



Naval Auxiliaries

SPECIALISED IN SECONDARY SUPPORT

DAMEN



From purpose built
to auxiliary mission
adaptability”

» Sail training vessels *Shabab Oman II* & *Stad Amsterdam* sailing together.

NAVAL AUXILIARIES

Specialised in secondary support

Damen is a leading international shipbuilding company that has been in operation for more than 90 years. Damen is well known for its naval combatants but also offers a wide range of naval auxiliary vessels.

- › Multi-role Auxiliary Vessels
- › Logistic Support Vessels
- › Hydrographic Survey Vessels
- › Naval Training Vessels
- › Sail Training Vessels
- › Harbour and Littoral support
- › Submarine Rescue Vessels
- › Submarine Support Vessels

These versatile vessels can be used for a wide range of operations, including search and rescue, maritime security, pollution control, and humanitarian aid, but also Hydrographic survey, Submarine support and rescue, Harbour and littoral support or naval training operations.





MULTI-ROLE AUXILIARY VESSELS

The multi-mission vessel

Intended for global service, the capacity of the Multi-Role Auxiliary Vessel (MRAV) allows for more than one specific mission during a deployment. Capable of hydrographic

operations in both littoral and deeper waters, this vessel also has a helideck and substantial storage capacity for other mission configurations, equipment and cargo.

Furthermore, the MRAV can serve as a base for more extensive operations such as disaster relief and naval task group training support at sea.



PROVEN MISSION-MODULARITY

Multi-role Auxiliary Vessel

The common theme running through the MRAV series is the provision of a basic platform offering reliable and cost-effective multi-role potential and survey capabilities. With the addition of supplementary modular mission equipment, this family of vessels can be mobilised in numerous, mainly littoral, naval tasks such as

explosive ordnance clearance and disposal, diving operations, torpedo recovery and overhaul, ROV and UAV deployment, SAR, and coastal infantry and submarine support.

The largest version of the range will be able to operate worldwide, on the ocean as well as in littoral waters.

This ship has additional capabilities such as disaster and humanitarian relief, oceanography and naval training support. The introduction of flexible concepts allows as many functions as possible to be included in the vessels' scope without reducing the effectiveness and capacity of the fleet.

Operational profile

- ▶ Hydrography and oceanography
- ▶ Search and rescue
- ▶ Diving explosive ordnance clearance and disposal (EOCD)
- ▶ Unmanned systems deployment (UUV - UAV - USV - ROV)
- ▶ Coastal transport and small scale logistics support
- ▶ Coastal infantry support (compact sea base)
- ▶ Humanitarian aid/disaster relief
- ▶ At sea training and weapon system calibration support to combatants
- ▶ Naval personnel general practical training calibre guns



General

Length o.a.	43 - 85 metres
Displacement	660 - 3600 tonnes
Beam mid	11.5 - 16 metres
Draught	1.90 - 5.0 metres
Endurance	2 - 4 weeks



Suitable for

- › RAS/FAS, sea basing, strategic transport, disaster relief, training
- › Assistance during disasters and as a command centre
- › Transport of troops and equipment

HNLMS Pelikaan

Logistic Support Vessel 6513 (LSV)

Length o.a.	65.4 metres
Displacement	1,150 tonnes
Beam mld	13.2 metres
Draught	3.0 metres
Speed	15 knots
Endurance	21 days at sea

Replenishment Vessels

Primary ops. RAS, VERTREP, Logistic Support

Length o.a.	90.0 - 130.0 meters
Deadweight	2000 - 6000 tonnes
Speed	14 - 18 knots
Endurance	21 - 60 days at sea



