

INSIDE

NOVEMBER 2016 #26

INSIDE

RETHINKING THE MODEL

COOPERATION

NEW IDEAS

NEW IDEAS

NEW TOOLS AND SERVICES

NEW TOOLS AND SERVICES

MORE CORPORATE
PROFITABILITY

GustoMSC



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'THERE IS A STRONG NEED FOR CHANGE'

Wood Mackenzie Consultancy published an interesting survey about Cost Management in upstream oil and gas. InSide Magazine spoke to Andy Tidey, their Senior Vice President and Global Head of Performance Improvement, about how to obtain a long-term and sustainable cost-efficient regime.



INTERVIEW SEAWAY HEAVY LIFTING

CEO Jan Willem van der Graaf shares his vision on strategy, flexibility, technology and how he is planning to lift Seaway Heavy Lifting to the next level.

PREFACE

RETHINKING THE MODEL



The theme of this edition of GustoMSC's InSide magazine, Rethinking the Model, can be applied to many aspects of our work and to the markets that we operate in. A number of examples of this are highlighted in the magazine in front of you.

Offshore Oil & Gas

It has been the topic of previous InSide editions: the present market downturn in offshore oil and gas leads to an ever greater need for models where cooperation and innovation reduce costs. Successes have been achieved recently, for instance at Statoil's Johan Sverdrup project, where GustoMSC designed unique CAT-J drilling jack-ups contribute to a project that will produce oil at 25 USD/bbl. Having the optimal tool for the given task is essential in order to be cost effective. The Scylax is another example. This newly designed drillship makes developments available in the mid-to-deep-water market at reduced building and operating costs (see pages 14-15).

On pages 6-9, Wood Mackenzie's Andy Tidey stresses the importance of real cooperation between operators, contractors and suppliers, where a fair distribution of risk and reward is key to sustainable and long-term success. He puts forward that the day-rate model can be counterproductive. We recognize this and experience this in the (in our view) rather slow adoption of new technologies like our SmartCrane (see pages 10-13). Operators are in favor of it whereas contractors in general seem to be reluctant to adopt the SmartCrane.

Maybe because it reduces the number of rig days, whereas operators are reluctant to allow a higher day rate for more efficiency. Perhaps a more integrated model could benefit all, also in this case. GustoMSC is ready to participate.

Offshore wind

On a macro scale, offshore wind is a result of rethinking the global model of (offshore) energy supply. On a smaller scale, Seaway Heavy Lifting has developed a successful model for installing monopile foundations with a floating crane vessel instead of a jack-up. The cranes they use are GustoMSC designed, and the design of the heavy-lift vessel Oleg Strashnov is also made by GustoMSC, albeit for oil and gas and not with offshore wind in mind. Seaway Heavy Lifting's CEO Jan Willem van der Graaf explains on pages 16-19 how important it is to be flexible in this market, also where cooperation with others is concerned.

The ever-growing size and weight of wind turbines and their (monopile) foundations has made us rethink the transportation and installation model for monopiles. The result of this rethinking is the Ensis WTI vessel (page 20), which transports the monopiles vertically instead of horizontally. This significantly increases the number of piles on board to a maximum of 12. In addition, the offshore handling of the piles is safer and it makes the entire process more efficient.

As a result of the downturn in offshore oil and gas, we see that many operators in this market

are moving into offshore wind, whereas GustoMSC has been active in this field since the very beginning (around 2002). Needless to say, experience is also essential for this market; it is the key to reducing risk and increasing efficiency. GustoMSC provides proven technology combined with the experience and creativity that are needed to take the next steps in this market. We have a range of solutions available and are continuously developing new ones, on our own or in close cooperation with partners. Contact us to stay abreast of the latest developments, we will be pleased to share our insights with you.

Operational support and consultancy services

Besides the innovative new design and equipment solutions mentioned in this edition of InSide, it is good to remember that GustoMSC also provides operational support on existing units. We support our clients continuously and we are ready to take on any challenging engineering project you wish to explore. Also do not hesitate to contact us early on in your new developments, because it is in these early phases that we will be able to advise and add value to your decision-making process as a consultant. We are here to support you continuously with our expertise, as we aim to do in all projects we are involved in.

Looking forward to hearing from you and being of service to you.

Nils van Nood
CEO GustoMSC

COLOPHON

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Editing, design and production
Total Identity, Amsterdam

Editors
Sieds de Boer
Mattijs Faber
Monique van der Have
Catherine Poventud
Tessa Vleugels
Yvonne van de Wal

Design, photography and illustrations
Karoly Effenberger
Adam Lane
Chris Gloag
William McVean
Carl van de Rijzen
Arlo Spaans
Julius van der Woude

GustoMSC
Karel Doormanweg 35
3115 JD Schiedam
The Netherlands
+31 (0)10 2883 000
info@gustomsc.com

www.gustomsc.com

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DRILLING SEMI-SUBMERSIBLES DESIGNED FOR HARSH ENVIRONMENTS

GUSTOMSC LAUNCHES THE OCEAN-HE SERIES

Driven by the increasingly demanding requirements for harsh environments, GustoMSC is launching a new harsh environment drilling semi-submersible series: the OCEAN-HE. Based on our extensive experience in harsh environment and existing OCEAN designs, these units will add true value to the market in terms of safety, operability and efficiency. The units are designed with the latest rules and recommended practices in mind, to ensure safe operations in a severe environment.

The OCEAN1600-HE is the top of the range and the largest drilling semi yet, designed for the North Atlantic environmental conditions. With a displacement of around 70,000 tonnes, it contains a large derrick, DP3 and a 16-point mooring system, a large deck area and 15,000 t VDL. At the other end of the harsh environment spectrum, the new OCEAN850-HE represents the low cost midwater semi, still with safety and motion characteristics at high standards.

The two designs span the spectrum of the harsh environment drilling market, and anything in between can be designed. With the introduction of the OCEAN-HE series, GustoMSC is able to provide full coverage of the harsh environment drilling spectrum.

