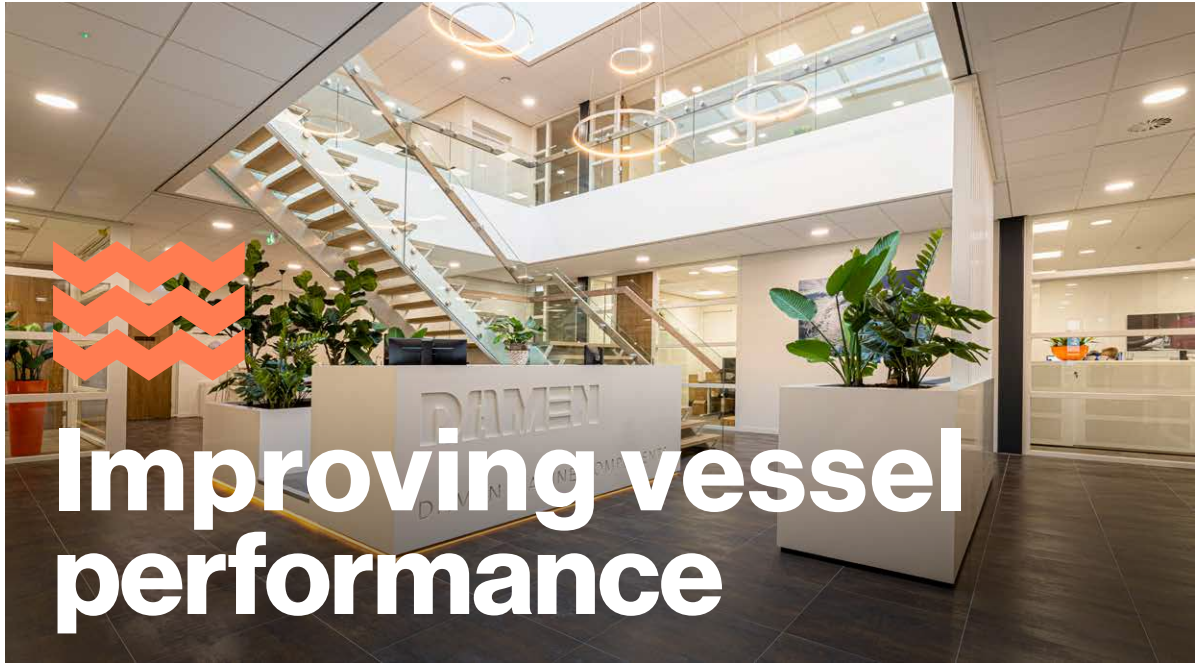
DAMEN

MARINE COMPONENTS



Improving vessel performance

In this brochure we wish to give you a general picture of DMC's portfolio of ship manoeuvring installations and our range of other marine equipment.

I would like to briefly introduce our purpose and strategic goals. All aimed at further developing DMC the industry reference. And to gradually extend our portfolio with other related marine equipment – hardware and software – and services. A relevant evolution, now that the recent mergers with, and acquisitions of fellow specialist companies have been successfully completed. DMC now operates as one, integrated and effective, international organisation.

To achieve our goals, we have adopted a marked and powerful focus on operational excellence, product innovation & systems integration, and professional service. A strategy cemented in a series of continuous improvement programmes designed to better align our products and systems and to optimise our service. Under strict management team supervision, these areas of attention encompass all elements of our organisation. To put it simply, our purpose is to be the world class supplier who doesn't just make the components and does the electronics, but who covers the whole end to end lifecycle.

Undisputed, top quality products and ditto operational excellence will continue to define all our actions. Being consistently reliable in improving vessel performance. That's how we'd like you to see us. **Welcome on board.**"

Mark Visser
Managing Director

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About us

Damen Marine Components (DMC) specialises in the design and production of premium manoeuvring systems and marine equipment. Rooted in over 150 years of experience, our scope runs from the smallest inland craft to the largest ocean vessels - and anything in between.

DMC's organisation includes our new, 100-staff headquarters in Hardinxveld-Giessendam, the Netherlands, in-house engineering in the Netherlands, Germany and Romania, and in-house production facilities in the Netherlands, Poland and China. The production facilities in Poland and China are ISO 9001-2015 and ISO 14001-2015 certified to guarantee consistent quality. The Dutch facilities are VCA certified.

Following the merger with Van der Velden Marine Systems in 2018 and the acquisition of the staff, activities and stock of WK Hydraulics in 2019, DMC has meanwhile successfully completed its organisational integration. Whereas the reputed Van der Velden name will continue to be the trademark for steering and rudder systems, Damen Marine Components is now geared for the future.

