

MacGregor News

Customer magazine | Issue 175 | Winter 2020



Future Vision

Cargo flow
in 2030
page 8

Creation of the
integrated digital ship
page 12

MacGregor sees tipping point for
condition-based maintenance
page 16



In this issue

- 3** Welcome
- 4** Latest news
- 8** Cargo flow in 2030
- 11** Keeping cargo flowing infographic
- 12** Creation of the integrated digital ship
- 16** MacGregor sees tipping point for condition-based maintenance
- 18** The value of training
- 20** “MacGregor through your eyes” photography competition
- 22** Digital solutions webinar series

Cover image: *Whether it's sun or clouds, MacGregor has got your back.* By Maciej Mieczkowski, Global Services.

Welcome

A warm welcome to the latest edition of MacGregor News which I trust our customers, business partners and colleagues will find interesting and informative.



Despite the impact of the coronavirus pandemic, MacGregor has achieved some notable successes during 2020 that continue to demonstrate our focus on supporting our customers, and the wider maritime industry in which we remain a long standing and committed participant.

Following our acquisition of the TTS marine and offshore businesses in July last year, we have made excellent progress in integrating our activities to better serve customers worldwide with a wide range of sustainable and cost efficient cargo and load handling solutions.

We are applying our oil & gas technology and operational experience to support the further development of offshore wind and renewable energy, with the addition of TTS crane and gangway capabilities being notably valuable in this area of application. We are proud to be working on the pilegripper solution for our

customer, OHT, which will further lower installation costs and make renewable energy more competitive.

Despite the challenging market conditions, we have been able to secure important orders in the merchant passenger and cargo transport sectors in both Europe and Asia, including a cargo handling crane contract that includes the provision of our condition-based monitoring and maintenance planning service, OnWatch Scout, within scope of supply.

In this respect, we have seen an accelerated interest in, and uptake of, digitally-enabled services that enable remote technical support and advice to be provided in combination with comprehensive locally-based support, aimed at maximising operational availability and minimising unplanned downtime.

Despite the global impact of the coronavirus pandemic and difficult circumstances for seafarers, the maritime supply chain is buzzing. We are very proud that our service teams worldwide are enabling cargo vessels to operate, thus ensuring an uninterrupted supply of goods to consumers. I am very impressed by the resilience of the MacGregor team and our focus on keeping cargo flowing!

As we conclude this extraordinary year, I look forward to a more promising 2021 and more opportunities to support the growth of our customers' businesses in parallel with our own.

Michel van Roozendaal
President, MacGregor

Latest News



Supporting the development of wind energy

In August, a significant order was secured for delivery of the mission-critical system to be installed on the OHT offshore wind foundation installation vessel, *Alfa Lift*, which is being built at the China Merchants Heavy Industry shipyard in Jiangsu, China.

Scope of supply includes the engineering, procurement and construction of the monopile lifting, skidding and transfer

system, which is an integral part of the installation process undertaken by employing an upending tool and motion compensated gripper frame.

The motion-compensated gripper frame will be closely interfaced with the vessel's dynamic positioning and control system in an integrated solution developed jointly by MacGregor and Kongsberg Maritime.

Alfa Lift is scheduled for delivery in 2021 and will be the world's largest custom-built offshore wind foundation installation vessel. She will feature a 3,000t main crane, a 10,000+ m² 'smart' deck, capable of carrying and installing up to 14 XL monopiles per voyage and will be able to fully submerge the main deck to a depth of 14.66m.

▶ ANIMATION: OFFSHORE WIND ENERGY

<https://youtu.be/pKkPNlvxLpg>



Østensjø Group expands its Edda Wind fleet

In May, MacGregor received equipment orders for four offshore wind service vessels.

Two of the equipment packages were awarded by the shipbuilder, Astilleros Gondán in Asturias, Spain for Edda Wind's zero emission prepared Commissioning Service Operation Vessels (CSOV).

Each of these vessels will be equipped with a Horizon all-electric walk-to-work gangway, including the largest integrated passenger lift ever fitted to a wind service vessel, which is interconnected to a Colibri 5 tonne 3D motion compensated crane.



The other two equipment packages were awarded by Astilleros Balenciaga which is building Edda Wind's second generation Service Operation Vessels (SOV). These are also prepared for zero-emission hydrogen fuel and will be equipped with a Horizon all-electric walk-to-work gangway

system and 3 tonne Colibri 3D motion compensated crane.