Rutger Baan
Commercial Director

COLLABORATION AGREEMENT WITH THE DAMEN SHIPYARDS GROUP

At this year's OTC in Houston, The Damen Shipyards Group and GustoMSC announced a collaboration where Damen markets and sells a range of non-propelled and self-propelled jack-up platforms for the offshore industries: the DG JACK range.

The collaboration is based on customized versions of GustoMSC's reputable basic designs of the SEA and NG jack-ups specifically optimized for the Damen way of production. Damen chooses for customized versions of the SEA and NG jack-ups, since they have proven to be best-in-class jack-up design solutions. The cooperation gives Damen a head start, which gives it ample time to further optimize the detailed design for construction and

operation, which will result in higher variable loads, increased simplicity and shorter delivery times. The DG JACK will be provided with the well-known GustoMSC jacking systems.

Damen offers further customization possibilities for its clients, offering an all in combination with Damen's extensive first class experience in shipbuilding and vessel optimization, financing, worldwide sales network and after-sales services. As a result of this collaboration, Damen and GustoMSC are fully aligned to provide an optimized solution during the complete lifecycle of the units.

The SEA and NG jack-up designs remain part of the GustoMSC product portfolio, offering our clients the unique advantage of freedom of choice when it comes to the yard for the construction of the unit. In this way, we enable our customers to develop their optimal design solution and consecutively tender for construction.

Jan-Mark Meeuwisse
Commercial Director



Courtesy: Damen Shipyards Group

INTRODUCING ENSIS WIND TURBINE FOUNDATION INSTALLATION VESSEL



Looking at the future of offshore wind, the need for larger-scale wind turbines presents multiple installation challenges. As the designers of several crane vessels, including the Oleg Strashnov, which has already proved to be highly successful in foundation installation over the last few years, GustoMSC is now introducing the Ensis: a dedicated design for offshore wind turbine foundation installation.

With a large free deck area of 3,500 m², which can be configured for up to 12 monopiles, a high variable load of 17,500 tonnes and a main crane capacity of 2,500 tonnes

at 27.5 meters, the Ensis addresses the need to improve overall logistic and installation efficiency. It includes all requirements for the serial installation of these foreseen, larger, heavier monopiles and jacket foundations, and incorporates specific solutions for lifting capabilities, such as on-board logistics and other expected operational profiles. The Ensis was featured during GustoMSC's presence at Global Offshore Wind 2016.

More information on the Ensis on page 20.

Alain Wassink
Commercial Director

SEA INSTALLER'S CRANE UPGRADE

Started in April this year and completed in June, major modification works have brought the A2SEA-owned vessel (GustoMSC NG-9000C design) in line with the increasingly stringent requirements of the offshore wind industry. The primary focus was to upgrade the vessel's main crane, increasing the hoisting capacity by revising the operational conditions in accordance with the new rule requirements, and, in addition, increasing the boom length to 115 m and thus the hoisting height. In terms of capacity, the crane has been upgraded from a single mode 800 tonne crane to a double mode 900 tonne crane (700 tonnes at the long boom length and 900 tonnes at the original boom length). The boom insert piece has a bolted flange connection to facilitate the onboard exchange.

For the boom lengthening, GustoMSC supplied A2SEA with a new A-frame, a boom insert piece and a 900 tonne capacity winch when the sister ship 'Sea Challenger' was built in China. As the Sea Installer was fully booked, the upgrade was postponed until this year.

Installing the larger crane on the Sea Installer had numerous implications on existing on-board structures. The boom rest had to be replaced, which in turn necessitated additional modifications to the accommodation area.



Courtesy: Damen Shipyards Group

In order to house the main hook and auxiliary hook in both long boom and short boom mode, the existing auxiliary hook block pocket was replaced with a new construction that comprised one main and two auxiliary hook block pockets.

GustoMSC was responsible for the structural main design, the software modification to the crane, the commissioning of the new installed equipment, and performed all the functional, load and DNV certification tests.

With its increased lifting capacity, the 132 metre vessel, which is used chiefly for offshore wind farm installation purposes, will be able to take on a broader scope of work as offshore wind activities involve heavier and larger components.

Arjo van Putten
Project Manager Cranes

19 – 21 OCTOBER 2016
CHINA WIND POWER 2016 BEIJING
Participation in Holland Pavilion

24 – 26 OCTOBER 2016
ATC 2016 ST. JOHN'S
Stand 1002

24 – 27 OCTOBER 2016
RIO OIL & GAS RIO DE JANEIRO
Stand V14

7 – 10 NOVEMBER 2016
ADIPEC ABU DHABI
Participation in Dutch Pavilion

29 NOVEMBER – 2 DECEMBER 2016
OSEA SINGAPORE
Stand 1M4-06 in Dutch Pavilion

14 – 16 MARCH 2017
SPE DRILLING THE HAGUE
Stand 64

1 – 4 MAY 2017
OTC HOUSTON HOUSTON
Stand 4848

6 – 8 JUNE 2017
EWEA 2017 LONDON
Stand N-G60



COST MANAGEMENT IN UPSTREAM OIL AND GAS

KEEPING OUR HEADS ABOVE WATER

'IF THE INDUSTRY REALLY WANTS TO MAKE A SUSTAINABLE CHANGE, THERE IS A STRONG NEED FOR A CHANGE IN THE MINDSET, WAYS OF WORKING AND COMMERCIAL ARRANGEMENTS.'

Andy Tidey
Senior Vice President and Global Head of Performance Improvement, Wood Mackenzie Consultancy

Wood Mackenzie published a perspective on the oil and gas industry in December 2015. This international consulting firm concluded that, in view of the current focus on short-term measures and the 'easy' procurement savings achieved, the industry now faces a key question: where will additional cost savings come from? Furthermore, with supplier margins collapsing following industry price cuts, how sustainable are further rate reductions likely to be?

In order to adopt a long-term and sustainable cost-efficient regime, Wood Mackenzie concludes that we must re-evaluate the way operators and suppliers work together. InSide sat down with Andy Tidey, Senior Vice President and Global Head of Performance Improvement at Wood Mackenzie, to discuss this urgent matter.