Family values

As a member of the family-owned Damen Shipyards Group, we wholeheartedly practise the family values. There is simply no other way. This being our blood group, our conduct is aimed at a personal touch, loyalty and long-standing relationships. As clearly reflected by our very high repeat order ratio.

We work closely with third-party shipbuilding and repair yards, ship owners and -operators, naval architects and distributors of maritime equipment around the world. Third-party (non-Damen) orders account for about 75% of our business!

Our key objective is to not just deliver superior components, but also to be there for the entire lifecycle. Everything we do is aimed at improving vessel performance.

Our products and systems are designed to perform and built to last.

"Our key objective is to deliver superior components and to be there for the entire lifecycle."

Nozzles in all shapes and sizes

Damen Marine Components has been manufacturing propeller nozzles for over 40 years now. Today, we do so by the 'spinning' method, the DMC innovation with which we have – literally – revolutionised nozzle manufacturing.

Basically, the single spinning technique involves one single weld only, against the ten or up to thirty or more welds with the conventional production method. Consequently, our nozzles are somewhat lighter, with a smoother surface. The principle revolves around transforming a steel tube into a nozzle inner ring through mechanical cold moulding. Spinning, which is fully automated, can go up to eight metres diameter, and in addition ensures the shortest lead times in the industry! It is the production method in our two manufacturing plants in Poland and China and can process all types of steel.

Customised nozzles

We manufacture any type of nozzle, each to the customer's specific demands. As an initial step, we can analyse the client's operational requirements to determine whether a nozzle is beneficial, and subsequently advise on which type will fit the best.

In addition to the various standard nozzle profiles, like the well-known 19A and 37 and client specific nozzle profiles, we have developed in-house a series of optimised nozzles aimed at an enhanced performance and efficiency for different ship types and/or specific sailing operations or patterns. 'Improving vessel performance', as our corporate slogan goes.

The DMC range of nozzles includes:

- Optima
- Optispec
- Wing
- VG 40

Improving vessel performance

The Optima nozzle is acclaimed throughout the industry for its unparalleled mix of generating thrust, improving performance and noise/vibration reduction. L/D 0.4 up to L/D 0.6 versions make the Optima highly versatile and ideal for many ship types like inland ships, tugs, pushers, coasters, multipurpose vessels, fishing vessels and hopper dredgers.

The Optispec is a special type of Optima nozzle, designed for vessels not suited to conventional rudder systems and propellers, such as self-propelled cutter dredgers and pushers. The Optispec is a free-hanging steerable nozzle with fixed rudder blade.

The Wing nozzle is characterized by a very short profile length combined with a small system diameter and a special hydrodynamic wing profile. Due to its low resistance this creates optimal manoeuvrability and increased performance and efficiency at higher sailing speeds. The smaller system diameter allows a larger propeller diameter. The Wing is suited for vessels such as fishing ships, yachts and research vessels.

The VG 40 nozzle has a high inlet profile and a shorter length than the 19A. Delivering comparable forward thrust, the VG 40 outperforms the 19A at higher cruising speeds and is very suitable in thruster/rudder propeller applications.

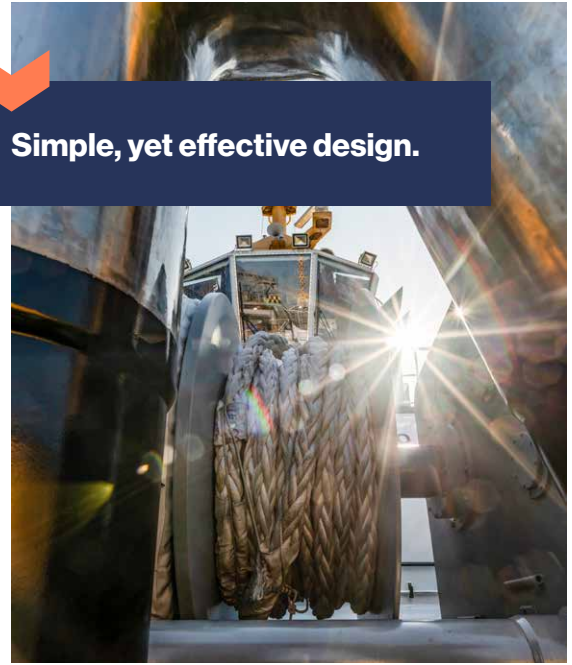
WINCHES, FULLY RELIABLE AND FUNCTIONAL AT ALL TIMES

Deck Equipment

DMC produces a range of in-house developed winches, capstans, towing pins and guide posts mainly for use in towage, escort operations and anchor handling. Each category featuring its own unique selling points. And each designed and fitted to be reliable and fully functional in the harshest conditions at all times.

