

# Tankers & gas carriers



Photo © Høegh LNG - Independence



**MACGREGOR**

Designed to perform with the sea

# Passion for performance – united by the sea

MacGregor is a family of innovators. By engineering solutions that make the sea more accessible, safe and reliable, we support you whose livelihood depends on the changing conditions of the sea. To enable that we have a variety of strong product brands and committed experts with a passion for solving challenges – and the power of the sea is sure to provide those.

Our founders braved new frontiers in different times and places. Those origins merge at today's MacGregor, inspiring us to continue the stories, and create new ones. The spirit of our founders lives on in the pride we have for what we do, and our determination to find new solutions for the people we work with. Together with you we will write the next chapters.

We are a global team of professionals, who create value for you; the owners, operators, and ship builders in the offshore and marine industries. Understanding your business and way of life is key to our work. It is the foundation to addressing your needs with tailored solutions for load handling, cargo handling, mooring or essential auxiliary equipment. Your productivity, sustainability, and equipment lifetime benefit from our combination of expertise and technology. As innovators, we work together with you to set benchmarks in innovative solutions and value creation.

Our deep respect for and experience of the sea lays the foundation for adapting to its challenging conditions. Wherever we work around the world, we work together with a passion for performance and a love of challenges — united by the sea.





# Safe mooring

Anchoring and mooring of your vessel not only requires knowledgeable crew, it also demands reliable and high quality deck machinery.

MacGregor has delivered deck machinery since 1875 through the Hatlapa and Pusnes brands. Currently we supply about 2,000 winches annually and the 5,000 vessels sailing world-wide with our equipment are a testament of our reliability and robustness.

Our equipment is designed in Germany and Norway and meets the requirements of all IACS classification societies, ISO and OCIMF MEG3. MacGregor's commitment to providing high quality products and world-wide services ensures a safe and reliable operation for our customers.

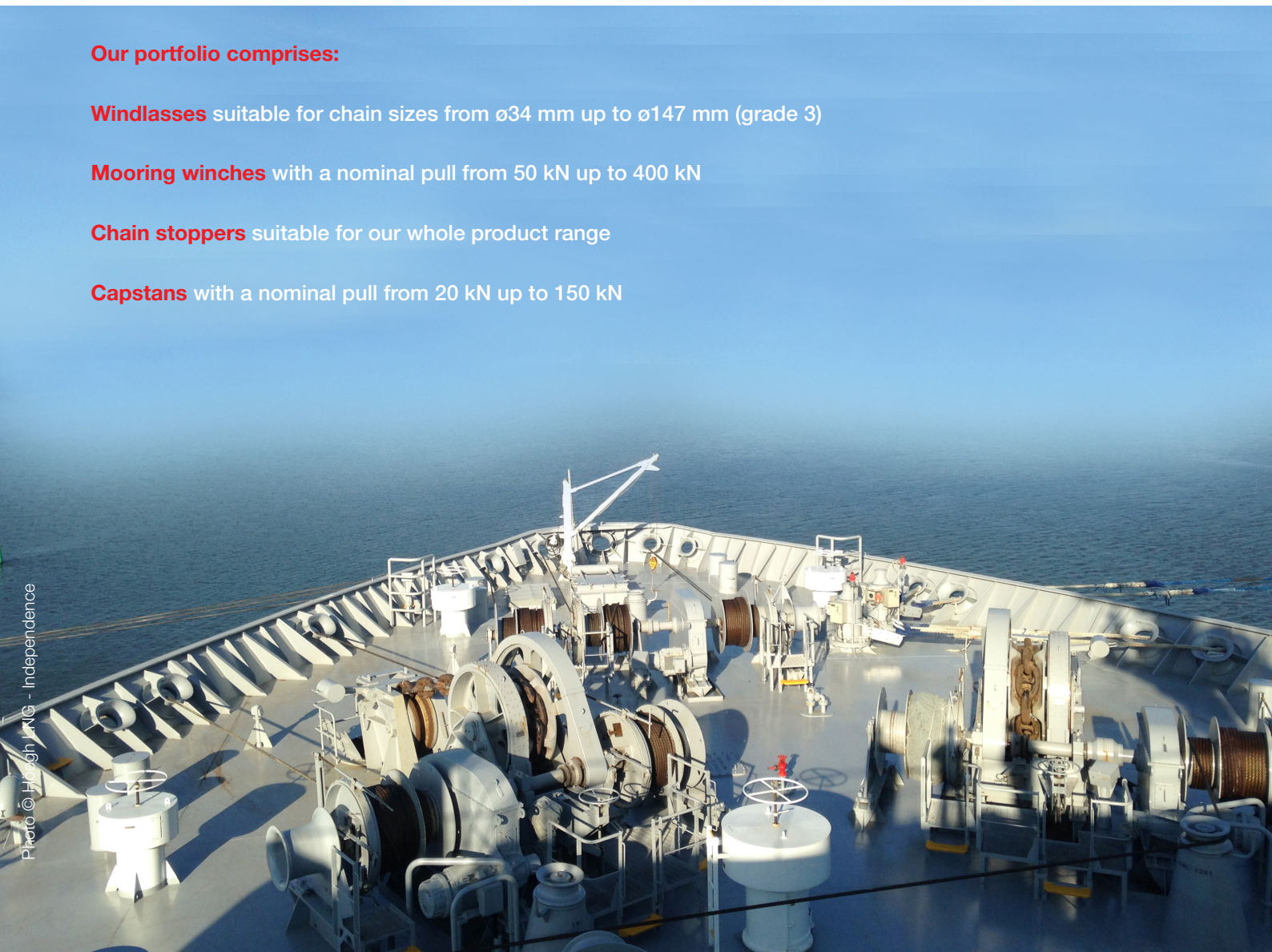
## Our portfolio comprises:

