. The IMO Polar Code defines new standards for safer and environment-friendly operations. A new international study supported by DNV GL is taking a closer look at the promises and challenges of the North-East Passage.

Intensifying sea traffic in Arctic waters comes with special challenges which need to be understood to mitigate risks.



Transporting goods from Asia to Europe normally takes around 20 to 25 days if you travel from China to the UK. Most vessels leaving from the Far East travel through the Suez Canal to reach the European continent. For a long time this was their only option, but the global rise in temperatures has created an alternative: the North-East Passage. Instead of heading south, ships can now travel to Europe on the northern Sea Route, which takes them along the coast of Northern Russia into the Arctic Ocean and the Barents Sea.

### Arctic 2030

This route is currently open for about four and a half to five months per year and can cut travel time by up to twelve days, reducing a ship's fuel costs, and with it, its overall environmental footprint. But does this theory live up to the industry's expectations in practice? What

efficiency gains can be realized? What are the risks involved? And what logistical challenges could operators face when their vessels navigate the Northern Sea Route?

To investigate this, DNV GL has teamed up with experts from across the northern hemisphere in the Arctic 2030 project, bringing together the Centre for High North Logistics, the University of Busan, South Korea, FSUE Atomflot, the Russian government-owned operator of the nuclear icebreaker fleet based in Murmansk, the Norwegian University of Science & Technology, and the Norwegian Shipowners Association. The project is supported by the Norwegian Foreign Ministry and contributions from the participants themselves. The goal of Arctic 2030 is to perform a comprehensive analysis of current commercial transport and logistics operations along the Northern Sea Route. >



The duration of a trip from eastern Asian ports to northern Europe can be cut by up to twelve days.

## HOW TO COMPLY WITH THE POLAR CODE

The code entered into force for all new vessels 1 January 2017, and for existing vessels at the latest at first intermediate or renewal survey after 1 January 2018. The additional MARPOL requirements have entered into force for all vessels.

To comply with the Polar Code, a ship and its crew must be certified for operations in the geographically defined polar waters. In these regions

the ship must be operated within the limitations stated on its polar ship certificate and follow the operational requirements defined in the code. The main parameters limiting operation include the vessel's ice class and design temperature.

The code is divided into two parts. Part I related to crew and vessel safety (add-on to SOLAS), while Part II addresses

protection of the environment (add-on to MARPOL).

Based on an initial assessment of the planned operation, the additional hazards are identified and then addressed in the mandatory Polar Water Operational Manual. Most vessels will need some additional equipment and crew training to comply with the code. Finally, an on-board survey must be carried out before the polar

ship certificate can be issued. DNV GL has been authorized by major flag states to approve related documentation, perform the relevant surveys and issue Polar Code certificates. DNV GL Maritime Advisory may assist with equipment assessments and reviews.

For more info, see [www.dnvgl.com/polar](http://www.dnvgl.com/polar)

> The study covers aspects such as potential efficiency gains, the cargo base, costs, infrastructure needs as well as security and safety. "It aims to gather the data, performance indicators and scenarios needed to assess the feasibility and reliability of using this route in the future," says Morten Mejlænder-Larsen, Discipline Leader Arctic Operation & Technology at DNV GL - Maritime.

### Safe Arctic operations

A remote and inhospitable environment combined with limited infrastructure makes safety an absolute priority in Arctic operations. "In many respects the dangers in the Arctic differ little from those in other sea regions: collision with a vessel or installation, fire and explosion hazards, structural failure, grounding, an accidental oil spill. But the consequences of any individual incident could be much more serious," explains Mejlænder-Larsen.

Added regional hazards such as ice, topside icing, low temperatures, darkness and fog change the risk equation. Many of these factors were

considered in the development of the IMO Polar Code, a set of internationally agreed minimum standards for ice operation which has been in force since January of this year.