Towing winches

Our latest innovation in winch technology, the variable speed drive, enables it to always haul and veer with the highest line speed available. The speed of the drive system automatically adjusts itself in proportion to the required line force, for both hauling and veering. All our winches can be mounted on the deck, using only four footpads. All have the same footprint, thus allowing for easy exchange or replacement. By using high quality bearings and seals, and stainless steel in places where it makes a difference, the maintenance requirements are extremely low.



Simple, yet effective design.

All towing winches can be delivered with optional length in line and load measurement, which makes them suitable for escort operations in calm water conditions. Standard version with pulling forces up to 30 tonnes for towing winches and up to 100 tonnes for anchor handling winches. Brake holding loads up to 200 tonnes. Other requirements available on request.

Escort towing winches

Our hydraulic Escort towing winches are the only ones on the market that don't use brakes, but use an active pay-out and haul-in system instead. They can hold and veer the motor from zero to full speed at a variable line force setting from 10 to 100 tonnes on the motor. The DMC escort winches are fully compliant with the class rules for performing escort operations in 'open sea' with high waves.

Tugger winches and capstans

Our range of Tugger winches and capstans has been created to perform frequent auxiliary duties on any vessel. They are straightforward, reliable, precision winches. Their simple, yet effective design requires minimal maintenance. Components such as the rotating points are maintenance-free.
The gearwheels are hardened and grinded, and the capstans are mounted on a universal mounting flange to enable them to be fitted on length and diameter of pipe. Both the electric and the hydraulic versions are available with pulling forces from 5 to 40 tonnes. Capstan pulling forces from 3 to 15 tonnes.

Pulling you to the next level.

SEA AND LAND APPLICATION

Custom hydraulics

DMC's proposition in the field of hydraulic components and services was broadened significantly after the integration of a hydraulics specialist group in 2019, adding 40 years of specialist experience. We design, build and install our products in-house.

When there are different hydraulic apparatus on board, it can be advantageous to integrate them for various economical and operational reasons. DMC covers this field of challenging engineering too, naturally including our 24/7 service.

We design, build and install our products in-house.

The range of standard production and custom hydraulic systems includes:

Towing pins

Retractable towing pins, with or without wire chain stoppers, to keep the towing rope or anchor chain in the centre of the tug. Fixing shackles and attaching ropes together, are additional safety-related applications. Our range basically stretches from 35 to 135 tonnes SWL, respectively up to 80 and 100 tonnes bollard pull.

Bow thrusters

DMC can provide the hydraulic drives for bow thrusters of any brand, resulting in well plugged-in systems in both retractable and tunnel units, and cross-pipe layout. We use closed hydraulic systems ensuring a short response time from joystick command for an almost immediate maximum thruster power. A true asset for the tugs and workboats demanding rapid and accurate manoeuvring.

Mast-lowering systems

Mast-lowering systems are a must, considering the limited draught required by the countless bridges, especially in Europe. Our custom-built systems allow masts to be lowered safely. They can be connected to the ship's existing hydraulic systems, or to a stand-alone power pack.

Power pack units

Wherever hydraulic power is needed, DMC will provide the pack. The units vary from very small to large, with our offering ranging from a tank or a unit, up to a complete system. If desired, DMC also takes care of handling the classification society affairs.

Wherever hydraulic power is needed, DMC will provide the pack for you.

Industry

We also serve the land-based industrial sector, and as such are well established with the world of brick and concrete manufacturing, soil compaction and salvage (crane) vehicles. In the concrete industry in particular, DMC can be called upon for revitalisation projects, periodic and ad hoc maintenance and newbuild activities.

Contamination and flushing of hydraulics

The quality of the oil and the presence of contaminants are crucial for the lifespan of hydraulic systems. It is essential that pipeline systems are flushed before entering service. System contamination is measured according to the ISO-4406, or the NAS class. Our flushing and monitoring equipment will help achieve the necessary level of cleanliness. Filter inspection and possible replacement is included.

Van der Velden® – the brand

Maintaining the Van der Velden® brand name was never an issue as the merger with Damen Marine Components was taking shape. It is clearly too valuable an asset; too renowned throughout the market. Consequently, since the two Damen subsidiaries amalgamated in 2018, Van der Velden® continues to be the trademark for rudders and steering systems sold by Damen Marine Components (DMC).