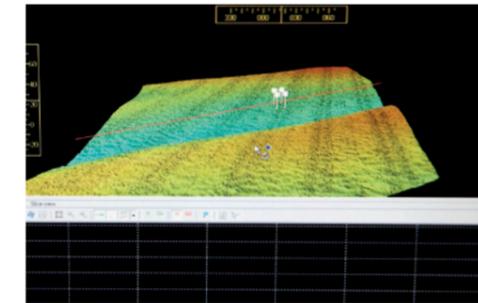
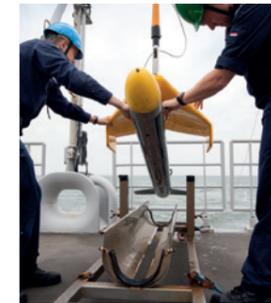
THE NAVY'S WORK HORSES

Logistic Support Vessels

Auxiliary vessels are often considered the workhorses for navies carrying out crucial logistics operations. Damen Naval has vast experience in building

high-end auxiliaries. The Damen Group can combine commercial and military standards and specifications, enabling it to offer military enhancements

according to customer commercial specifications in a very economical execution.



NAVAL AUXILIARIES

Hydrographic Survey Vessels

Damen is an experienced design and construction partner for hydrographic survey vessels. Decades of experience with both naval and commercial hydrographic survey vessels means

that we can offer customers an unbeatable price-quality ratio. Damen ensures that every requirement is met in terms of hull shape, sensor suite and systems.

As well as the hydrographic research function, Damen offers add-ons such as search and rescue, mine-sweeping and training functions.

Suitable for

- › Hydrographic and oceanographic survey
- › Oil spill recovery
- › Disaster relief, Search and Rescue
- › Fisheries inspection
- › Pollution control
- › (Coast guard) Training

OSRV Simón Bolívar

Oceangoing Scientific Research Vessel

Length o.a.	83.0 metres
Deadweight	1,000 tonnes
Beam mld	16.0 metres
Draught	4.30 metres
Speed	13.0 knots
Range at 11 kn	10,000 nm

HTMS Pharuehatsabodi

Hydrographic Survey Vessel (HSV)

Length o.a.	66.3 metres
Displacement	354 tonnes
Beam mld	13.2 metres
Draught	3.1 metres
Speed	12 knots
Range at 15 kn	3,000 nm
Endurance	15 days at sea

HNLMS Luymes / HNLMS Snellius

Hydrographic Survey Vessel (HSV)

Length o.a.	81.4 metres
Displacement	1,900 tonnes
Beam mld	13.1 metres
Draught	4.0 metres
Speed	12.5 knots
Range at 15 kn	4,300 nm
Endurance	14 days at sea



Suitable for

- › Navigation training
- › Torpedo and mine recovery operations
- › Diving support
- › Helicopter/UAV training
- › Officer sea familiarisation
- › Target towing
- › Consort duties
- › Unmanned aerial vehicle support



Training Vessel

Length o.a.	41.5 - 94.0 metres
Beam	9.2 - 14.4 metres
Speed	12.8 - 17 knots
Crew	24 - 22 persons
Spec. personnel	up to 91 persons



The vessel was also successfully delivered for the following secondary missions:

- › **Officer Sea Familiarisation Training**
- › **Consort Duties**
- › **Operational diving support (mine warfare)**
- › **Practice weapon recovery**

FLEXIBLE CONCEPTS ALLOW AS MANY FUNCTIONS AS POSSIBLE WITHOUT REDUCING EFFECTIVENESS

Naval Training Vessels

The Damen Multi-role Air Training Vessel has been designed and built to undertake the following primary missions:

› Training of helicopter pilots, activities include:

- Day/night flight deck helicopter take-off and landing operations
- Simulated helicopter search and rescue operations

› Training of flight deck crew:

- Fi-Fi activities
- Crash on deck procedures
- Aircraft securing operations
- Aircraft refuelling (hot/cold)
- HIFR, both simulated and live
- Vertical transfer operations
- Anti-Submarine/Anti-Surface Aircraft Control (ASAC)

› Aircraft control training



THE BEST NAUTICAL AND NAVIGATIONAL TRAINING

Sail Training Vessels

Damen helps customers give the best nautical and navigational training possible with our Sail Training Vessels. Naval cadet training has never been so easily put into practice.