### Vessel-specific considerations

Most of the ship traffic takes place over the summer months and a vessel's risk profile varies according to its type and mission. "Off-shore support vessels tend to work in groups. If one gets into trouble, another one can come to its aid, but on the flip side there is a heightened danger of collision or contact. Cargo ships in transit will be heavily dependent on icebreaker assistance. For expedition vessels and large cruise ships it is essential to provide additional passenger training to make sure everyone on board is aware of the risks particular to this environment," says Mejlænder-Larsen.

The elevated risk for passenger vessels and tankers is reflected in the Polar Code's additional training requirements for officers on watch on board these two vessel types.

When assessing the feasibility of Arctic operations, the availability and cost of

## SHIPPING ACTIVITIES IN 2016

Based on detailed AIS information the project mapped 236 voyages by 88 different vessels in the NSR area in 2016. Typical voyages carried out by MPV-related ship types are listed below.

### For heavy-lift and module carriers to Sabetta:

- From Europe: 14
- From Asia: 15
- From other places: 4

### Dry bulk vessels to Sabetta:

- From Russia: 43
- From Europe: 6

### General cargo vessels to Sabetta:

- From Russian ports: 111
- From Europe: 27
- From Asia: 16



emergency response services during each leg of the voyage is one of the main considerations for all vessel types. "Operators need to be aware that some ports along the route are not open or equipped to handle international traffic," Mejlænder-Larsen explains. "Furthermore, the costs of a response are hard to predict and not always transparent."

Since the Arctic is an environmentally sensitive region, it is also necessary to draw up effective plans and prepare resources for efficient clean-up in the event of an oil spill, apart from making sure the vessel is fit for Arctic operation and its crew has the relevant skills and experience.

### Ready for the challenge

"Our investigations found that infrastructure in the region is slowly improving, but future development will depend on the attractiveness of the area to potential investors. Recent activities have mostly been driven by the oil and gas industry, particularly the Yamal LNG project," says Mejlænder-Larsen.

When looking at the trends, low oil prices and a drop in commodity prices have reduced the appeal of the North-East Passage to international shippers. In 2016 only 19 transits were recorded, as opposed to 71 in 2013. "However, with the Polar Code rules for iceclass vessel designs in place, as well as a growing body of experience and deeper understanding of the risk involved, it may only take a turn in the markets or a rebound in oil prices for that interest to be rekindled," says Mejlænder-Larsen. "If and when that happens, we at DNV GL will make sure our customers are well prepared for the challenge." ■ KT

Photos: Vladimir Meinik - Fotolia; DNV GL



#### DNV GL Expert

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### PREPARING TO CROSS THE NORTH-EAST PASSAGE

- **Certification:** Operators should check whether their vessel has both a valid Polar Code certification and the required ice class. The requirements vary depending on the time of year and the conditions predicted by the Northern Sea Route Association.
- **Communications:** Operators need to make sure their vessels have communication equipment adapted to the planned sailing route. GMDSS Sea Area A3 is acceptable for operations up to 70°N/S. GMDSS Sea Area A4 is required for operations above 70°N/S. Ships travelling through these polar regions must carry a DSC-equipped HF radiotelephone/telex. Non-GMDSS systems, such as Iridium, can be effective for voice and data communication in polar waters.
- **Operation:** Vessels travelling the North-East Passage are required to have a Russian ice pilot on board during the relevant part of their voyage. In addition they need to be accompanied by a nuclear icebreaker along sections of the route where ice may be present. This area normally stretches from the Kara Sea to the Bering Strait. A date and meeting point need to be arranged in advance and DNV GL recommends to arrive ahead of time. Operators need to be aware that they may have to adjust their schedule at short notice, depending on the availability of an icebreaker.
- **Safety:** Even during the summer months there is a risk of encountering drift ice in the North-East Passage. This will have an impact on the vessel's speed. Finally, the availability of search and rescue teams is somewhat limited on the Northern Sea Route. It may not always be possible to gain access to the nearest port, as some are open to Russian vessels only.



The Arctic 2030 report will be available for download at [www.chnl.no](http://www.chnl.no) from June 2017.