The orders are the result of a long collaboration with Edda Wind, its ship designer, and other key suppliers to realise the potential of fully electrified equipment and integrated vessel systems.

Maximising cargo handling crane availability and performance



Safety, asset optimisation, operating efficiency and sustainability are key themes for the maritime industry. During the

coronavirus pandemic, customer interest in new, digitally-enabled services that further enhance support for MacGregor's range

of cargo and load handling solutions has grown.

This year, two important contracts have been secured to provide cargo handling cranes for eight 62,000 dwt general cargo ships to be built in Asia. The first contract also includes the OnWatch Scout equipment monitoring and management system within scope.

OnWatch Scout is a condition and predictive monitoring system focused on maximising the operational availability and performance of MacGregor equipment in service, and supporting more effective planning of maintenance activities.

OnWatch Scout milestone

North Sea Shipping is the first customer to sign a 5 year OnWatch Scout service agreement with MacGregor. The OnWatch Scout Predict system, including machine learning models, will be



installed on the large subsea construction vessel, *North Sea Giant*.

With time, the system will enable potential crane operating problems to be identified and addressed before they arise, providing a material advantage in today's competitive market situation. In addition, OnWatch Scout will guide technical crew through troubleshooting and

on board repairs that can be undertaken while the vessel is in operation.

North Sea Giant is equipped with two Active Heave Compensated (AHC) offshore cranes, SWL 50 and 400 tonnes, and operates in the harsh environment of the North Sea. Installation and testing will take place during November in Norway.

Strong customer relationships and a global presence

Despite the challenging and highly competitive market environment, MacGregor has been able to secure significant orders for merchant cargo and passenger vessels during the year.

These include orders from Japan to provide ramps and

lifting platforms for two Ro-Pax vessels and two material supply vessels, an order from Scandinavia for a group of Linkspans, and another RoPax order in Asia. In the last case, the scope of supply was one of the largest in its segment.

These contracts demonstrate the importance of strong customer relationships, a global presence and the ability to meet specific operational needs, with through-life reliability, durability and efficient loading.



MacGregor supports China's Lingshui 17-2 gas field development

The riser pull-in system delivery ceremony for the Lingshui 17-2 (LS 17-2) project was



held on 9 November 2020 in Zhuhai, China. The north and south modules were loaded onto a barge for transfer to Yantai, where the main hull is located.

LS 17-2 is the world's first deepwater semi-submersible production platform with condensate storage facilities, and

is owned and will be operated by CNOOC.

In 2019, MacGregor was selected to supply the on-vessel mooring systems and riser pull-in system for the project. The mooring system was successfully delivered on time in June, despite restrictions imposed by the coronavirus pandemic.

Enabling Arctic missions

Halter Marine has chosen MacGregor to supply deck machinery and cargo handling equipment to the US Coast Guard Polar Security Cutter (PSC) programme.

Scope of supply comprises anchor windlass, mooring winch-

es and capstans, main towing winch, offshore cranes, oceanographic winch, hangar overhead crane and cargo access equipment. The contract also provides for two further options for delivery to a second PSC in 2025, and the third vessel in late 2027.

The Polar Security Cutter programme (PSC) is planned to replace the United States Coast Guard's existing fleet of icebreakers. The new fleet will allow the USCG to perform missions in the Arctic region, including defence and readiness operations, research assignments, search, rescue and logistic support and vessel escort.

The PSC will provide accommodation for 186 crew, scientists and others as part of the mission packages, with a capability to break through two metres of ice and operate for 80 days without replenishment.



Deck handling solutions for the US Naval Sea Systems Command's Towing, Salvage and Rescue Ships

In July, MacGregor secured an order to provide deck handling solutions to two Towing, Salvage and Rescue (T-ATS) class vessels to be built at Gulf Island Shipyards LLC, a subsidiary of Gulf Island Fabrication Inc.

The order represented the 4th and 5th shipsets that will be supplied to the new T-ATS class, which will be deployed for worldwide naval service including open-ocean towing, supporting salvage operations and submarine rescue missions.



Scope of supply includes deck machinery, towing winch, traction winch, shark jaws, towing pins/pop-up pins, stern roller, offshore crane and other

accessories. Deliveries are planned to take place during the last quarter of 2021 through to the first quarter of 2022.