**Windlasses** suitable for chain sizes from  $\varnothing 34$  mm up to  $\varnothing 147$  mm (grade 3)

**Mooring winches** with a nominal pull from 50 kN up to 400 kN

**Chain stoppers** suitable for our whole product range

**Capstans** with a nominal pull from 20 kN up to 150 kN



## Hydraulic drives

Hydraulic drives have through many years proven their reliability, high capacity and flexibility for tanker vessels and gas carriers.

MacGregor can offer two different types of hydraulic drives:

### High pressure

MacGregor high-pressure hydraulic deck machinery is based on a "ring-main" system with a nominal working pressure up to 265 BAR:

- Low-speed/High-torque motors w/control valve blocks machined in one unit
- Stainless steel brake drum surfaces
- Maintenance-free brake assembly
- Brake spindle in stainless steel
- Spring-applied mooring drum band brakes
- Isolation valves for easy maintenance

### Low pressure

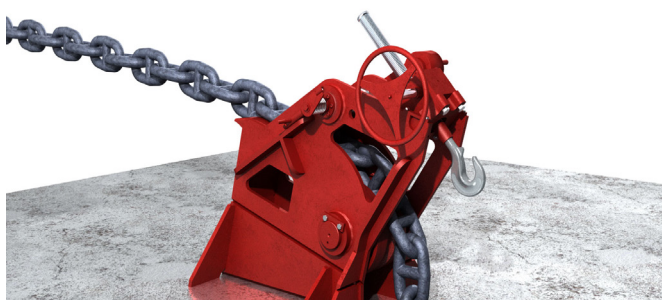
MacGregor low-pressure hydraulic deck machinery is based on a closed circuit system with a nominal working pressure up to 40 BAR.

- Hatlapa low-speed/High-torque motors
- Stainless steel brake drum surfaces
- Maintenance-free brake assembly
- Brake spindle in stainless steel
- Spring-applied mooring drum band brakes
- Isolation valves for easy maintenance
- Fluctuation in volume due to variation in temperature or/and pressure are compensated of an expansion tank connected in the system.

## Chain stoppers

Anchoring is one of the most critical operations on-board a vessel. Problems during anchoring can be very severe for safety of the vessel and its crew.

MacGregor offers well proven chain stoppers for the complete range of deck machinery. Additionally MacGregor can offer chain stoppers with a patented safety device reducing risk of anchor loss and damage to the windlass drive system.



## Electric drives

With high environmental awareness and more vessels operating in arctic areas, electric drives have become a more common solution also for tanker vessels and gas carriers.