For more insight about the IMO Polar Code and related services please visit [www.dnvgl.com/polar](http://www.dnvgl.com/polar)



Lashing platforms carrying project cargo fall within the scope of CSC.

It is by no means a new requirement. Nevertheless, it has taken some operators of multi-purpose vessels by surprise, says Andreas Hübner who has first-hand experience. The DNV GL expert often sees surprised faces when he mentions the International Convention for Safe Containers (CSC) from 1972. "Just because a ship manager believes that he does not own or transport any containers does not mean he can neglect the CSC," says Hübner.

Most MPVs – depending on ship size – have one or two flat racks on board. With a base the size of a 20-foot container, they carry up to eight equipment boxes fitted with twist-locks. Also lashing platforms used to distribute the load when carrying project cargo are frequently found on board MPVs. When not needed, these steel structures either remain on the pier waiting for their next use, or are taken to their next place of use inexpensively by container ship.

### Certification required

A fact many are unaware of: platforms which have the same length and width as an ISO 1496-5 container base and are equipped with top and bottom corner fittings; flat racks with a fixed complete end frame; and bin racks with twist-locks and fixed bins or other equipment fall within the scope of CSC when carried on board. Every container used in international transport, including flat racks and platforms, must bear a valid safety approval plate (or "CSC plate"). "This allows terminal operators to determine instantly whether a given container is safe for the purposes of the convention," Hübner explains.

Most platforms, flat racks and bin racks are already certified when sold. But that is not enough: the CSC safety approval must be renewed after the first five years following purchase, and every 30 months thereafter. "To date, an expired CSC plate has had no significant negative consequences for the ship operator," Hübner points out. But this is changing. In Australia, port state control is already requiring a valid certificate for lash bin racks. "If the ship is unable to provide it, the terminal operator has to prohibit

# ATTENTION REQUIRED

It may not look like a container – but it could still count as one. Lashing platforms and other steel elements on board ships are subject to regular maintenance and inspections.

unloading of the bin rack at the quayside," Hübner continues. This means the ship's crew have to unload the bins themselves one by one. Says Hübner: "That is tedious, time-consuming and costly."

From a safety perspective the Australian policy is absolutely understandable, not least because the condition of platforms and racks is often deplorable after a few years of use, which is hardly surprising: "These steel structures are on the ships' weather decks 95 per cent of the time when the vessel is at sea where they are exposed to the elements, including green water," says Hübner. "Also they are offloaded and loaded frequently in connection with any cargo operation. Even with regular maintenance by the crew they suffer damage quite easily."

### Important recommendations

Condition checks of container frames and racks as required by the CSC Code can be performed by the owners themselves. But in case of doubt, it is better to have a surveyor or classification society perform the job for the sake of credibility. This is especially true when the manufacturer's original CSC certificate has been lost. A class surveyor is easy to schedule. Hübner points out: "We are on board on a regular basis and can check this at the same time."

When purchasing new platforms, flat racks or bin racks, owners should choose certified products only and make sure the supplier submits a certificate bearing the proper registration number. It is also advisable to document routine inspections, e.g. in the vessel's PMS system, which makes it easy to replace a missing CSC plate. "With the intense wear these products are exposed to at sea, CSC plates go missing more often than you would expect," Hübner points out. ■ PL



A valid CSC plate on containers and racks is mandatory.

**"Just because an operator does not own or transport any containers does not mean he can neglect the CSC."**

**Andreas Hübner, Head of Section Container Certification at DNV GL**



### DNV GL Expert

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# FLEXIBILITY MAKES THE DIFFERENCE

Continuing a long-standing, highly productive working relationship, Oshima Shipbuilding and DNV GL have developed a state-of-the-art design for a 65k, open-hatch general cargo carrier.