The Sail Training Vessels are also used as an ambassador of the country of origin by participating in tall ship races (STI) with other navy training vessels from all over the

world. The Sail Training Vessels are designed in cooperation with Dykstra Naval Architects for optimal sailing performance.



Sail Training Vessel

- › Naval cadet training
- › Nautical training
- › Navigational training



General

Length o.a.	82-107 metres
Displacement	1150 - 3000 tonnes
Sail area	2630 - 3500 m ²
Crew + trainee	85 - 240 persons
Rigging type	Square, full-rigged

DEPENDABLE STRENGTH CLOSE TO BASE

Harbour and Littoral Support

Damen is known for constructing a wide range of vessels, including tugboats and salvage vessels for harbor and the littoral. Our reputation is built on its ability to deliver high-quality and innovative vessels tailored to the specific needs of its customers.

Navies of all over the world are using these assets with great success due to excellent performances in naval support operations.

We offer a wide range of Tugs for all your harbour and littoral support tasks. From ASD, RSD and ICE Class Tugs with the possibility to even have a full electric tug to lower your environmental impact. The range varies from 21 to 33 meters in length with a bollard pull range from 40 up to 85 tonnes.



CONTINUOUS DAY AND NIGHT RESCUE OPERATIONS

Submarine Rescue Vessels

Damen is known for designing and building submarine rescue vessels, and has a proven track record in this area. Damen's submarine rescue vessels are designed to provide critical assistance in the event of a submarine emergency, such as a distressed or stranded submarine.

These vessels are equipped with specialised technology, equipment, and systems that allow them to locate, assess, and rescue submariners in distress. They often have advanced diving and submersible capabilities, along with medical facilities to provide necessary medical support to rescued personnel.

Our expertise in designing and building submarine rescue vessels highlights our commitment to maritime safety and the well-being of submariners. This specialization underscores the dedication to provide comprehensive maritime solutions, including vessels that play a vital role in emergency situations.



CRUCIAL SUPPORT FOR SUBMARINES

Submarine Support Vessels

As part of our Submarine Support arsenal Damen is a designer of vessels for retrieving torpedoes or other underwater weapons that have been fired during training exercises, tests, or actual operations. These vessels play a crucial role in the maintenance and reuse of torpedoes, as they allow recovery and refurbishment of these expensive and technologically advanced weapons.

These vessels can be equipped with various tools and equipment to safely and effectively recover torpedoes from the water. This includes cranes, winches, diving equipment, and remotely operated vehicles (ROVs) to manipulate and secure the torpedoes during recovery.

Supporting a submarine at sea involves a complex logistical operation to ensure the crew's well-being, the submarine's operational capabilities, and the successful completion of its mission. The change of new personnel or necessary MEDEVAC release and the delivery of food, spares, and fuel can be done with the Damen Axe-bow patrol vessels with outstanding sea behavior and are available in different sizes. The largest Damen Axe-bow vessel, the 7011 is able to support submarine transfer even at high seas in combination with a dedicated transfer system such as the Ampelmann system this ship is able to deliver necessary goods and personnel at a speed of 40 knots and has a gyroscopic stabilizing system installed providing a stable platform at zero speeds.