MacGregor can offer two different types of electric drives:

### Pole changing type

MacGregor pole-changing electric deck machinery offers simple and well proven solutions:

- 3-speed IP56 electric motors
- Advanced PLC control system ensuring low starting and switching currents ensuring smooth operation
- Stainless steel brake drum surfaces
- Maintenance-free brake assembly
- Brake spindle in stainless steel
- Spring-applied mooring drum band brakes

### Variable frequency drive (VFD)

MacGregor VFD controlled electric deck machinery offers superior handling and safety.

- 1-speed IP56 electric motors
- Stepless speed control
- Full torque available from zero to nominal speed
- Low starting current
- Less and smaller power cables
- Stainless steel brake drum surfaces
- Maintenance-free brake assembly
- Brake spindle in stainless steel
- Spring-applied mooring drum band brakes



## Capstans

MacGregor offers both hydraulically and electrically operated capstans

# Precise manoeuvring

MacGregor has been the preferred supplier of steering gear since 1933. We have continuously updated and improved our systems to meet the growing requirements of customers and authorities.

We deliver three main types:

## Rotary vane

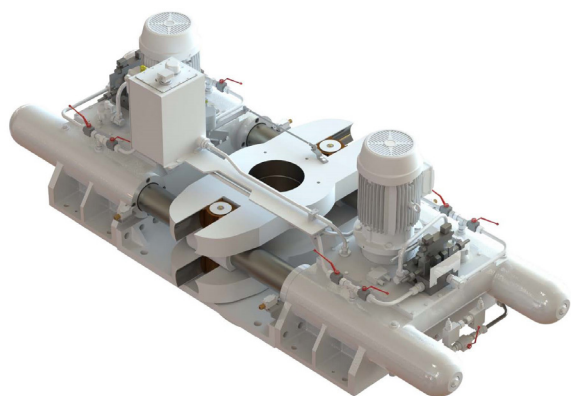
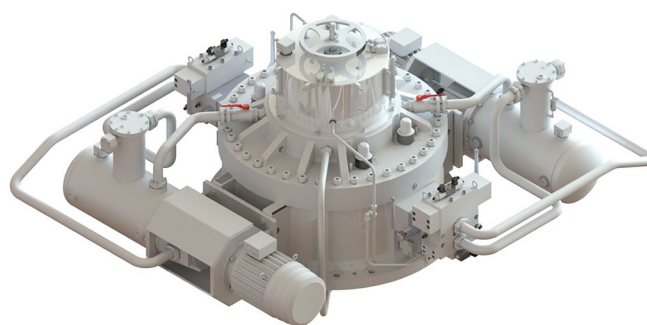
Hatlapa "Triton" and Porsgrunn rotary vane steering gear are suitable for all vessel sizes from around 5,000 dwt to the largest ships.

Porsgrunn IMO series models fulfil the SOLAS requirement for oil-, gas-, and chemical tankers above 100,000 dwt.

The rotary vane steering gear can offer full redundancy and rudder angles up to  $2 \times 70^\circ$ .

### Advantages:

- High rudder angle, full torque at all angles



## RAM-type

Hatlapa RAM type "Poseidon" steering gear are suitable for all vessel sizes from around 5,000 dwt up to the largest ships.

For smaller RAM-types the rudder carrier is included.

The RAM-type steering gear can offer full redundancy and rudder angles up to  $2 \times 45^\circ$ .

### Advantages:

- Simple installation
- Easy maintenance

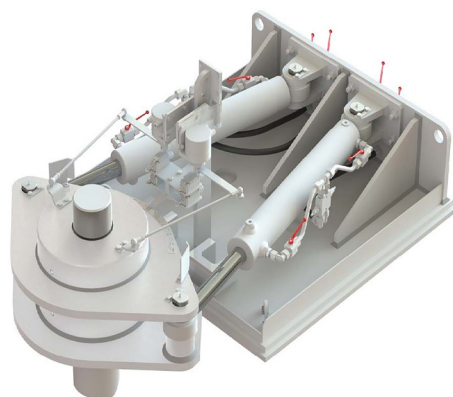
## Piston type "Neptune"

Hatlapa piston type steering gear is suitable for all kind of vessels from around 500 dwt up to vessels around 30,000 dwt.