High efficiency and flexibility are the keywords that best describe the purpose of a new joint development project between Oshima Shipbuilding and DNV GL. Oshima, well known as a specialist in open-hatch carrier design, was envisioning a modern, high-performance ship utilizing the best available technologies and adapted perfectly to current market demand. In addition to their extensive combined experience, Oshima and DNV GL used input from major owners as well as extensive market research accounting for fleet profiles, trades and cargoes.

## Ship size and cargo hold configuration

The design is intended for a wide range of project cargoes and packaged goods, such as the carriage of lumber, wood pulp, coils, ingots and carriage of other major and minor bulk cargoes. As cargoes increase in quantity, diversity and size, open-hatch

general cargo carriers often carry a variety of goods during the same voyage, which requires many port calls along the route. Flexible loading options and excellent utilization of the available cargo space were therefore top items on the project agenda, along with high operational efficiency and emission compliance.

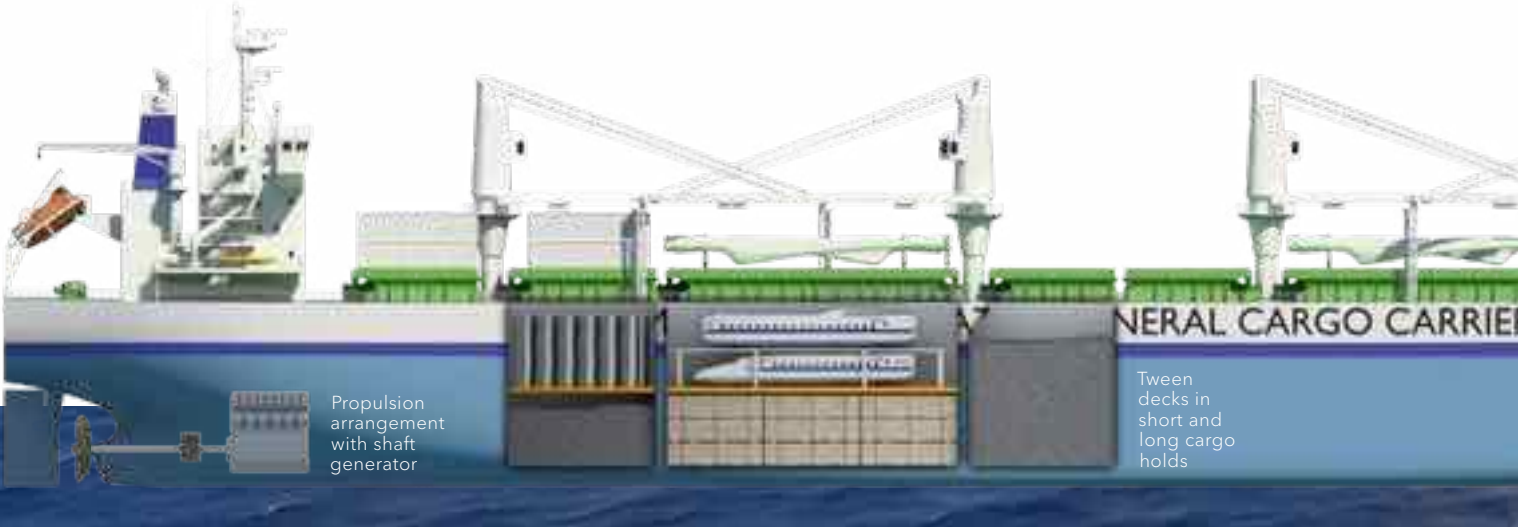
The deadweight and main dimensions were chosen based on market demand and an assessment of the current fleet and order book, accounting for port limitations, trade patterns >



Trade patterns analysed for determination of ship size and operating profiles.



Market research and direct input from owners and operators shaped the design concept.



> and cargoes. Considerations were also made as to find the optimal hydrodynamic performance for the given size. The design features a high cubic and deadweight capacity at a shallow draught, enabled by an increased breadth without compromising performance. This allows the ship to enter a large number of ports. It has eight box-shaped cargo holds with full-width hatch openings, including two long holds for larger project cargoes. Holds No. 2 to No. 7 have piggyback-type hatch covers while holds No. 1 and 8 feature folding covers. Rapid cargo handling is ensured by four all-electric jib cranes, a cost-effective selection offering flexible loading compared to the more expensive gantry cranes.