Cargo flow in 2030

What will the business of shipping and ports look like 10 years from now?

How will the business of cargo flow and handling change over the next 10 years? It's a question Maritime CEO has posed to hundreds of shipping executives in recent months. Some have BladeRunner-esque visions of the ship/port interface; others are more cautious about the speed of change.

Phil Curran, vice president at G2 Ocean, says changes in cargo handling methods over the next 10 years will be driven by technology improvements.

"As technology improves and becomes less expensive and more accessible, we are

expecting many opportunities in the breakbulk sector for improved, efficient automation, especially in operations onshore," Curran says.

As an example, Curran expects shipping companies to use Radio-Frequency Identification (RFID) technology increasingly to monitor cargo from the first to the last mile.

"Tagging with RFIDs will be commonplace and will not only improve the visibility of cargo transport along a shipment journey but also help to improve our supply chain management," Curran says.

Coordinated improvements

Kris Kosmala, a cargo handling expert and regular Maritime CEO columnist, says it is vital for the industry as a whole to work together to drive efficiencies over the coming decade.

“Value is created out of coordinated improvements across all port-vessel and port-cargo touch points,” Kosmala reminds readers.

Looking at specific touch points reveals where the improvements and changes will be happening over the next 10 years. In the physical port-vessel interface area Kosmala reckons we will see progressive deployment of vessel mooring solutions such as smart bollards

and smart quay walls based on sensors and movement suppression technology between the bollard and the vessel.

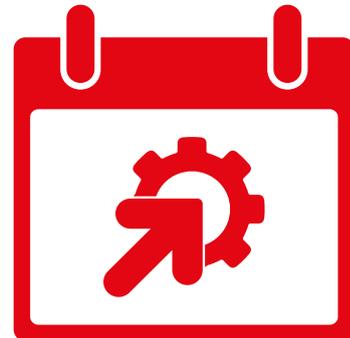
But the physical aspect of mooring systems does not create sufficient value nor competitive differentiation. There is a need, Kosmala reckons, for predictive and optimisation software to be deployed above the physical interface that would aid terminal mooring crew in both tactical planning (where and how to position a vessel at the quay in advance of the arrival/departure), as well as operational decisions on securing/releasing the vessel on the day of its actual arrival/departure in port.

Predictive maintenance

“The next 10 years will bring increasing sophistication of sensors and also sophistication of software capable of reading data from the sensors and predicting equipment servicing needs and optimising repairs and maintenance on the shore and ship equipment,” Kosmala suggests.

John Carnall, senior vice president in MacGregor’s global services division, agrees wholeheartedly with Kosmala on this point. Carnall can see one definite big change coming belatedly to shipping, namely predictive maintenance, something that will be normal by 2030. Carnall, who comes from a mining background, points out that for miners this has been the norm for the past 15 years.

“Nowadays with algorithms you can run predictive maintenance much more flexibly. Remote monitoring will be part of the solution, but the technology will be increasingly embedded within the products themselves,” Carnall explains.



The years through to 2030 will be dedicated to improving and extending software platforms capable of measuring, assessing, and making decisions on behalf of humans, Kosmala reckons. For this to happen, sensors and robotics installed on every piece of quay and ship equipment will have to include open interfaces allowing software platforms to harvest real time data from operations. This will allow managers (and management software) to evaluate performance of all pieces of equipment as one and send decisions in real time back to the individual equipment to modify its operation in such a way that the entire system of machines is not disrupted.

Ship design and shipbuilding

Michel van Roozendaal, the president of MacGregor, envisions that by 2030 ships will be more advanced tech-wise and commoditised on a positive basis, so that they are built in a far longer series; it will therefore make sense to invest in more ambitious technology.

In aviation, just two companies - Seattle's Boeing and Toulouse-based Airbus - have a stunning combined market share of 91% in the commercial aircraft market globally. Such dominance allows the pair to direct research and development more strategically, offer a limited, but generally successful line-up of products and ensure that suppliers are anxious to please.

Shipbuilding still has a long way to go to get to a more dominant position at the bargaining table, but it is slowly getting there.

Van Roozendaal, a former aerospace engineer, argues that shipping needs to properly embrace series construction if it is to enjoy true technological change.