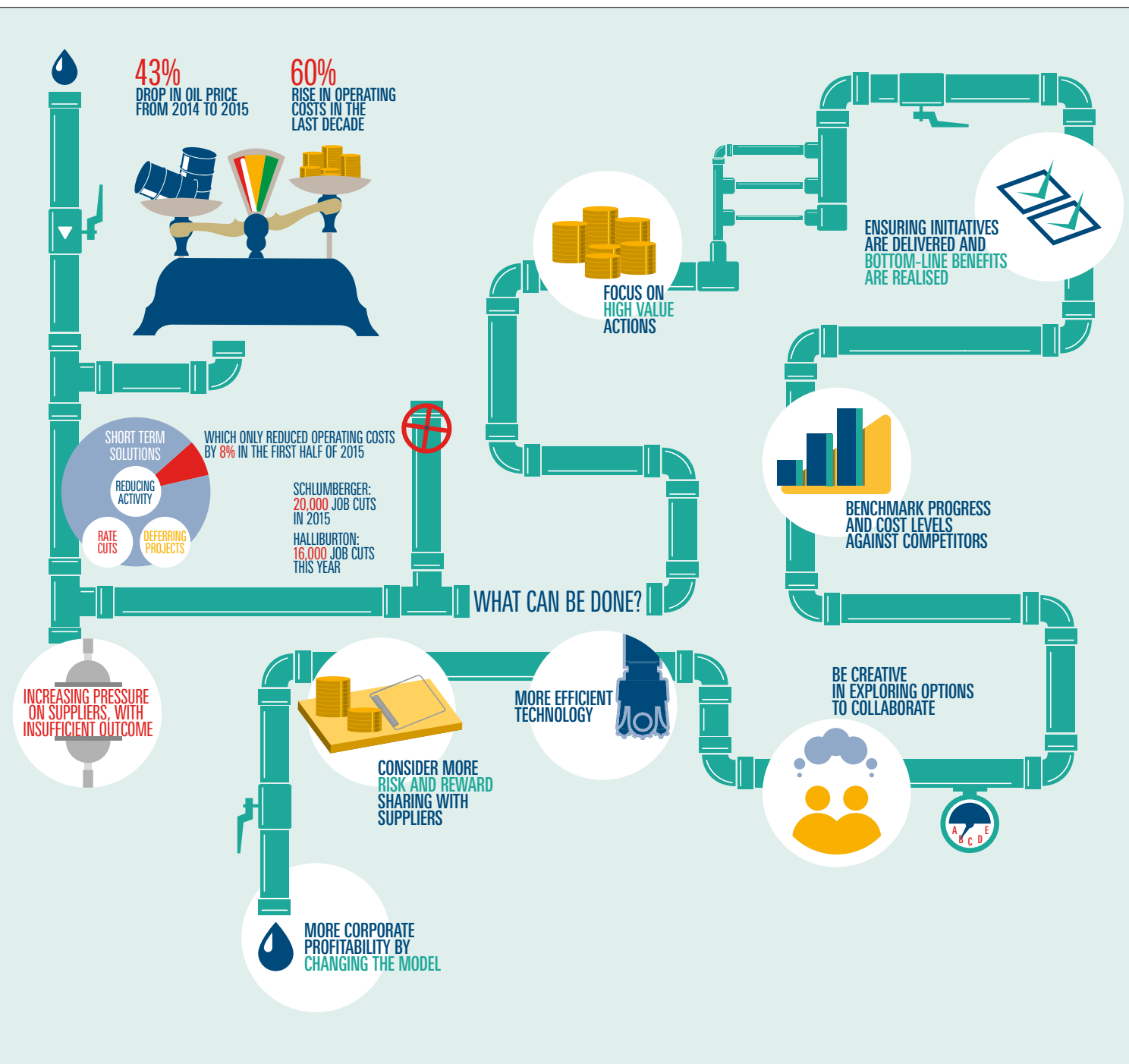
What major changes do you think are necessary in our industry, given the current market situation?

'There are various aspects to this question, but the main issue is: given the expectation of an oil price in the range of \$60 to \$80 for the medium to long term, what cost level does the industry need to get to? Despite the significant pain over the last 18 months, and the good work a lot of people have done, there is still a lot more that needs to be done just to get to that cost level and to do it in a sustainable manner.'

Our work at Wood Mackenzie shows that in the upstream oil and gas market there is still a significant focus on short-term cost control and on approaches that can be quite adversarial between the operators and the supply chain. The operators have been very focused on rates, on renegotiating and retendering contracts and on cutting back discretionary spending. Of course, this is all legitimate and shows good discipline, but what we haven't seen is the industry getting together systematically, and thinking through how – between all the participants in the supply chain – you can actually take costs out of the overall system for the benefit of everybody. I believe that this is the fundamental change that is required!'

What possibilities do you see to make that happen?

'Well, when you look at parts and materials for instance, there is a lot more variation in our industry than in other industries. Recently, someone who was working in the North Sea told me something interesting: the operator he was working with had over 100 shades of yellow paint for their platforms. So, let's take a step back and look at US unconventional, you see that they are much more focused on standardization, and on manufacturing type disciplines. The major cost reductions in other industries, such as the automotive industry, were realized through the standardization of parts, consolidation of the supply chain, deep long-term relationships between the Original Equipment Manufacturer and the tier one-suppliers, and value engineering.'



SUMMARY WOOD MACKENZIE SURVEY

The oil and gas industry has experienced significant pressures over the past year. Unit operating costs have steadily increased over the past decade by 60% in real terms. This prolonged period of cost escalation has been followed by a collapse in oil prices over a relatively short period – the average Brent price during the first half of 2015 was 43% below the 2014 average.

In an attempt to preserve cash, many operators have responded by taking a number of short-term measures, such as deferring projects, reducing activity or increasing the pressure on suppliers through rate cuts. This has resulted in cost pressures across the supply chain. Suppliers are initiating their own cost-reduction programs, which have included consolidation and aggressive cuts in headcount. While unit operating costs

have started to fall, with an estimated global average reduction of 8% in the first half of 2015. After a decade of significant cost inflation, real costs remain 46% higher in 2015 than they were in 2004.