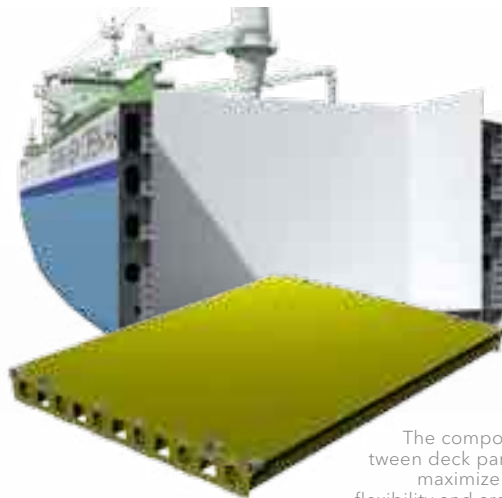
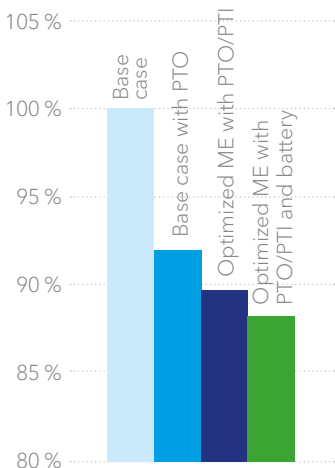
**Composite tween decks**

The ship is specifically designed for the use of tween decks to maximize space utilization. Holds 2, 3, 6 and 7 can be compartmentalized in this manner. For weight reduction Oshima, DNV GL, COMPOCEAN and IKNOW Machinery jointly developed

innovative composite tween deck panels, each made of a single-skin GFRP (glass-fibre-reinforced plastic) top plate bonded to corrugations, which in turn are bolted to the end plates. These composite tween decks are 50 per cent lighter than steel versions without sacrificing any of the functionality, service or safety. The developers accounted for load carrying capacity, dimensional stability, impact resistance, reparability, environmental effects, vibrations, wear and fire safety. Benefits include significantly shorter port handling time, reduced maintenance costs and a simple, cost-effective manufacturing process. A full-size prototype was produced and tested and the design concept has received approval in principle (AiP) from DNV GL. The AiP confirms that, while some details and design solutions need further clarifications, the innovative composite design concept is feasible for application in bulk carriers and cargo carriers.

A similar approach was taken for the hatch cover design where an existing joint development of DNV GL and Oshima was adapted for the current project. In 2013 DNV issued an AiP for the

**FUEL COST PER YEAR COMPARED TO CONVENTIONAL SYSTEM**



The composite tween deck panels maximize the flexibility and are 50 per cent lighter than their conventional steel equivalents.

“We believe this new ship design will be very useful for our customers. The ship has great cargo flexibility and several new technologies for general cargo carriers have been implemented, such as composite tween decks, a PTO/PTI shaft generator and batteries.”

**Tatsuro Iwashita**, Deputy Yard General Manager



A full-size tween deck prototype was produced and tested and the design concept has received approval in principle (AiP) from DNV GL.



**KEY FACTS**

**Trade and cargo flexibility**

- Ship size and cargo hold arrangement adapted to market demands for trades and cargoes
- Application of new technologies and materials little used for general dry cargo ships
- High cargo utilization and flexible loading with tween decks

**Energy efficiency**

- Fuel-efficient operations with new propulsion configuration
- Energy-efficient crane operations with hybridization

**Fuel alternatives**

- Several options for emission compliance

composite hatch covers followed by Panama flag approval for fire safety.