"Shipbuilding is a perpetual repetition of building a prototype. Very few vessels are exact copies of another. That makes it a little bit of an improvisation and makes it harder for technology to make an impact and to be used more efficiently," he says, something that ought to change with the number of yards contracting thanks to the round of mega mergers going on.

"You don't see many series with identical ships," van Roozendaal observes. "There is a lot of improvising going on, so it makes less sense to optimise the design of the ship."

Further down the line, as the number of shipyards and shipowners inevitably contracts van Roozendaal says he can see ships becoming more uniform and systems such as deck handling, bridge and propulsion equipment becoming standardised. "It would be great if these systems became better to operate with an increased transition from hydraulics to elec-

trics. Electric systems have many benefits with greater control," says van Roozendaal.

"New shipping and shipbuilding technology for vessel management and propulsion will feature prominently in the 2020s. The recent consolidation of shipbuilding groups is well timed to provide research and investment on the scale needed to meet this challenge," says Dr Martin Stopford, the non-executive president of Clarkson Research and one of the most famous shipping analysts in the world.

Magnus Sjöberg, senior vice president at MacGregor's merchant solutions division, reveals more high-end shipowners are asking for revolutionary changes.

"You have to turn every stone and we can help with that," Sjöberg says.

Warming to the theme, Sjöberg cautions that - historically - changes in shipping have taken time.

"The shape of ships has been the same since the 1960s, but the size has been scaled up. We will see some different kind of designs coming through, but not into the mainstream straight away," Sjöberg predicts.

Dennis Mol, vice president, digital and business transformation at MacGregor, also has some cautionary words about the speed of change in the coming decade.

"I don't believe in those very disruptive visions to the future," Mol says in a candid interview with Maritime CEO. "It did not happen with iPhones, Uber, Amazon, etc. overnight. It takes a while and for shipping it will take a while as investments are so large that the assets have to trade for a long time."

However, as Mol points out, shore-based technology is changing so quickly that greater automation and remote predictive applications ashore will inevitably have consequences for and applications on board ships at sea.

KEEPING CARGO FLOWING



THE WORLD ECONOMY DEPENDS ON THE MARITIME INDUSTRY

60%

of the value of seaborne trade is transported by containerships

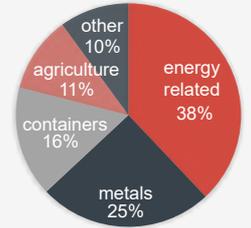


90%

of non-bulk cargo worldwide is transported by container

12 billion

tonnes of cargo carried by sea in 2019



38,000

ships in the global oceangoing fleet

32%

of the global fleet are bulk carriers



Many containerships carry **10,000** containers per voyage

80%

of world trade is carried by sea



98%

of containers are recyclable and shipping is significantly more carbon-efficient per tonnes carried than air, road and rail

77 km

length if the containers from an 11,000 TEU containership were unloaded onto a train



10

In its lifetime a large containership travels to the moon and back 10 times



MACGREGOR TECHNOLOGY IS ON EVERY SECOND SHIP AFLOAT

2,060

skilled personnel



90+

years of experience



81

offices worldwide



located in **31** countries



5,000

mobile offshore vessels and structures with MacGregor equipment

20,000

oceangoing merchant ships with MacGregor equipment



50%

of the world's fleet have MacGregor equipment installed



MacGregor is part of Cargotec **12,000** employees in **100** countries
Smarter cargo flow for a better everyday

MacGregor's expertise is sought by industry bodies when developing new standards and regulations



MAXIMISING OPERATIONAL AVAILABILITY AND MINIMISING UNPLANNED DOWNTIME

850

service experts

in

60

service centres



20,000

ship visits per year



42,000

spare part deliveries per year

Cargo Boost increases carrying capacity by up to

15%



OnWatch Scout remotely monitors

200+

condition alarms



24/7

global support



4,000

ships covered under service contract



Creation of the integrated digital ship

The maritime technology outlook for the coming years is very much about vessel optimisation, according to a survey conducted by Maritime CEO in which MacGregor participated.

“The obvious first driver this year is technology that can deliver genuine fuel savings, lower emissions and better vessel performance,” says Tore Morten Olsen, president of maritime at Marlink.

Leif Bystrom, chief operating officer at MacGregor, says, “Our customers are asking for solutions to improve their performance.