In a survey on the industry's view on how cost adjustments are likely to be implemented, 79% of the respondents stated 'very likely' with regard to rate renegotiations. Only 21% of the responses were related to cost-adjustment mechanisms that link incentives between operators and suppliers (e.g. 'performance-based contracts' and 'oil-priced linked contracts').

It is unclear how much more of the supply-chain cost pressures can be absorbed by service companies. With the industry's focus on short-term cost adjustments, further

rate negotiations may not be a sustainable strategy for long-term cost management and ultimately corporate profitability.

Sustainable cost efficiency requires a new approach

In contrast to individual measures (per single operator or supplier), a number of cost management areas identified require a high level of coordination between operators and suppliers. As such, achieving long-term and sustainable savings requires far better engagement across the supply chain – and potentially vastly different ways of working.

From the Wood Mackenzie Consulting Survey 'Cost management in upstream oil and gas: Crash diet or lifestyle change?' Published December 2015



'THE DAY-RATE MODEL CAN BE APPEALING, BUT IT IS OFTEN COUNTERPRODUCTIVE TO WHAT OPERATORS WANT TO ACHIEVE.'

Andy Tidey
Senior Vice President and Global Head of Performance Improvement, Wood Mackenzie Consultancy

Thus efficiency and working across company borders are the necessary conditions for change and progress in our sector... How can we become more integrated?
'If the industry really wants to make a change, there is a strong need for a change in the mindset and a change in commercial arrangements. From a historical perspective, there are adversarial relationships in our market. In the UK, we have the expression 'when the boot is on the other foot...' there just aren't really enough incentives to make major changes for the long run – which is in fact quite different from having long-term relationships, stable pricing, and the kind of contracting mechanisms that are being used in other industries where people are buying an outcome.'

We do see good examples of suppliers and operators working together to optimize a development and the implementation schedule. The key question for us is whether these examples of collaborative behavior are sustainable, as and when the oil price and activity levels recover. However, what we can conclude is that we have to deal with the type of contracts we use, make a shift from looking at issues solely from a technical point of view to a more commercial perspective, and just not always push people to deliver things quickly.'

What is your opinion on the day-rate model?

'The day-rate model can be counterproductive to what operators want to achieve. Of course, the model is tempting for a procurement person, because it makes it easy to compare rates between the various suppliers. But then after that initial phase, when working in the field, the incentives can be completely misaligned. Why would it be wrong to start working for a fixed fee? There are a lot of industries, such as my own consultancy industry, that have moved away from the day-rate model in recent years to a model which is more focused on the outcome based on a fixed fee or value-based pricing. This is a very interesting contrast.'

Certainly, safety and operational risk are paramount and cannot be compromised by cost considerations. But there are other industries that face similar safety challenges, for example, commercial aircraft. There is a significant difference in the way that the supply chains work in this sector. Airlines order aircraft from manufacturers such as Boeing and Airbus, and order their engines from, for

example, Rolls Royce or GE. They are buying a relatively standard system, rather than designing it. The commercial models have also evolved, for example, paying the aero engine manufacturer for availability and for flying hours.'

What can you recommend to the players in the market?
'First of all, the industry needs to get its head around what it means to operate in a low margin environment. Part of that is arriving at a better balance between technical and physical outcomes and financial benefits. The integrated players have a great opportunity to build on the experience that they gained in their downstream operations.'

Secondly, the market needs to focus on how to reduce costs sustainably across the whole supply chain. Sustainable cost management rather than a short-term focus on rates will be key.

And last but not least, new commercial models such as 'risk and reward' sharing might be interesting to experiment with. Performance-related and outcome-based incentives can stimulate collaboration on a mutual benefit basis. Models that can reduce the upfront capex investment for the operator and get more projects past Financial Investment Decision are a significant win for all parties. By doing so, we will be able to create a new and 'healthy' market place!'

Andy Tidey
Senior Vice President and Global Head of Performance Improvement, Wood Mackenzie Consultancy

Qualifications and career summary

- Bachelor's Degree in Economics at Kingston University (1985 – 1988).
- Master's Degree in Management at Imperial College London (1989).
- Financial and operational roles at United Parcel Service, Argos and DX Network Services.
- 2005 – 2012 Partner at KPMG UK.
- 2012 – 2015 Regional Vice President EMEA – Commercial Performance Improvement at BP.
- 2015 – present Senior Vice President and Global Head of Performance Improvement at Wood Mackenzie.

SMARTCRANE

REDUCING RIG TIME

The SmartCrane offers unique features that directly address the call for cost reduction from operators, while providing drilling contractors with a means to distinguish themselves. Two elements were high on the agenda when developing this piece of equipment: facilitating simultaneous operations (SIMOPS) independently of any operation in progress on the drill floor and making material handling underneath the cantilever or between the work platform and drill rig easier.

'THE SAVINGS IN RIG DAYS CAN BE AROUND 10% FOR P&A AND DEVELOPMENT DRILLING PROGRAMS WHEN COMPARED TO CONVENTIONAL CAMPAIGNS.'