**Energy-efficient power supply system**

A feasibility study by DNV GL has investigated the fuel-saving potential of battery pack-assisted crane operation. This found that a hybrid system can save up to 20 per cent of annual fuel costs for crane operations, resulting in an estimated six- to nine-year investment payback time where the range depends on if the auxiliary engines are run with LSFO or MGO as fuel. With the battery pack absorbing peak loads, one or two auxiliary engines running close to optimal load - instead of the usual two or three - can supply enough power for crane operation. This result in a potential reduction of genset running hours of 50 per cent. When lowering cargo, the cranes can regenerate energy and feed it back into the batteries. An additional DC/AC inverter will allow the batteries to be connected to the main switchboard.

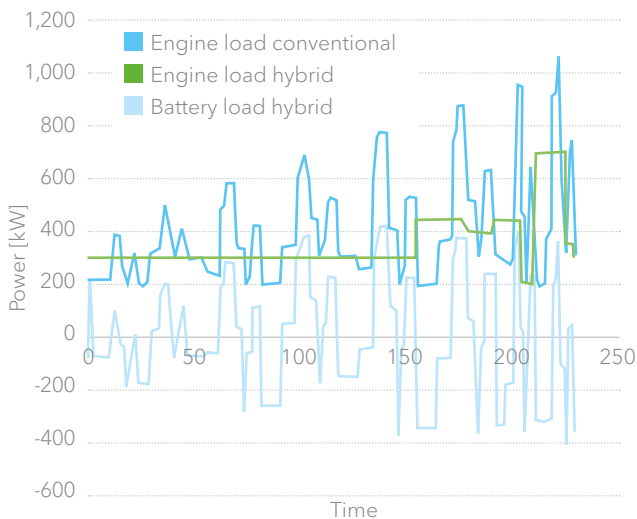
Photos: DNV GL, Oshima Shipbuilding

Furthermore, investigations of a large number of comparable vessels revealed frequent operation at low loads, confirming the opportunity to improve the overall main engine running performance and thus potential to improve the annual fuel consumption. DNV GL has found that an optimized six-cylinder, two-stroke main engine running on LSFO in combination with a PTO/PTI (power take-off/power take-in) shaft generator could reduce annual fuel costs by up to 10 per cent and maintenance costs by more than 30 per cent. An additional 1.5 per cent savings can be achieved through utilizing the battery in operations where generator sets are kept running at low load due to redundancy. The additional investment will pay for itself within a period of four to eight years, depending on auxiliary engine fuel type and price.

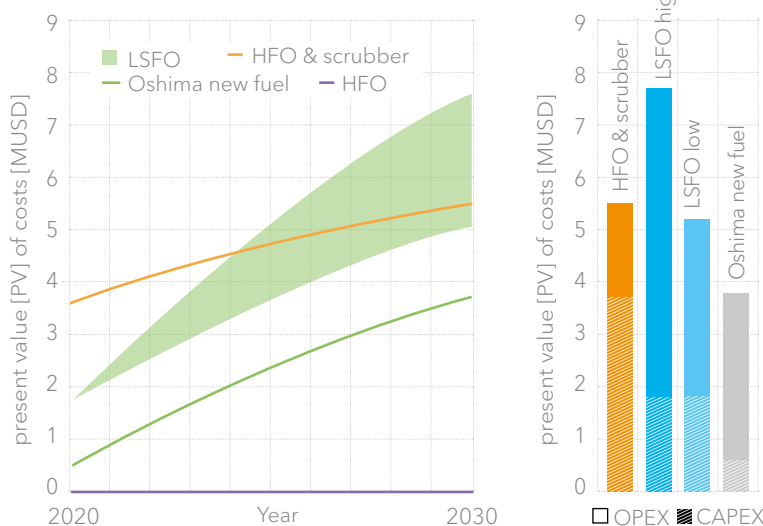
**Fuel alternatives**

To meet current and future emission limits, the Oshima design offers various options for different fuel strategies. Apart from the baseline LSFO version with exhaust gas recirculation (EGR), available >

**ENGINE LOAD PROFILE - CONVENTIONAL AND HYBRID**



**ACCUMULATED COST COMPARED TO HFO BASELINE**



“This new concept design of an innovative, open-hatch general cargo carrier is a good example of how co-operation between industry partners can benefit the maritime industry.”