The piston type steering gear offers rudder angles up to  $2 \times 60^\circ$ .

### Advantages:

- Compact design
- Simple assembly and maintenance
- Integrated mechanical stoppers



# At the heart of every ship

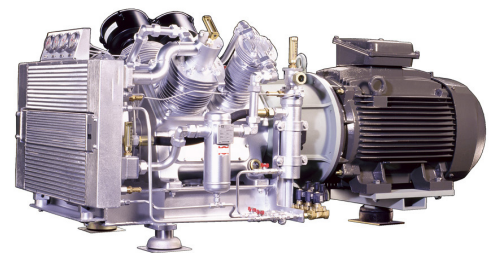
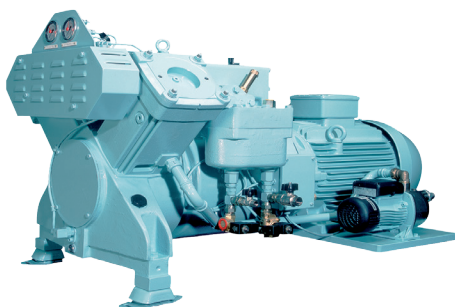
MacGregor offers Hatlapa compressors that are either piston or screw compressors types, with either air or water cooling. They can be used for different services including starting air, service air, working air and control air. All Hatlapa compressors can be delivered with approval from an IACS classification society. When it comes to providing an essential reliable air supply, Hatlapa compressors are the best choice.

## Compressors L series

Air-cooled two or three stage piston compressors of compact design with two to four cylinders, a capacity up to 411 m<sup>3</sup>/h and final pressure up to 40 bar.

The most important use is to provide starting air for the main diesel engines and generator engines.

The well balanced cooling system means that they are suitable for environments with high ambient temperature such as the engine room.



## Compressors V series

Water-cooled two stage piston compressors with two cylinders, a capacity up to 375m<sup>3</sup>/h and final pressure up to 30 bar. The most important use is to provide starting air for the main diesel engines and generator engines.

The well balanced cooling system means that they are suitable for environments with high ambient temperature such as the engine room.

## Screw compressors

The most important use is to provide working, service and control air for tools and machines, operating valves or control equipment.

Hatlapa screw compressors have a capacity up to 670m<sup>3</sup>/h at pressures from 7 to 13 bar.

They are available with air or water cooling.



# Cranes

Reliability in all conditions from arctic to tropical. MacGregor presents a full range of hose-handling and provisions cranes for tankers. Their safety efficiency and low maintenance requirements make these state-of-the-art cranes the ideal choice for all types of tankers.

## Hose-handling duties

MacGregor supplies the HH range of cylinder luffing cranes, with capacities from 3 to 25 tonnes, and outreaches of up to 24m. Additional capacities are available on request.

## Explosion proof

The hose-handling crane incorporates an electric pump motor certified to EExd IIbT4. The motors are protected as per IP55 and have temperature class F (temperature rise 'B'). The electric pump motor is well protected inside the pedestal.

The electrical starter is located in a safe area and EExde start/stop buttons are mounted on the crane foundation.

## Provisions duties

MacGregor provisions cranes (GP) have capacities ranging from 3 to 25 tonnes, with outreaches of up to 24 m. In addition to handling stores and equipment, MacGregor provisions cranes are suitable for special tasks such as handling free-fall lifeboats.

## The technology leader – always ahead

Shipping industry rules and regulations are constantly changing. As the technology leader, MacGregor conducts an ongoing dialogue with the classification societies and other authorities concerning changes that influence the operation and design of ships of all types.

## Personnel transfer

MacGregor can offer personnel transfer on both hose-handling and provisions cranes. All safety requirements from the classification societies are fulfilled.