Rutger Baan
Commercial Director



IMPROVING EFFICIENCY THROUGH SIMOPS

WIRE LINE SEPARATED FROM THE DRILL FLOOR
LESS PEOPLE ON THE DRILL FLOOR

COST EFFECTIVE
EASILY MOUNTABLE, RETROFIT POSSIBILITY

EASING MATERIAL HANDLING
ACCESS TO WORK AREA WITHOUT HANDSHAKES

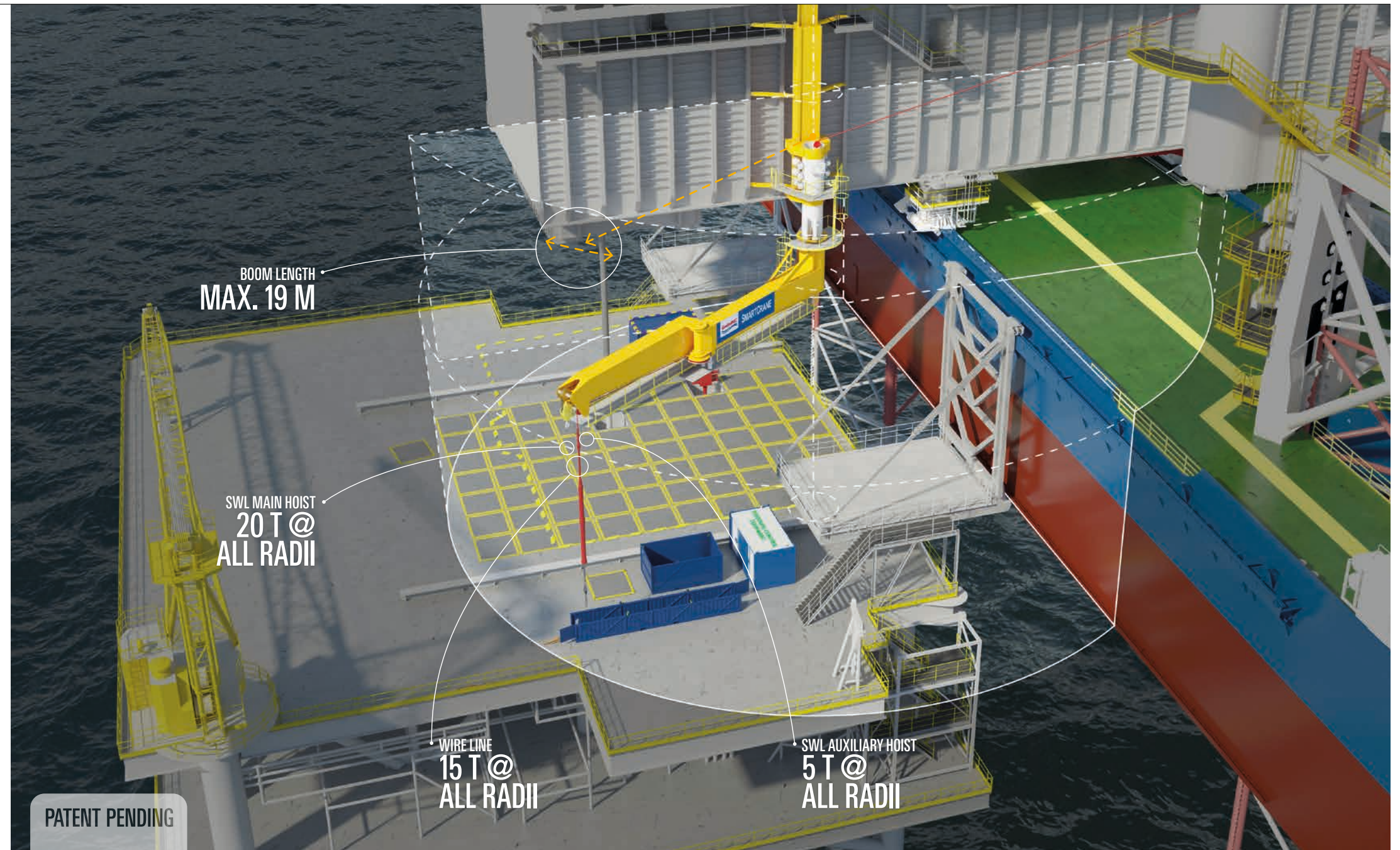
EFFICIENCY
NO NEED FOR TUGGERS AND RIGGING SHEAVES

SAFETY, HIGH LEVEL OF CONTROL
LESS HANDSHAKES

PATENT PENDING

'THE SMARTCRANE CAN LIFT UP THE EFFICIENCY OF THE ENTIRE UNIT, AS IT UNLOCKS THE SHADOW BENEATH THE CANTILEVER.'

Naxim Zhang
Project Manager SmartCrane



Facilitating SIMOPS

Enabling a wire line operation away from the drill floor is a huge advantage in development drilling and plug and abandonment operations. The SmartCrane enables wire line through its moveable arm with the hoisting point underneath the cantilever. The wire line operations can take place on one well while development drilling, intervention or plug and abandonment operations are going on at another well.

The savings in rig days for a plug and abandonment operation can amount to around 10% compared to the conventional procedure, in which all activities such as logging and cementing must be performed in a sequence on the drill floor. The SmartCrane allows several activities to take place at the same time on one well, or makes it possible to do preparatory work on one well while the drill floor is working on another well.

Enhancing efficiency

The SmartCrane is fitted out with a series of wire line guide sheaves to guide the wire line to any position where the crane tip can reach. In addition, it provides a 20 metric tonne hoisting capacity underneath the cantilever at any position outside the drilling riser, and also has the possibility to reach to the main deck of the rig. It can thus

transfer containers and other pieces of equipment from the main deck of the rig to underneath the cantilever and vice versa. This is a unique feature that greatly enhances safety and efficiency, as rig crane access to the wellhead deck from the drilling rig is difficult since the area is being blocked by the cantilever. At the same time, topside cranes are usually not used, due to the fact that the drilling rig is cantilevered out over the platform.

Increasing safety

Separating the wire line operation from the drill floor operation means less people on the drill floor and less interaction required between different crews. Safety is enhanced substantially by the reduction in handshakes due to the single lift from the rig main deck to the wellhead platform, and the high level of control as a result of the short distance from crane tip to hoist.

The crane operator is in the optimal position to oversee and control the operation as he uses a handheld device to control the crane. Blind lifts are avoided. In addition, the operation can be programmed for anti-collision in the crane operating system to ensure that the load and crane boom do not collide with obstacles such as the drilling riser, topside modules or the aft of the rig.

New build or retrofit

Because of its electrical drive system, the SmartCrane requires little maintenance. It can be installed on a newly built rig or retrofitted to an existing rig. Due to the efficient foundation interface, it requires little modification to the existing cantilever structure. The SmartCrane is easily dismantlable, enabling full reach and combined load capability for cantilever operations when needed. It is even possible to use the SmartCrane on different rigs, when the same integration point is used on similar rigs in the drilling contractor jack-up fleet.