VDVMS, short for Van der Velden Marine Systems, joined the Damen Shipyards Group in 2013, the year of its 50th anniversary. This versatile ship's gear company began making a name for itself following the breakthrough development of hydraulic steering systems. This innovation was eagerly welcomed by, initially, inland shipping, as it dealt with the

outdated steering wheel & chain rudder technique. Van der Velden® soon began developing innovative rudders to fully optimise the manoeuvring concept according highest hydrodynamic standards.

Building on its success on inland waters – with about 10,000 rudders delivered to date – the company gradually expanded into sea shipping since the nineties. From a take-off in the American and Asian offshore supply sector, VDVMS successfully extended into all segments of sea shipping, ocean going and shortsea alike.
The continuous in-house research & development resulted in a constant flow of innovative maritime equipment. This has led up to today's broad range of hydraulic steering systems, rudders and energy saving devices.

MARINE SYSTEMS
VAN DER VELDEN®
REGISTERED TRADEMARK OF DAMEN MARINE COMPONENTS

Complete range of steering systems

Whatever the number of rudders, up to eight if you wish, DMC offers a complete range of hydraulic steering systems under the Van der Velden® brand. No matter what ship type, we can provide standardised solutions up to 1,600 kNm torque. For heavier systems, DMC teams up with eminent partners to fulfil customer requirements. Our range includes asymmetrical steering systems, piston type, also known as RAM type steering systems and the compact rotary vane concept. All are developed and produced in-house in our production facility in the Netherlands.

No matter what ships design, we can provide standardised solutions up to 1,600 kNm torque.

Asymmetrical 2 or 4

The asymmetrical steering systems are being supplied in sets of two rudders or multiple coupled sets. Although most common in inland ships, they are suitable for every type of ship. Their asymmetrical configuration yields the maximum use of the propeller thrust thanks to a fixed geometry between the rudders. For single- and twin-screw inland ships the steering gear is designed case-by-case.

Piston-type

The Van der Velden Commander™ Piston-type steering system operates a single rudder. Its two double acting cylinders ensure reliability and redundancy, whereas sufficient steering capacity remains available when one cylinder is bypassed. This low maintenance turnkey configuration is easily mounted on a single adjustable foundation plate. Torque ranges up to 425 kNm. Its scope includes inland and seagoing ships.

The most muscle, the least space.

Rotary vane

The most muscle, the least space. That's the best way to summarise the Van der Velden Commander™ Rotary vane steering system. This strongman's torque ranges from 30 up to 1,600 kNm. Two 1,000 kNm units will do the job for a sizable pipelaying vessel or RoRo ship. The high-end design consists of an integrated tiller and cylinder, which generates an equally high torque in all possible steering angles.
The tiller and cylinder being part of the actuator, allows the rotary vane to take the full vertical load of the rudder and rudder stock – as designed. A separate rudder carrier is therefore superfluous. It can safely be claimed that DMC makes first class rotary vanes. Their work field extends from any type of seagoing ship to superyachts and dredgers.

Reliable rudders, ultimate course

A safe course literally depends on reliable rudders. Our Van der Velden® brand rudder portfolio covers the entire spectrum, from basic to sophisticated, and for all seas, rivers and canals. Aside from our standard range we design tailor-made rudder systems and/or produce according to customer drawings.

Full spade

Our full spade rudders vary in profile and common application. The ATLANTIC model is best suited for straight ahead journeys, delivering excellent (and economic) course keeping for medium to high speed ships like container ships, naval patrol and frigates et cetera. Characterised by its fishtail shaped trailing edge, the MASTER rudder offers good manoeuvring performance and smooth course keeping. These key elements make this rudder type especially suitable for vessels that travel relatively short distances and frequently have to come in and out of harbours or change position, like a.o. dredgers, fishery and miscellaneous support craft like crew tenders. The absence of moving parts in these robust full spade designs significantly reduce wear and tear.

Flap rudder

When searching for the ultimate in manoeuvring and course-keeping, the high lift flap rudders are the most sophisticated option. DMC offers two different flap solutions. The TIMON model has an open flap linkage, which allows for a 90º rudder angle. Its wide range in size makes it very suitable for larger ships such as offshore and Ro-pax ships. The BARKE® model has the distinguishing feature of the flap's angle progressively increasing relative to that of the main rudder. This leads up to an impressive 100º rudder angle. The unique flap linkage of the BARKE® rudder is fully enclosed, resulting in minimum wear and eliminating sand entry or contact with floating objects or ice. This version impresses in shortsea, ferries, yachting, dredging and fishery.