To keep ahead of the competition they need state-of-the-art solutions and systems so their work becomes more efficient.”

As Magnus Sjöberg, senior vice president at MacGregor’s merchant solutions division, puts it: “Clients are asking for waste in the whole logistic chain to be reduced.”

“ *Our customers are asking for solutions to improve their performance. To keep ahead of the competition they need state-of-the-art solutions and systems so their work becomes more efficient*

”

CARGO BOOST

Cargo Boost increases containership earning potential and sustainability by maximising cargo space utilisation, efficiency and lowering emissions per transported unit of cargo. Different cargo system configurations are analysed to establish which delivers the best investment efficiency, with utilisation rate increases of up to 15% achievable. Cargo Boost scope can vary from simple documentation updates, to minor mechanical upgrades and all the way to major system upgrades combined with MacGregor’s Productivity Care service.



Increasing efficiency and performance

According to Rajesh Unni, the CEO of Singapore shipmanager Synergy Marine Group, “The industry has started seeing IT as a differentiator rather than an enabler. The challenge remains in trying to find ways to make the best use of technology.”

Dennis Mol, vice president, digital and business transformation at MacGregor, says that customers are asking for two things in the current environment - aid to operate as efficiently as possible and a quick response time.

Quite so, concurs Daniel Lundberg, a director

working with Mol on developing MacGregor’s digital solutions.

“Customers want increased profitability and increased use of their ships. We can do this using big data, monitoring and supporting our equipment remotely to harness data and evaluate information before anything happens,” Lundberg says.

This is something MacGregor is already doing with its OnWatch Scout service which is taking condition monitoring and predictive maintenance to the next level.



ONWATCH SCOUT

OnWatch Scout increases the flow of information and moves support from a reactive to proactive mode, with operational data streamed directly from the vessel, monitored, analysed and used to provide guidance on performance. The system monitors component condition and predicts potentially critical performance issues while optimising planned maintenance intervals through measurement of use and condition.



The smart ship

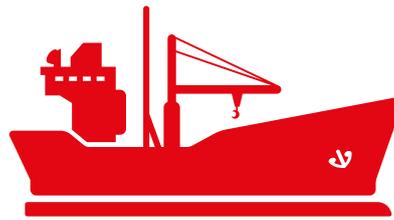
“Artificial intelligence (AI) can be used to harness both shipboard and external data to optimise vessel performance and thus reduce excess fuel consumption and, consequently, emissions,” says Gil Ofer, head of open innovation at Eastern Pacific Shipping.

To see the most significant gains from AI, however, Ofer points out that the use of high-frequency data coming from sensors will be necessary, and as such, the Internet of Things (IoT) will be a top theme for the coming year.

Manish Singh, the recently installed CEO of Videotel and Seagull, agrees with Ofer, arguing that we are on the cusp of the real adoption of the Internet of Maritime Things, as he describes it. Stronger and cheaper connectivity to ships, MESH networks onboard, greater use of sensor technology, vessel position and operational data, will deliver significant new digital tools, he says.

Morten Lind-Olsen, CEO of Dualog, picks up on the widely held perception that digital fleet performance monitoring will grow strongly in the coming year. This is in no small part down to the impact of increased bandwidth at sea, he points out.

“We’re seeing the creation of the integrated digital ship,” he says. “This is partly linked to the bandwidth issue, but as I see it there is a



huge focus on increased business efficiency through consolidated ships operations.”

This goes all the way from automating human/manual interactions through digital solutions to increasing machine to machine interactions through IoT data and sensor-database exchanges, Olsen explains, something that will drive more analysis and systematised planning ashore.

Olsen’s predictions are not dissimilar to Henrik Hyldahn’s, the CEO of ShipServ, who says: “The continued upgrading in IT infrastructure within shipping will create the platform to accelerate the use of data and analytics, which provides owners and operators with real transparency to analyse their organisations and business models, driving efficiencies and optimising performance and profitability. In line with this, throughout the coming months we will also see further progression in automation, which will lay the foundation for cognitive systems and intuitive interfaces, which – from a procurement perspective – will be a key element in its ongoing digitalisation.”