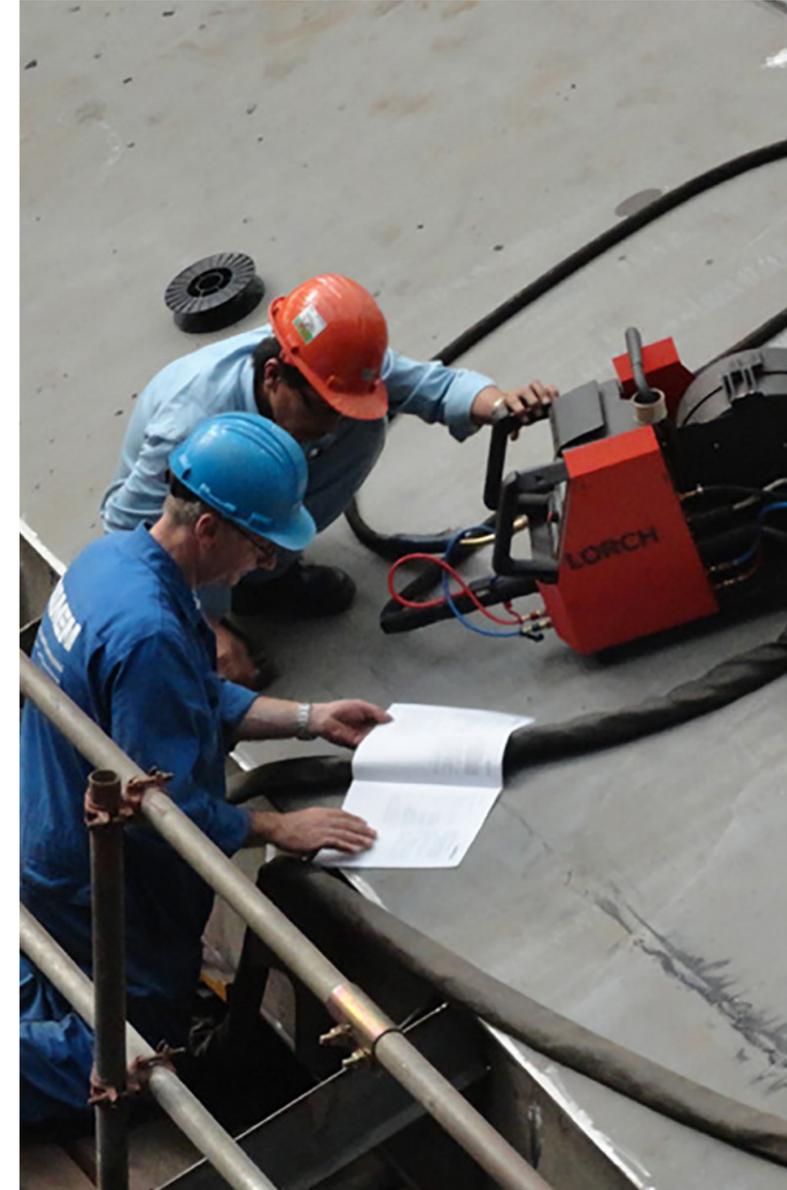
DAMEN TECHNICAL COOPERATION

Building on site

Damen Technical Cooperation enables you to build your Damen vessel locally, anywhere in the world. We provide you with a prefabricated shipbuilding kit and can, on request, combine this with expert assistance, training and backup.

By using standardised components it is possible to make a custom-built design while fulfilling specific local requirements. This cost-efficient concept can be applied to the full range of Damen vessels for a wide variety of marine operations.

One in five Damen vessels is built on-site through the Damen Technical Cooperation programme. In addition, clients can take the design-only option and have their vessel built by a shipyard of their choice.



SUSTAINABILITY

Towards a sustainable future

Damen works proactively to decrease the environmental footprint of its vessels in several ways.