Morten Løvstad, DNV GL Business Director Bulk Carriers

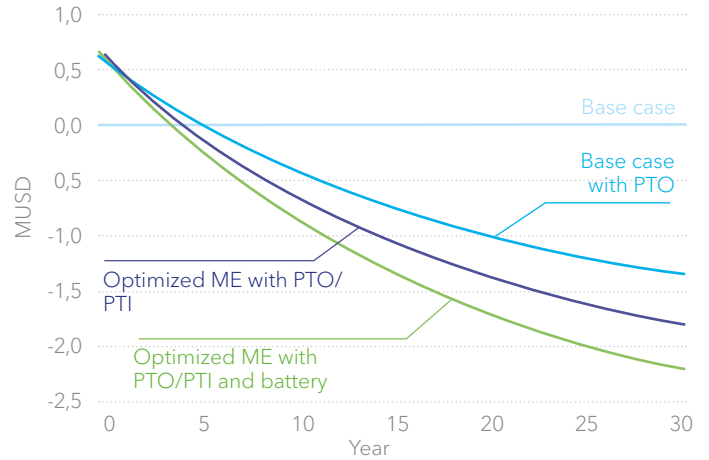
> options include HFO with a SO<sub>x</sub> scrubber and EGR/SCR, LNG, and an innovative Super Eco Fuel which is currently being developed by Oshima and several industry partners. A financial comparison of the available options has been done, giving an initial indication if, or under which conditions a scrubber and the new fuel type are financially attractive compared to the LSFO option. Within the assumptions of the comparison, the scrubber solution provides shipowners with a positive outlook for a return on investment. The new fuel type option also seems favourable from an economic point of view.

**Significant potential**

This new Oshima concept design delivers an excellent combination of characteristics for the varying trade and cargo requirements representative for the open-hatch general cargo segment. “We believe this new ship design will be very useful for our customers. The ship has great cargo flexibility and several new technologies for general cargo carriers have been implemented, such as composite tween decks, a PTO/PTI shaft generator and batteries,” says Tatsuuro Iwashita, Deputy Yard General Manager at Oshima. Both Oshima and DNV GL agree the design offers a highly attractive option to owners and operators in the open-hatch segment, combining well-known technologies that are currently available, making this a design ready to order while it includes features little used today but with significant potentials.

Says Morten Løvstad, DNV GL’s Global Business Director for Bulk Carriers: “This new concept design of an innovative,

**CUMULATIVE DISCOUNTED CASH FLOW FOR CONVENTIONAL VS OPTIMIZED SYSTEM**



open-hatch general cargo carrier is a good example of how co-operation between industry partners can benefit the maritime industry. The use of low-weight composite material for bulk carriers and general cargo carriers has been an area where both DNV GL and Oshima have done R&D for many years already, and I am pleased to see that this concept has now reached a level where it can be applied in commercial design, ready for order. Also, the use of hybrid solutions for the crane operations is a technology I think will be common in most of the future bulk carrier designs. Finally, I am excited about the new “Super Eco Fuel” developed by Oshima - provided sufficient availability of bunkering and technical feasibility of engine performance can be assured, this new fuel may have a significant potential as marine fuel!” ■ AL



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**OSHIMA NEW 65K OPEN-HATCH GENERAL CARGO CARRIER**

The ship size and main dimensions were selected based on an assessment of the current fleet and order book, trade patterns and port limitations, cargoes and vessel performance considerations.