Rutger Baan
Commercial Director

MAIN CHARACTERISTICS

Boom length	
SC380	19 m
SC300	15 m
SC240	12 m
SWL	
Main hoist	20 t @ all radii
Auxiliary hoist	5 t @ all radii
Wire line	15 t @ all radii
Speed	
Boom slewing speed	0.5 rpm
Trolley elevation speed	2 m/min
(with full load on main hoist)	
Main hoisting speed	15 m/min
Auxiliary hoisting speed	15 m/min

10,000 FT

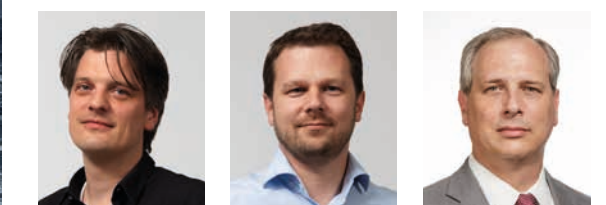
SCYLAX COST-EFFECTIVE DEEP-WATER CAPABILITY

Having the optimal tool for the given task is essential in order to be cost effective. The Scylax is designed to make developments available in the mid to deep-water market at reduced building and operating costs by providing fit-for-purpose capabilities. The Scylax builds on our experience in designing dedicated drillships, which have proven that they provide equal or better capabilities and performance than their peers in a more compact form, such as in our highly successful P10,000 design.

The key is to focus on the essential functionality for deep-water drilling. Whereas ultra-deep water units feature ever increasing hook loads and capacities, these requirements can be reduced for a large amount of the wells in deep-water. Designing the Scylax based on these rationalized requirements allows for different choices to be made in the design, reducing building and operating costs.

Designed around the drilling process, the Scylax provides deep-water drilling in a compact design based on a single derrick or drilling mast set-up with offline stand building, dual BOPs, up to 10,000 ft water depth capability and ample capacity mud systems. Drilling equipment packages of all major manufacturers can be readily integrated into the design. Signature GustoMSC design features, like maximized usable deck areas resulting from the integrated design and dedicated use, in-hull riser storage and in-hull mud and bulk systems and protected walkways, add to the operational safety and efficiency.

Complemented by our extensive experience in working with shipyards around the world, this brings best-in-class capabilities to the deep-water drilling market at a much reduced cost level. Its contemporary design and freedom of choice for equipment make and specification, provide ample customization possibilities.



Sjoerd Hendriks
Design Manager Vessels

Alain Wassink
Commercial Director

Lance Etheridge
Commercial Director

**HOOK LOAD
UP TO
907 MT**

Drilling equipment packages of all types with hook loads of up to 907 mt can be integrated, opening up the latest developments in drilling equipment and efficiency available.

**MAINTENANCE
PROVISIONS**

Dedicated maintenance areas, access provisions and paths providing ample space for maintenance.

**WATER DEPTH
7,000 TO
10,000 FT**

The Scylax is optimized for the deep-water segment ranging from 7,000 – 10,000 ft.

**DECK AREA
5,600 M²**

Clever deck layout arranged around the drilling process provides more free deck area than on many much larger vessel designs. Ample deck space at drill floor level enables direct equipment access to the drill floor area.

**TRANSIT SPEED
13 KNOTS**

The high transit speed of the Scylax makes it the perfect tool for short campaigns, reducing transit time and optimizing drilling time. To minimize fuel consumption and environmental footprint the hull shape and thruster headboxes are optimized using the latest CFD technology.

INTERVIEW SEAWAY HEAVY LIFTING CEO
JAN WILLEM VAN DER GRAAF

FLEXIBILITY IS KEY!



Jan Willem van der Graaf, CEO of Seaway Heavy Lifting, is very pleased with his company's recent big success: 'The Beatrice project is a major step forward in achieving our ambition to be an Engineering, Procurement, Construction and Installation (EPCI) contractor in the offshore renewables industry. We are proud that BOWL has chosen Seaway Heavy Lifting and Subsea 7 for the design, fabrication and safe execution of the foundation and cable lay work for their Beatrice offshore wind farm.'

InSide Magazine saw the Beatrice project as an opportunity to interview Seaway Heavy Lifting's CEO at the company's head office in Zoetermeer (the Netherlands) and to discuss the company's new and successful strategy.

How did Seaway Heavy Lifting's pioneering vision for the renewables business come into being?

Seaway Heavy Lifting had a history of twenty years in oil & gas and decommissioning when it entered the renewables market as a strong Transportation and Installation (T&I) contractor, starting with the Greater Gabbard contract. Since then, the company has installed more than 500 wind turbine foundations and 20 offshore substations. At the same time, Subsea 7 had become interested in the upcoming renewables market and started looking into ways how they could gain a foothold in this market. At that time, around five years ago, Subsea 7 was contracted by SSE (Scottish Southern Energy) to form an alliance for the Beatrice project. SSE was looking for parties with a real offshore oil and gas mentality and, in Subsea 7's case, specifically for a contractor with the necessary knowledge and experience in offshore project execution. Other parties in the alliance for the Beatrice project were Siemens Wind, Siemens Transmission, BiFab and Atkins. The Beatrice opportunity was thus the first, concrete step in Subsea 7's ambition to enter the renewables market.

While Beatrice developed as a project, Seaway Heavy Lifting further increased its presence in renewables. It became clearly visible that the wheat had been separated from the chaff over the past six years; there is no longer room for sub-standard equipment. The time that parties simply took equipment for inland waterways to sea is – fortunately – definitely over. As a result, Seaway Heavy Lifting had increasingly become an established name in this market. In 2012, it was decided that it would be a good idea to combine the T&I strengths of Seaway Heavy Lifting with the project skills of Subsea 7. Subsequently, all of Subsea 7's renewables business was brought together in Seaway Heavy Lifting in 2013. This made it possible for Seaway Heavy Lifting to expand further in the EPCI renewables business. The Beatrice project became a prime target for Seaway Heavy Lifting.