## Modular design

After listening to our customers, we designed our hose-handling and provisions cranes as complete self-contained modules, with the power pack integrated in the crane housing and foundation. This arrangement ensures:

- Short lead times
- Less cost and time for installation onboard
- No risk of contamination from external pipework
- Full load capacity factory testing before delivery

## Protected machinery

All moving parts run in oil, ensuring minimum wear and tear, with the added benefit of silent running. All vital parts are well protected to withstand the corrosive atmosphere encountered on a ship's weather deck. The control valves are provided with marine type handle/spool arrangements. The electric pump motor is well protected inside the foundation, which is a weather tight compartment.





### Crane control

As standard, MacGregor hose-handling and provisions cranes are provided with controls on an open platform above the slewing ring.

All crane movements are smooth with precise, stepless speed control. Slewing and luffing modes can be operated individually at up to maximum speed or, alternatively, the two motions may be controlled at the same time with full load, but at reduced speed.

The cranes can be supplied with an optional operator's cab or remote, portable controls with cable or wireless connection. Access to the driver's platform is by an external ladder.



MacGregor cranes are designed as complete, self-contained modules

# Worldwide presence and local service

Our customer-driven engineering and service solutions support customers in their onboard, port and offshore operations worldwide. Today, half of the world's oceangoing ships are fitted with MacGregor equipment. Turn to us when you want a reliable partner to keep that equipment up and running throughout your ship's lifetime.

## **Genuine marine spare parts - solution for reliable performance**

We are able to source genuine spare parts and components (hydraulic, electronic and mechanical), even when it comes to obtaining original spare parts that are no longer stocked. Our logistic centres arrange original MacGregor spare parts to any destination worldwide.

MacGregor offers you lifecycle support for ships, ports and terminals, offshore and rigs. We complement our products with original spare parts and support services.

## **Maintenance and damage repairs**

For any minor or major repair work, conversion or modernisation of your cargo handling equipment, contact us. Our work starts with consultancy where we undertake a thorough inspection of your equipment. Through our lifetime analysis, we can determine whether the equipment is to be repaired, converted or modified, thus extending its productivity.

We supply repair services on a planned schedule, on demand or on an emergency basis.

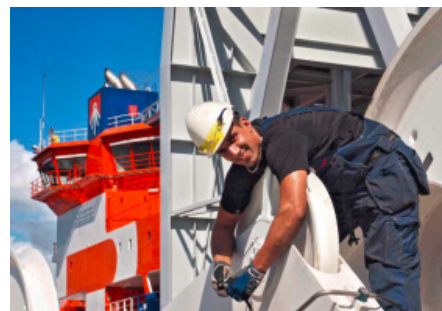
## **Product experts**

Tight and continuous collaboration between our field services network, product competence centres and new sales units ensure precise, quick and efficient support to our customers.

We operate in approximately 50 countries and we are constantly strengthening our local presence to meet changing market needs. MacGregor's service network consists of more than 60 service centres in major ports around the globe, staffed by specialists.

## **Global presence, 24/7**

Armed with our world class expertise in cargo and load handling, we can provide service to our customers all over the world. Our global service network with its trained engineers, spare part coordinators and service personnel is at your service 24 hours a day, throughout the year and across the globe.



# Full service portfolio

MacGregor offers you lifecycle support for ships, ports and terminals, offshore units and rigs. We complement our products with original spare parts and support services around the clock. We are only a phone call away, often just around the corner and we serve our customers in their own languages. Our goal is to provide top-of-the-line service and sustainability throughout the lifetime of our products. MacGregor's cargo and load handling product knowledge and expertise is unparalleled.