AUTOMATED MOORING

In collaboration with Kongsberg Maritime, MacGregor has developed the mooring solution that will enable the world’s first autonomous container ship, *Yara Birkeland*, to undertake mooring operations without human intervention. This innovative and fully electrical system increases safety and eco-efficiency compared to conventional mooring operations, with the solution based on a seven-axis robotic arm that takes the mooring ropes with loops and wraps them around bollards on the dock. Load-controlled winches then hold the vessel in the correct position against the quay.



Big data

In Hong Kong, William Fairclough, the managing director of Wah Kwong Maritime Transport Holdings, reckons the coming year will see Big Data change the business of shipping with a host of competing platforms coming online promising to deliver unprecedented insight into the movement of cargoes around the globe.

Tommi Keskilohko, director of customer solutions at MacGregor, taps into this theme and puts it in the context of providing customers with solutions to grow the earnings potential of each ship. He goes on to cite the company's innovative Breakbulk Optimiser, which uses algorithms to work out the storage of a breakbulk vessel to optimise the carrying capacity and stowage options. Something that used to take days of planning is now done in an hour, he says, observing that the commercial win-

dow available to a customer suddenly opens by a day as a result.

"We're tapping into the revenue streams of our customers," Keskilohko says.

Looking at all of this technological change, Jörg Peschke, director of digital solution architecture at MacGregor, reckons many owners still need persuading, although he also highlights that they will only be convinced if the imperatives are fully transparent.

"Customers are unsure about the implementation of digital solutions and enhanced technologies," he concedes. "The big question is also a simple one: What is my ROI on this? To answer this critical question, we work hand-in-hand with customers and are very open with our interfaces."



BREKKBULK OPTIMISER

Breakbulk Optimiser has been developed together with customers to improve information transparency, efficiency and operational performance in the breakbulk industry. The cloud-based service uses cargo booking data and vessel route information to enhance planning capabilities, and enable fact-based decisions to be made that increase operational efficiency, consistency and business performance. The service also provides an enhanced ability to react to last minute changes and no-shows as the software optimises the stowage plan.

The previous two articles originally appeared as part of the Maritime CEO special supplement 'Shipping in 2030 - the future of cargo handling', published in September 2020.



MacGregor sees tipping point for condition-based maintenance

Whilst condition-based information backed by responsive OEM support and technical expertise have become increasingly key to effective maintenance planning and maximising operational availability, coronavirus related restrictions have visibly increased the benefits to shipowners and operators.

“In the past, the service organisation footprint and logistics management capabilities required to effectively support ships in operation have perhaps not been fully recognised,” says John Carnall, MacGregor’s Senior Vice President, Global Services. “With the current limitations on travel and provision of onboard support, this has changed and customers are seeing the value of locally based specialists and remote technical expertise in ensuring that the right parts are available in the right place at the right time.”

With 850 specialists and 60 service centres located in 31 countries worldwide, including recent expansion to provide enhanced support to

customers operating in the Americas, MacGregor fully understands the value of local specialists supported by ‘centre of excellence’ based technical experts, and an ability to supply original spare parts from regional warehouse stock.

“Customers are recognising the value of condition-based information as a maintenance planning advantage,” adds Dennis Mol, Vice President, Digital and Business Transformation. “It provides peace of mind with respect to mission-critical systems and operational continuity, and is something we expect will be increasingly required by shipowners and operators to maximise the efficiency and value of expensive assets”.

Condition-based maintenance management

“As an industry, we are moving towards predictive tools, which will help to eliminate unplanned downtime, ultimately reduce maintenance costs and increase revenue and profitability,” adds Mol.

He says MacGregor’s extensive knowledge is being channelled into developing algorithms that can predict when certain equipment requires maintenance based on use and condition, rather than relying on conventional time-based service schedules. Digital advances in this arena include ‘OnWatch Scout’, with four merchant and offshore pilots currently in operation.

“High quality, accurate, predictive maintenance is possibly one of the most important elements of service provision,” says Mol. “OnWatch Scout is a predictive tool developed to ensure that equipment is able to operate more or less continuously. It detects variations in the behaviour of components and predicts if something might happen. We then have the ability to notify the customer and advise them of the preventative steps that need to be taken to avoid component failure.

“The crew and operation centres engaged in the pilot programmes are very happy with the ease of system use and information being made available, which is providing common visibility of the crane operating information. This, in turn, is supporting effective ship to shore communication and coordinated decision making.”

Future development plans include extension of the OnWatch Scout capability beyond cargo and load handling cranes to include hatch covers, deck machinery and other critical equipment and systems.