The 5,000 tonne crane vessel Oleg Strashnov installing wind turbine foundation tripods at Borkum West II Windfarm. The vessel as well as Oleg Strashnov's 5,000 tonne and Stanislav Yudin's 2,500 tonne cranes are GustoMSC designs.

How did this EPCI proposition develop? Was it demand-driven?

'Yes, it was indeed strongly demand-driven. We simply aim to deliver good work in T&I, to keep our vessels in operation and to enable our company to grow. EPCI is not an objective in itself for us, but the development is very important for Seaway Heavy Lifting. We saw an increased demand for EPCI solutions, and expect the renewables market to grow. EPCI developments may become 50% of the business. Banks play a big role in this contracting shift. The renewables market works in a different way from the oil and gas business, where the operators develop on their own without much external financing. With EPCI in renewables, a lot is based on project finance and this approach determines the contracting method. "Bankability" has become a key driver and therefore contract risks have to be carried more and more by the contractors. In a market that develops in such a manner, finding the right partners is also becoming very relevant: if you are standing back-to-back with other contractors, and are willing to share certain risks, you can reposition yourself properly to meet the changing market demand. We are now processing 40,000 tonnes of steel into piles and 70,000 tonnes of steel into jackets for the Beatrice project – and in that case you must be able to rely and build on the production supply chain. After all, it is 60% of the contract sum... Seaway Heavy Lifting therefore builds on its five key subcontractors SIF, EEW, Bladt, BIFAB and Smulders. So EPCI is where renewables is going, and where we want to position Seaway Heavy Lifting.'

What other changes do you envisage or believe to be necessary in the foreseeable future in order to lower the LCOE (Levelized Cost Of Energy) and how can collaboration strengthen your position?

'Seaway Heavy Lifting's R&D department has always been focussed on many different technological developments and our aim with R&D is that the work processes improve, installation times decrease and new technology serves our clients. This is not just focused, for instance, on the installation of wind turbine foundations, but also on the installation of the turbines that are growing in size. We recently joined GROW, a combined government/industry initiative to develop technology aimed at bringing the LCOE down.

First, I see the growing size of the turbines as a cost saver. Initially these units were 3 to 4 megawatt whereas now these units are 6 to even 10 megawatt. We obviously follow these developments and I don't know where this will end in the future but this will reduce the installation costs per megawatt substantially. Secondly, the way the work is executed. When we started we installed one monopile in one and a half days on average. Nowadays, we have adopted a process-oriented way of working resulting in just over one half a day installation time per monopile and we are constantly improving our installation process. A next step will be installation while on dynamic positioning. This is technology that we are currently developing that will substantially further reduce installation time.



Jan Willem van der Graaf
CEO of Seaway Heavy Lifting

After obtaining a Master's Degree in Naval Architecture at the Delft University of Technology, Jan Willem van der Graaf worked at Smit International, Rockwater and van der Giessen-de Noord. He then joined Subsea 7 as Vice-President for the African region. In 2011, he was appointed Senior Vice-President Strategy and Renewable Energy. He has been the CEO of Seaway Heavy Lifting since January 2013.

Seaway Heavy Lifting was formed in 1991 and is jointly owned by Subsea 7 and a private investment company. The company has a long track record in Transportation and Installation (T&I) of offshore structures in the oil and gas industry and entered the offshore wind business in 2009 with the installation of monopile foundations for the Greater Gabbard project in the UK. Seaway Heavy Lifting is owner of two high-specification heavy-lift vessels: the Oleg Strashnov and the Stanislav Yudin.

That brings me to collaboration. Collaboration is becoming more and more important in our case: partnering is in some cases necessary in order to make new developments possible, but more often to Seaway Heavy Lifting, collaboration means smart sub-contracting. You must be able to rely on a very professional group of suppliers, and it should not only be about the 'bottom dollar', but also very much about quality. Another aspect is that, working together with others means that we can remain flexible as a company. Therefore, we do not do everything ourselves: with our two vessels, we already have around 800 employees on the vessels and at our office, and you have to ensure that you employ your staff to do the work that they are specifically suited for. This is why I am happy that I can rely on the reliable hiring of tugs, barges and other equipment and services at all times. For instance, we hired ten pontoons and nine tugboats for a project in Venezuela last year. And fortunately, we can simply return these at the end of the project. The flexibility to be able to work with various subcontractors is key to our success!

Strategic focus is therefore important: how does this relate to the markets that you are active in?

'Seaway Heavy Lifting is active in three markets: oil and gas, renewables and decommissioning. Strategically, it is very important to manage the expectations for these different markets well. For example, at present there is no growth in the oil and gas market due to the price levels. This market will thus remain under pressure in the coming years and, as a consequence, we are now focusing on renewables. Nevertheless, we are not losing sight of oil and gas; after all, it is a matter of time until the existing supply is depleted, and that means that new wells will have to be developed and, in that case, deep-sea might become an option again. It is a game whereby you have to constantly anticipate. And that keeps you on your toes.'

Can these markets also learn something from each other?

'What was learned the hard way in the oil and gas market over the years, is not only to do it better but also to do it safe. The sector has experienced a huge culture change. Working safely has of course become

a non-negotiable precondition: operators demand this from us, but more specifically it is what we want ourselves. This is why we also have a strict safety policy internally and we support this with a safety campaign called Incident and Injury Free (IIF). We are constantly improving the way all our people offshore as well as onshore perceive safety and live up to it. I am very proud that Seaway Heavy Lifting can start a project in Venezuela with short preparation time and work there for eight months without one Lost Time Incident.