Inland shipping

Rivers and canals are Damen Marine Components' home front. In inland shipping Van der Velden® has been the industry's benchmark for steering gear and rudders for decades now. Inland rudders are usually installed in sets of two per propeller, whereby the standard Van der Velden® set-up has asymmetric rudder angles of 60/80º. The Hydro Dynamic (HD) model ensures excellent manoeuvring at slow speed thanks to the optimal lift from its fuller profile. With manoeuvring capabilities paramount, it also performs great in straight ahead sailing, making HD our most popular model.

The XR model, with its slimmer profile, offers the most fuel efficiency on straight ahead journeys. The three-rudder system (3SYS) with which Van der Velden® revolutionised inland shipping propulsion in the 70's, still offers the best possible manoeuvrability on narrow and winding waterways and other challenging situations such as locks or moving in confined docks. With its 120° angle, the world's largest; 3SYS even today remains unbeatable in the manoeuvrability vs fuel efficiency ratio.

Furthermore, we offer flanking rudders. These rudders are commonly applied to (pusher) tugs. Being located in front of the propeller, they provide better manoeuvring capabilities during astern operations. All our flanking rudders are tailor-made and can be optionally designed with a retractable function. This minimises resistance during ahead operations, which results in significant fuel savings compared to conventional flanking rudders.

Our Van der Velden® brand rudder portfolio covers the entire spectrum, from basic to sophisticated, and for all seas, rivers and canals. Depending on the type of rudder, there are options available to enhance performance or to extend lifespan, our so-called Energy Saving Devices (ESDs).

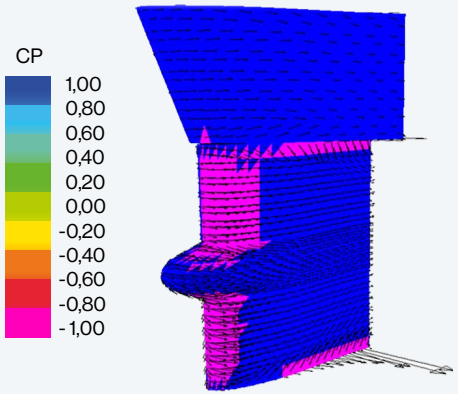
Full focus on energy saving

Unless we all return to sail propulsion, fuel economy will remain a decisive element. DMC offers a diverse range of energy saving devices (ESDs). In addition to lowering the fuel bill, energy saving also serves the shipowners' responsible greening objectives by reducing the industry's carbon footprint.

The toolbox of our prolific engineering teams contains CFD and FEM engineering design capabilities. CFD (Computational Fluid Dynamics) refines hydrodynamic calculations for hydrodynamic performance, manoeuvring, cavitation, resistance and propulsion. FEM (Finite Element Method) supports strength calculations for rudder blades, stocks, trunks and post- or pre-swirl devices but also serves other challenges such as vibrations.

Van der Velden® Rudder fins

The rudder fins, or thrust fins, guide the post-swirl and, when combined with a rudder bulb, reduce the rotational losses of the propeller.



Van der Velden® Asymmetric Rudder Technology (ART™)

ART™ features a unique rudder blade's leading edge, available with a Z or S-shape twist. It is adapted to the propeller slipstream and related inflow angles, creating smooth water inflow, optimizing the lift-drag ratio and reducing cavitation risk. ART™ counters the rotation effects of the propeller slipstream, gains higher propulsion efficiency and can be applied to all Van der Velden® rudders.

Van der Velden® Hydro Spoiler

This ESD is most applicable for inland ships with two rudders per propeller. Mounted exactly on the centreline behind the propeller, the Hydro Spoiler's curved blades bend the propeller slipstream into a straight flow towards the rudder. This smooth flow improves the propulsion efficiency and sailing speed whilst reducing noise and vibration.

Van der Velden® Nozzle fins

The nozzle fins, or pre-swirl stator fins, are mounted on the propeller nozzle and equalise the wake of the hull. This improves the inflow towards the propeller.

Van der Velden® EQUAL Duct

This pre-swirl device is capable of significantly cutting fuel-cost. There is an inherent asymmetry in the thrust generated by a propeller between the starboard and port side. The EQUAL Duct modifies the water inflow into the propeller disc area, thereby reducing this asymmetry, which leads to increased thrust. This higher propulsion efficiency delivers notable fuel savings. This higher propulsion efficiency delivers notable fuel savings.