Operational performance

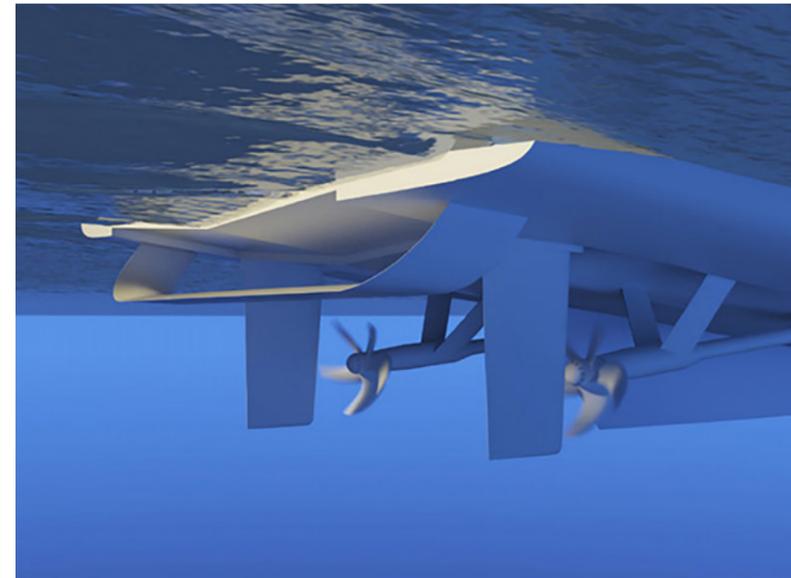
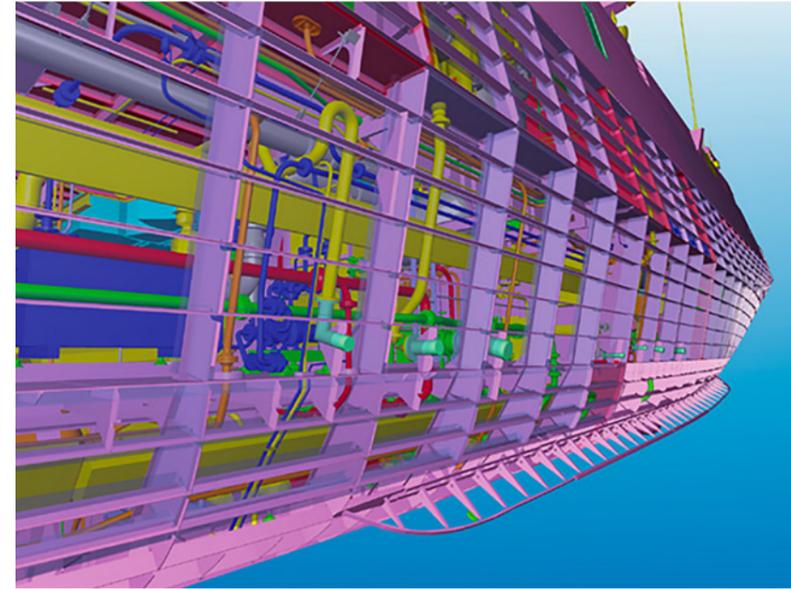
In order to reduce the fuel consumption of our vessels, the following upgrades will be implemented on the next generation of products:

- ▶ Multi-objective optimisation energy management strategy
- ▶ Prototype of the Hull Vane design
- ▶ Adaptive pitch control
- ▶ Hull optimisation based on actual operational weather conditions and sea states
- ▶ Several efficiency improvements to the HVAC and E&A systems through component selection and system design

R&D

In cooperation with strategic partners in the maritime production chain and research institutes, we participate in numerous research programmes aiming to lower CO₂ emissions and reduce dependence on fossil fuels. These have the following themes:

- ▶ Alternative fuels
- ▶ Alternative (hybrid) power and energy storage
- ▶ System optimisation and energy management
- ▶ Exhaust gas treatment systems



REFERENCES

We take pride in our track record

For more than 90 years, Damen has worked with clients around the globe on the design, engineering and construction of Offshore Patrol Vessels, as well as Naval Auxiliaries, Landing Platform Docks, (Sail) Training Vessels and Hydrographic Survey Vessels.

Based on this extensive experience, Damen also offers governments worldwide a broad range of vessels, ranging from 7 to more than 200 meters. Although built according to a standardized concept, Offshore Patrol

Vessels are tailored to each clients' unique operational requirements and can be equipped for multiple missions. With every vessel we build, we guarantee quality standards based on proven technologies.



OCEANS OF POSSIBILITIES Damen Shipyards

Damen Shipyards Group has been in operation for over ninety years and offers maritime solutions worldwide, through design, construction, conversion and repair of ships and ship components. By integrating systems we create innovative, high quality platforms which provide our customers with maximum added value.

Our core values are fellowship, craftsmanship, entrepreneurship and stewardship. Our goal is to become the world's most sustainable shipbuilder, via digitalisation, standardisation and serial construction of our vessels.