**Main particulars**

- Length: 210 m
- Breadth: 35 m
- Max draught: 13.1 m
- Deadweight: 65,000 mt
- Cubic capacity: 77,000 m<sup>3</sup>

**Major equipment**

- Composite tween decks
- Fully electric JIB deck cranes
- Shaft generator
- Battery pack

**Speed**

- Service speed at design draught, NCR with 15% sea margin: 14.5 kn

**Daily fuel consumption, service speed at design draught**

- 25.1 t (Tier III mode)

**DNV GL class notations**

- #1A, General dry cargo ship, HC(A), Holds 3 & 6 may be empty, Grab(3-20), Strengthened(HA, DK, IB), COAT-PSPC(B), E0, LCS, BWM(T), BIS, TMON(X), Container, DG(B, P), Clean, Recyclable, Battery





The forum targets operators of heavy-lift MPVs with a crane capacity of 2 x 300 tonnes and above.



"I am delighted with the echo this initiative had in the industry."

**Thomas Cord**, Managing Partner, Arkon Shipping & Projects

# TRUSTED FORUM FOR HEAVY-LIFT

A round-table for sharing experiences, news and trends has been on the wish list of the heavy-lift segment for some time. DNV GL has taken the initiative, establishing a forum for premium heavy-lift MPV owners and operators.

The inaugural meeting of the Heavy Lift Exchange Forum took place last autumn. Members of the forum have since expressed their appreciation of this new, independent platform that provides shipowners and ship managers with an opportunity to address and discuss technical, operational as well as legislative matters of common interest in an informal and trusting setting.

Thomas Cord, Managing Partner of Arkon Shipping & Projects, who was appointed as chairman, points out the importance of the forum for the heavy-lift segment: "I am delighted with the echo this initiative has had in the industry. The participants quickly realized how useful it can be to have an exchange platform tailored to their particular ships and their specific needs and challenges, which are different from those of other ship types." He adds: "My role is to facilitate the meetings and make sure they are valuable to all members. One of the main intentions is to create an atmosphere of trust within the group where members feel confident to address critical issues, such as damage they have suffered or other challenges." The original members of the forum were identified in cooperation with the chairman based on specific criteria: their ships' crane capacity, which should be at least two times 300 tonnes SWL; whether their ships frequently carry demanding project cargo; and whether they operate their vessels commercially. Companies meeting these criteria are believed to have a good understanding of future cargo-related requirements. Forum members may propose to invite additional members or guests, such as flag state representatives, design companies, cargo owners or manufacturers who can contribute valuable know-how or are experts on specific agenda topics.

## Meeting the segment's needs

Key membership benefits include the opportunity to communicate specific vessel capabilities vis-à-vis cargo logistics providers,

as well as obtaining an improved understanding of transport needs and developments, says Cord.

As the initiator of the forum, DNV GL will continue to take a facilitating role. Jost Bergmann, Business Director MPV, describes the classification society's rationale: "It is important to continue exchanging ideas and experiences to advance the international heavy-lift business and strengthen its position in the maritime industry. Participating in the Heavy Lift Exchange Forum not only allows us to share our expertise with the industry but also to take experiences and suggestions from the forum into consideration in future rule developments to best meet the industry's needs."

## Priority topics defined

Following the formation of the forum, a priority list of topics was agreed for discussion at future meetings, such as lifting appliances including testing and renewal criteria for both fixed and lose gear, unified standards and common interpretations for sea fastening, minimum stability criteria during lifting operations in port, offshore and with stability pontoons, crew training for heavy-lift operations, typical damage, lessons learned.

It was agreed to hold meetings at least biannually in Hamburg or other major maritime hubs as proposed by the group. The third meeting has been scheduled for June 2017. Seafastening as well as crew training for heavy-lift operations have been chosen as topics from the priority list. ■ JS



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### About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. Operating in more than 100 countries, our professionals are dedicated to helping our customers in the maritime, oil & gas, energy and other industries to make the world safer, smarter and greener.

DNV GL is the world's leading classification society and a recognized advisor for the maritime industry. We enhance safety, quality, energy efficiency and environmental performance of the global shipping industry - across all vessel types and offshore structures. We invest heavily in research and development to find solutions, together with the industry, that address strategic, operational or regulatory challenges.

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