Enhanced propulsion efficiency

Van der Velden® Silent Bulb

The rudder bulb helps to reduce rotational losses of the hub vortex. This optional, and also retrofittable, bulb performs best when combined with a bespoke propeller hub cap. Enhanced propulsion efficiency leads to notable fuel savings.

ELECTRICAL ENGINEERING

The domain of DMC Dynamics

Digitalisation enhances ship safety and efficiency by real time controlling, monitoring and visualising the functioning of onboard systems. As digitalisation also provides insight into the technical state of the different installations and processes, it is an indispensable operating tool: better maintenance planning, longer lifespan.

The required electrical engineering is the domain of DMC Dynamics.

Our specialist department for the design and production of sophisticated embedded electronics, DMC Dynamics has been established as a structured unit in 2020, after having been operational as our in-house development staff since 2011. Producing both the software and hardware – computer boards and process units et cetera – of all its products in-house, Dynamics is DMC's sophisticated system integrator.

DMC Dynamics develops and provides the control and monitoring systems for all components that the other DMC product groups deliver. The end users vary from small workboats to ultra large container ships, super yachts, combat ships and so on, in all conceivable shipping market segments.

The control systems cover basically any ship or craft.

Control to perfection

The control systems cover basically any ship or craft. SP2700 is a real-time redundant digital steering system with a control and alarm system. Main or pilot steering and directly linked emergency steering can be selected, whereas FU steering is optional. Compliant with the most stringent class requirements, extreme safety and reliability are the SP2700's USPs.

HP7000 offers electronic rudder steering combined with hydraulic steering as an leading feature. The new SP3000 control and monitoring product line is a real-time redundant control and monitoring system for seagoing ships.

It is fully standardised, and with the help of a product configurator empowers various different configurations. Being a further development of previous generations the SP3000 line is ready for industry 4.0.

Ultimate monitoring with BOSS™

BOSS™ is the brand for the monitoring product line of DMC Dynamics. Each application monitors one of the ship's specific technical segments real time via a touchscreen display with integrated software.

Each product from this line can upload to the online BOSS™ platform and will provide insight into the condition of the system being monitored, using the vessel's sensors. Data can be logged and transferred to the cloud to facilitate remote inspections, analyses and precautionary measures via smartphone or tablet by e.g. the vessel operator. DMC Service – when authorised – can check the monitored system(s) at any time to initiate maintenance or repairs.

BOSS™ Economiser (ECO)

Calculates the steering behaviour, CO_2 emissions and fuel consumption per trip. It furthers captain's consciousness of sailing behaviour to advance fuel savings. Explicitly developed for inland waterways.

BOSS™ Oil Quality Monitoring (OQM)

Measures the oil condition of hydraulic systems, thus enabling the reliable anticipation of servicing and/or replacement.

BOSS™ Stern Force Measurement (SFM)

Measures lift and drag to calculate the best rudder angle, in order to avoid stall moments. Displaying the optimal rudder angle/rudder force ratio, it promotes course keeping and fuel savings.

BOSS™ Alarm Monitoring System (AMS)

Continuously monitoring the status of all main systems, AMS – which is configurated to class and IMO requirements – is indispensable.
The touchscreen panel allows a rapid response from the bridge or wheelhouse, promoting safer sailing.

All BOSS™ monitoring applications, apart from OQM, are available for both newbuild and retrofit.

BOSS™ Bearing Clearance Measurement System (BCM)

Through constant measuring of the neck and carrier bearing clearance between the rudder trunk and rudder stock, wear is timely noticed. Predictive maintenance will prevent downtime and unforeseen costs and delays during scheduled inspections.

BOSS™ Data Log Function (DLF)

Automatic logging of the data from all the aforementioned BOSS™ applications is conditional for effective reporting and trend analysing.
DLF delivers exactly what you want these other products to tell you. The fuel savings or carbon emissions per trip? Just one push of a button.

BOSS™ DMC Cloud Connect (DCC)

DCC is the appropriate instrument to access the logged data of all the BOSS™ tools. DCC links the logged monitoring with user platforms in the cloud, where data can be accessed at all times via an http link or VPN. It helps fleet owners and shipping companies to have better understanding of the monitored systems onboard.

Service hubs and agreements

Maximising your operational performance and minimising vessel downtime is a key purpose of ours. It is the core task of our service team, which operates just like the ships using DMC equipment do: all around the world and 24/7.