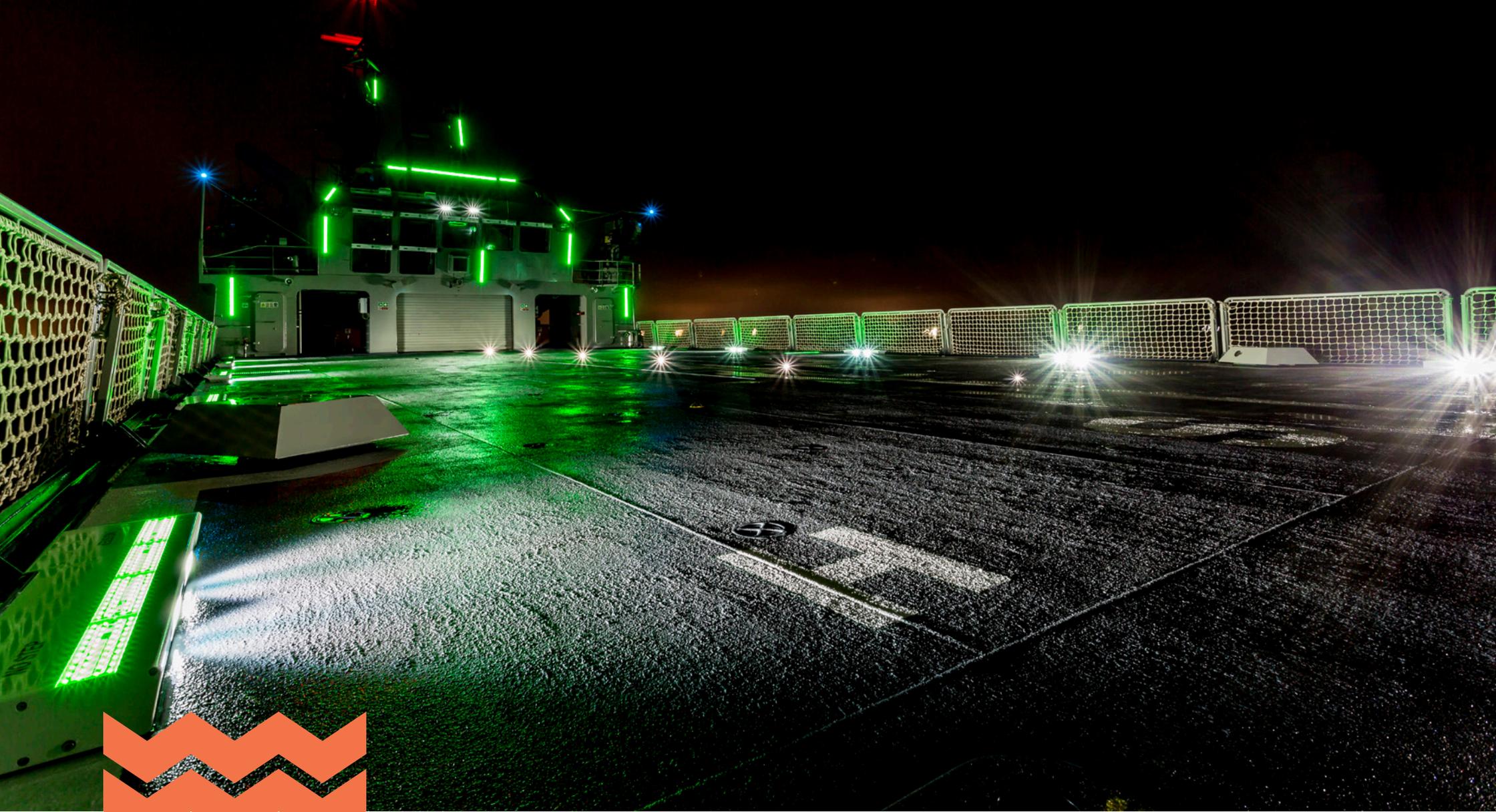
Damen operates 35 shipyards and 20 other companies in 20 countries, supported by a worldwide sales and service network. Damen Shipyards Group offers direct employment to more than 12,000 people.

Colophon

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