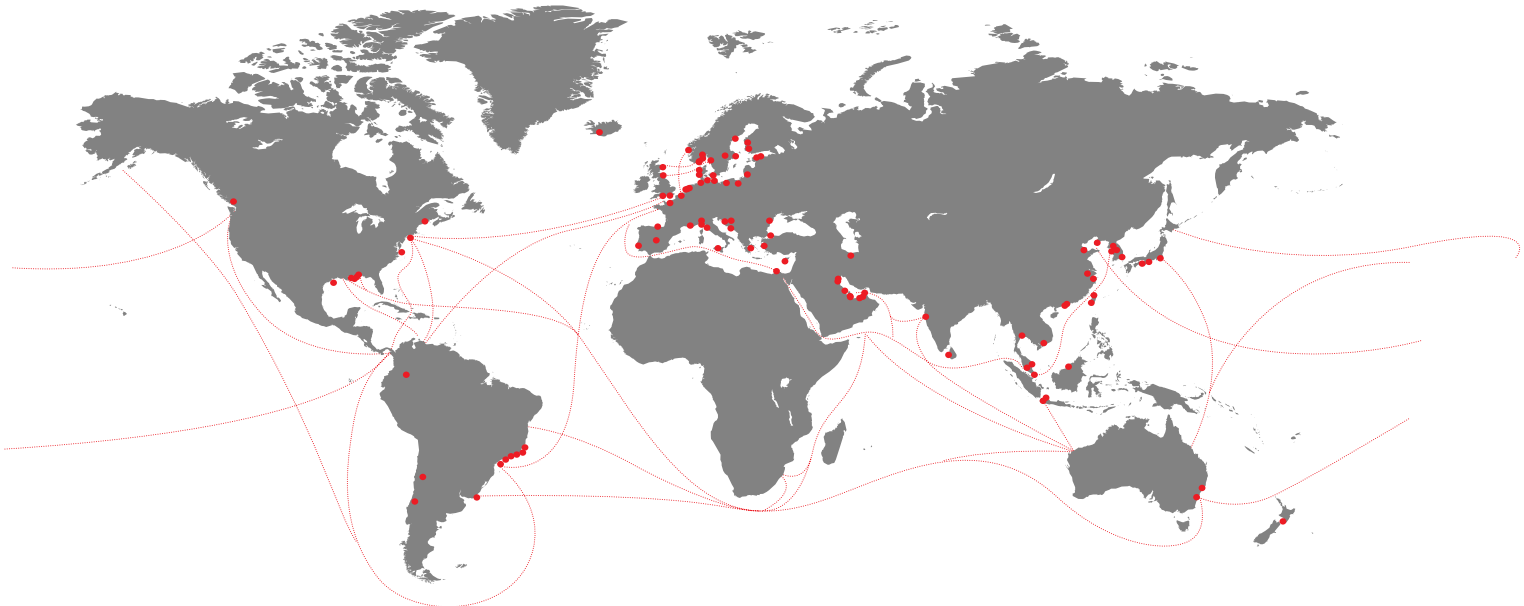
**Our service portfolio covers the following areas:**

- Spare parts
- Service and maintenance, both on-demand and planned
- Damage repairs
- Modernisations and conversions
- Retrofit, overhaul and modification services
- Refurbishing of steering gear with new pump sets and control units (including class society test)
- Hydro check for steering gear
- Replacement of certain equipment
- Reconditioning of compressors
- Remote control valve systems
- Inspections
- Installation
- Drydockings
- Training for crew and personnel
- 24/7-support services
- Consultancy services



Wherever needed, you can rely on our support.  
We serve the following brands globally, and we also serve all others.

- Ankerlökken Marine
- Allset
- ASCA
- Becker
- BMH
- Conver-OSR
- Grampian Hydraulics
- Flintstone
- Greer Marine
- Hamworthy
- Hatlapa
- Hydramarine
- Häggglunds
- Interschalt
- KGW
- KYB - ASCA
- KYB - Kayaba Industries / Navire Cargo Gear
- Luezhoe
- MacGregor
- MacGregor-Conver
- MacGregor-Häggglunds
- MacGregor-Kayaba
- MacGregor-Navire
- Navire Cargo Gear
- Nordströms
- Ozean Service & Reparatur
- Platform Crane Services (PCS)
- Plimsoll
- Pusnes
- Porsgrunn
- Triplex
- Vestnorsk Hydraulikkservice (VNH)



MacGregor shapes the offshore and marine industries by offering world-leading engineering solutions and services with a strong portfolio of MacGregor, Hatlapa, Porsgrunn, Pusnes and Triplex brands. Shipbuilders, owners and operators are able to optimise the lifetime profitability, safety, reliability and environmental sustainability of their operations by working in close cooperation with MacGregor.

MacGregor solutions and services for handling marine cargoes, vessel operations, offshore loads, crude/LNG transfer and offshore mooring are all *designed to perform with the sea*.

*MacGregor is part of Cargotec (Nasdaq Helsinki: CGCBV).*

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