Controlled from the Service Department's centres in Holland and Germany, inspections, maintenance and repairs are carried out from service hubs across the globe. In addition to our hubs stationed at the more than 40 Damen Shipyards Group yards and production plants, we have appointed local partners at locations that are considered (geographically) vital.

Our global coverage allows us to guarantee to be quickly on the spot. Recognised by all classification societies, DMC is certified to execute the required two-year or five-year seagoing inspection and maintenance intervals, and the three-year intervals for inland shipping. In addition to rudders and steering systems of any make, servicing is also provided for winches, hydraulics and our own control and monitoring systems. Again, with global coverage and round-the-clock accessibility.

GET READY TO EXPLORE

The world of Damen Marine Components

Head office
Netherlands Damen Marine Components Hardinxveld-Giessendam

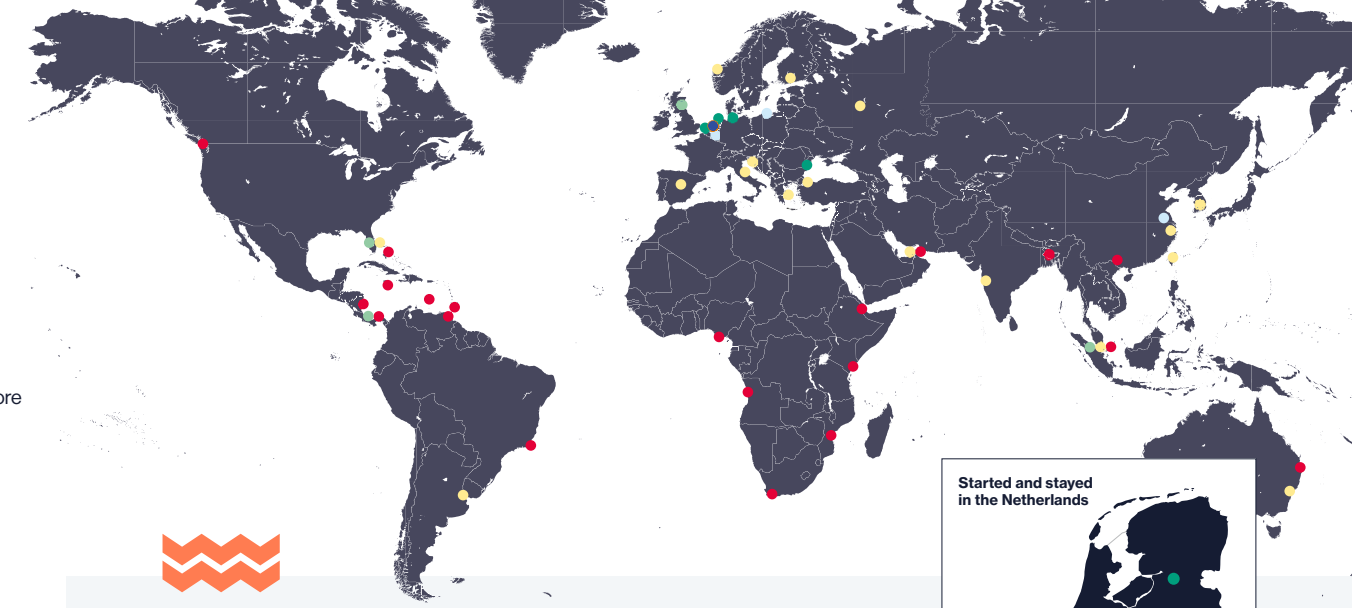
Support offices
Netherlands Damen Winch Technology
Romania Van der Velden® Rom Galati
Germany Van der Velden® Barkemeyer
Netherlands Damen Anchor & Chain Factory

Production facilities
Poland Damen Marine Components Gdansk
China Damen Marine Components Jiangyin
Netherlands Damen Marine Components Hardinxveld-Giessendam

Service hubs
Angola Damen Services Luanda
Australia Damen Services Brisbane
Bahamas Damen Services Nassau
Bangladesh Damen Services Dhaka
Brazil Damen Services Rio de Janeiro
Canada Damen Services Victoria (BC)
Curaçao Damen Services Curaçao
Djibouti Damen Services Djibouti
Jamaica Damen Services Jamaica
Kenya Damen Services Kenya
Mozambique Damen Services Beira
Nigeria Damen Services Port Harcourt
Panama Damen Services Panama
Saint Vincent and the Grenadines Damen Services St. Vincent
Singapore Damen Services Singapore Damen Shipyards Singapore
South Africa Damen Shipyards Cape Town
Trinidad & Tobago Damen Services Trinidad & Tobago
United Arab Emirates Damen Services Dubai
Vietnam Damen Services Song Cam

Authorised sales partners
Argentina, Australia, Brazil, Croatia, Finland, Greece, India, Italy, Mainland China and Hong Kong, Norway, Russia, Singapore, South Korea, Spain, Sweden, Taiwan, Turkey , U.A.E. & U.S.A.