Close is good, even closer is better

Good maintenance practices positively support business operations, but John Carnall emphasises that saving costs does not mean cutting down on maintenance itself: “It means being focused on doing it the right way,” he says.

“OEMs know their equipment better than anyone else. This enables us to more easily assess and determine its condition, ensure that parts are not replaced unnecessarily, and develop tailored, cost-effective plans for repair and renewal. Technical personnel can also make relatively small adjustments to opera-

tional parameters that deliver material performance benefits.”

“When we are able to have an effective dialogue with customers, jointly plan required work and then carry it out as agreed, we are the best at what we do,” Carnall adds. “With this being increasingly combined with the availability of condition-based information to support effective maintenance planning, we can further enhance the world-class operational support expected of MacGregor, even in these most challenging times.”



The value of training

Training in whatever industry you're in has gone through a profound and rapid change this year, thanks to Covid-19. Almost overnight, people adjusted to taking lessons by gazing at teachers from afar via computer screens rather than in physical classrooms.

As part of its approach to training, MacGregor has continuously sought to bring people up to speed with its own technology by using the latest available learning techniques. The approach, which in recent years has involved significant investment in distance learning and other digital training tools, has put the company in good shape to respond to Covid-19 constraints.

The development of simulation software for mission-critical equipment is undertaken in

close liaison with our design and technical departments, which then ensures that training in a virtual environment is as realistic as possible and delivers the intended commercial benefits.

Simulation technologies are becoming standard in the offshore industry. We rewrite the standards to take into account our customer's needs and to offer a range of simulation packages that will optimise your equipment while enhancing safety and operational efficiency.

“*Making expert knowledge available to customers through simulation-based training is another information-based capability that enhances crew capabilities, operational safety and equipment reliability*”

“Through theoretical sessions and simulator experience, our training courses allow the crew to practice challenging operations, experiment with new techniques, learn from mistakes and experience realistic consequences under the watchful eye of MacGregor trainers,” says Dennis Mol, MacGregor’s vice president for digital and business transformation.

Virtual reality simulator training is designed for both experienced and novice operators. MacGregor’s state-of-the-art immersive simulator provides unique practical training. Crew obtain experience, which in real life would have demanded a huge investment in time and posed considerable risks.

“Making expert knowledge available to customers through simulation-based training is another information-based capability that enhances crew capabilities, operational safety and equipment reliability,” says Mol. “Digital twin-based services provide a dynamic environment that enable procedure demonstrations and training to take place, with the ability for this type of training to be undertaken by crew onboard being a planned development,” he adds.

MacGregor simulates a wide variety of offshore cranes with a genuine crane control system and full operator interface. The simulator can be configured to reflect vessel, crane type, placement and a specific load for critical operation rehearsal. It simulates weather, wave direction and height, night and day, depth, load type, component breakdowns, system emergencies and other real-world challenges.

MacGregor’s virtual reality training centre in Arendal, Norway features an authentic operating chair for offshore crane simulations and a standing zone, where participants can walk around the simulated ship familiarising themselves with safe operation of the equipment. Refresher training and extra simulator days/hours can be provided for those with previous training.

Bow loading systems training courses for shuttle tanker personnel have continued to be arranged physically at the training centre despite Covid-19 restrictions in response to customer demand.

Government health and safety requirements are closely followed, with participants needing to quarantine in a hotel for 10 days prior to joining the course and maintain a 2 metre distance whilst in the classroom. All participants wear facemasks, and are provided with latex gloves whenever testing or operational training takes place.



“MacGregor through your eyes” photography competition

A “MacGregor through your eyes” photography competition was held during November to collect great shots that will be used to refresh and enhance the library of images that we use in our presentations and other communication materials.

Despite the coronavirus-related travel constraints, we were very pleased to receive more than 160 high quality entries from MacGregor colleagues working in different divisions and functions around the world.

The top 6 entries, as judged selected by the Executive Management Team, show MacGregor in action in Europe and Asia. The overall winning entry, submitted by Maciej Mieczkowski, is also featured on the front cover of this edition of MacGregor News.