Authorised service partners
Singapore, United Kingdom, U.S.A. & Panama



- Head office
- Support officies
- Production facilities
- Damen Services Hub
- Authorised sales partners
- Authorised service partners

Production on demand

The vast majority of DMC products are manufactured in our sophisticated, wholly-owned factories in Gdansk, Poland and Jiangyin, China.

These modern, highly versatile production plants, however, also have a significant share of third party work. This production to customer's drawings is not confined to the maritime and offshore markets only.

The industries for which these two well-equipped DMC plants work, includes mining, energy, construction and various other sectors seeking the production, or technical processing of steel and aluminium components. Their 'Damen class' staff, highly trained in the in-house Health & Safety training centres, are a further guarantee for top quality products and short lead times.

Our state of the art factories in Poland (est. 1991) and China (est. 2015) have ISO 9001, ISO 14001 and ISO 4500 certification. Poland adds ISO 3834. Both factories are recognised as approved manufacturers by all international classification societies. To ensure that all manufactured components meet customers' requirements DMC's factories maintain a strict quality policy.

EXPLORE OUR KEY CAPABILITIES

Factory information

Production techniques

- Tubular spinning
- Plate rolling
- Profile rolling
- Hydraulic pressing
- 3D plasma cutting
- Flame oxygen cutting
- NC Pipe Profile Cutting
- Saw cutting
- Welding manipulation
- Welding
- Preheating
- CNC Boring/milling
- Turning lathes
- Drilling
- Automatic grinding
- 3D measuring arm
- Blasting and painting

Capacity

- +/- 20,400 m^2
- 11 production halls
- Max. hoist 150 tonnes
- Max. dimension of product width/height/length 11.2 x 7.2 x 30 m and 7.9 x 9 x 50 m.

Authenticated top quality

Our commitment to delivering world class quality is firmly built-in. Consistent top quality cannot, however, simply be claimed. It must be substantiated convincingly, objectively and permanently.

We naturally have ISO and Dutch quality certification (VCA) in place, but this merely ensures a safeguard for consistent working procedures. Pushing our people and products to the limit for optimal solutions is our unceasing pledge, as substantiated in our recognised track record.

Designed to perform, built to last.

Polar pride and prestige

DMC's compliance with the highest qualifications of the world's leading classification societies comprises ICE Class and is relied upon by prominent navies.

The pinnacle of the shipping industry in terms of sheer robustness and reliability, ICE Class places the highest demands, considering the hostile environment, severe conditions, remoteness and consequently safety. We have a solid track record in supplying ICE Class manoeuvring systems, with tankers, shortsea vessels, tugs and other workboats, ferries and research, patrol and naval vessels providing a continuous order flow.

Recent projects for arctic deployment include the six Harry de Wolf Arctic/Offshore Patrol Ships (AOPS) procured by the Royal Canadian Navy, with Polar class 5 notation. The six icebreaking patrol ships will deploy DMC-built rudder systems and sternframe castings.

Pushing to the limit

Having supplied the complete manoeuvring system for the world's first-ever Polar Class 3 ICE Breaker Plus classified vessel, is another recognition of our ICE Class capabilities. This project, for Australia's groundbreaking ARSV (Antarctic Research Supply Vessel) Nuyina, has taken rudder and steering system design, engineering and production to the limit. 'Extreme' being the motto for all components, limits have been pushed. The two rudders for this Damen-built vessel stood at the basis for all subsequent design calculations. To cope with the antarctic ice conditions, a theoretical 32-knot top speed was the starting point, as opposed to the actual 16-knot top speed.

Adding to the steel thickness to absorb ice impact, a -40 degrees Celsius steel grade was needed. The two 18 square metre rudders each weighing 70 tonnes, are the heaviest per square metre that DMC has ever built. The profile of the full spade rudders was largely enforced by the rudder stocks' sheer thickness of over 1,000 mm. They weigh 35 tonnes each. This, naturally, has all extended into the steering system too. Generating cutting edge design and engineering, we – as main contractors – have teamed up with eminent partners to realise the one-off installation featuring plunger (RAM-type) pistons. DMC has delivered the Nuyina's entire manoeuvring chain from the ship's bridge up to the rudders.

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