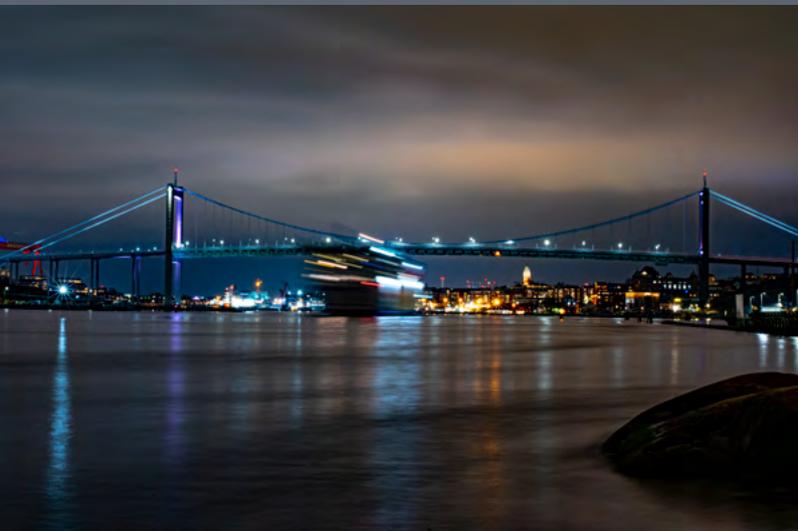
*Gdansk, Poland:
Whether it's sun or clouds,
MacGregor has got your back
Maciej Mieczkowski, Global Services*

Photo competition



Ystad Linkspan, UHL vessel equipped with MacGregor cranes & hatch covers
Alexander Brandstrom, Merchant Solutions

Germanica on its way out of Gothenburg, Sweden
Jon-Asle Jansen, Merchant Solutions



MV Timberland MacGregor Crane, Norrkoping Sweden
Rustan Jay Menta, Global Services



MS Viikki in Helsinki
Christian Nordin, Merchant Solutions



Interaction in the strategy storyboard workshop, China
Yench Wang, Merchant Solutions



Digital solutions webinar series

During the year, MacGregor hosted a series of webinars focused on digitally-enabled solutions that enhance key areas of safety, asset optimisation, operating efficiency and sustainability.

“Our focus on collaborative development with customers, partners and colleagues has resulted in the installation of digital solutions which optimise daily operations. We have been delighted to share our user-case experiences and startup approach during the webinar series,” says Dennis Mol, Vice President Digital & Business Transformation, MacGregor.

The series covered the following topics, with recordings available through the MacGregor website links:

How a remote monitoring service works: using OnWatch Scout for cargo equipment

An overview of how OnWatch Scout delivers the next generation of awareness, collaboration and “time-to-act”. [Watch the recording](#)

OnWatch Scout: Learning and capability development based on customer experience

Feedback from customer experience supports the accelerated development of digitally-enabled equipment monitoring capabilities that focus on maximising operational availability, minimising unplanned downtime and more effective planning for maintenance activities. [Watch the recording](#)

Installing OnWatch Scout on board; practical guidance

A practical overview of how installation of the OnWatch Scout condition-based monitoring system is performed on board offshore and merchant vessels. [Watch the recording](#)

Using digital twins to assure safe and cost-efficient complex operations

A wind energy example offers an insight into how a virtual reality digital twin can be used to develop a customer solution. [Watch the recording](#)

Using digital twins and simulation services to reduce operational and safety risks

The use of digital twins to reduce risk and overruns in complex and innovative new projects. How simulation can help operators to reduce operational risk by offering a more advanced, flexible way to train crew. [Watch the recording](#)

Breakbulk Optimiser - increasing asset utilisation & efficiency

An introduction to the Breakbulk Optimiser service that increases information transparency, reduces complex planning processes and improves cargo carrying efficiency. [Watch the recording](#)

Implementing digital solutions in a global operating company pre and post Covid-19

An introductory overview of the development process, with examples of tangible benefits that are being realised. [Watch the recording](#)



Wherever needed, you can rely on our support.
We serve our customers globally:

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





MacGregor is a leader in intelligent maritime cargo and load handling with a strong portfolio of MacGregor, Hatlapa, NMF, Porsgrunn, Pusnes, Rapp, Triplex and TTS products, services and solutions, all *designed to perform with the sea*.

Shipbuilders, shipowners 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 is part of Cargotec (Nasdaq Helsinki: CGCBV).

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MacGregor

macgregor@macgregor.com

www.macgregor.com