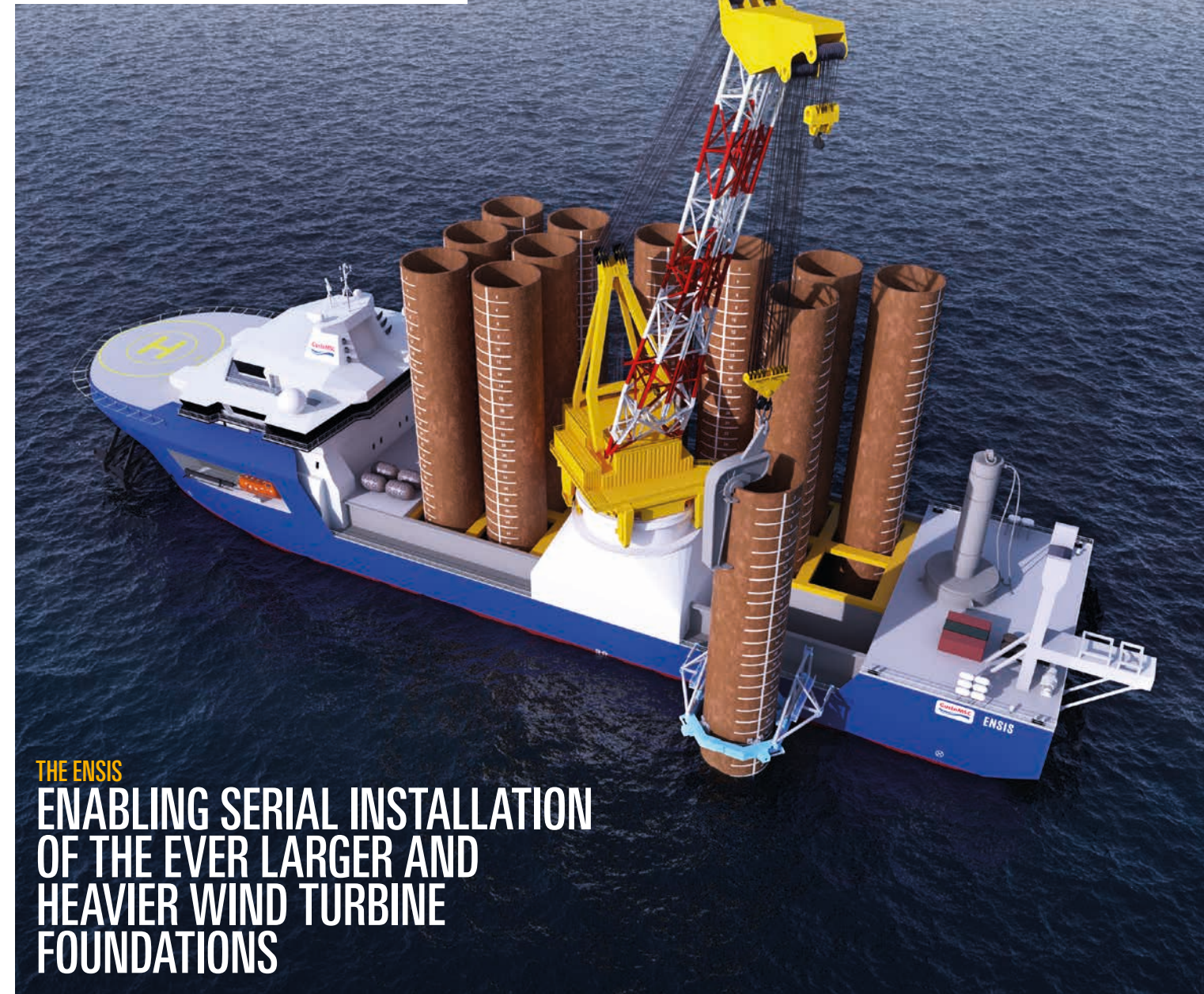
Another main issue is that the oil and gas market demands purpose-built solutions time and time again. This market is unfortunately not specialised in repetitiveness or working in a series-like manner. We are going to do this differently with renewables, so not only with larger and larger turbines, but also with better technologies to install these turbines and foundations faster. If you look at it this way, then our real strength - and distinctive quality - lies in the in-depth knowledge and experience of our people: they are constantly looking for the highest added value, the most important functionality, the most optimal specifications, and the best price. In the end, it is the Seaway Heavy Lifting people who determine the success of the company.'

'IT IS A GAME WHEREBY YOU HAVE TO CONSTANTLY ANTICIPATE. AND THAT KEEPS YOU ON YOUR TOES.'

Jan Willem van der Graaf
CEO of Seaway Heavy Lifting

PIONEERING TECHNOLOGY

GustoMSC focuses on designing and engineering state-of-the-art technology that helps the offshore energy market move forward. In this new article, we highlight our latest best-in-class solutions.



THE ENSIS ENABLING SERIAL INSTALLATION OF THE EVER LARGER AND HEAVIER WIND TURBINE FOUNDATIONS

The newly developed Ensis crane vessel has been specifically designed for offshore wind-turbine foundation transport and installation and has been optimized for serial installation of large monopiles.

Like the razor shell clam after which it is named, the Ensis crane vessel is specialized in quickly and efficiently embedding structures in and on the seafloor, enabling serial installation of the ever larger and heavier monopile and jacket wind-turbine foundations.

Optimizing performance

The Ensis is equipped with a heavy-duty crane at an offset position that maximizes the deck space that can be covered by the crane and hence the number of foundations within reach of the crane. In addition, the offset crane position offers a large outreach

over the side. Vertical storage of the monopiles allows for an unmatched number of 12 large monopiles and auxiliary equipment. This novel way of transporting monopiles maximizes the number of piles on board and within reach of the crane eliminating the need for additional on board pile handling. Due to the smart placement on the vessel's tank top, the center of gravity of the piles is kept relatively low, with favorable consequences for stability and loading conditions. Sea fastening of the piles is arranged at the bottom and at the top of the vessel's side, providing an effective and simple means of support.

Flexible & future-proof

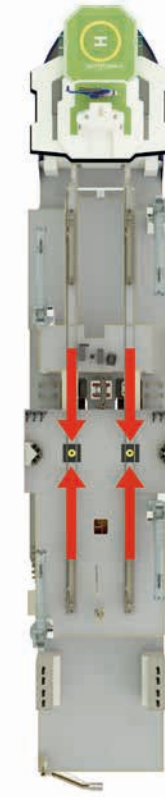
Ensis's storage area can be covered with pontoon hatch covers, providing a large multi-purpose working deck which can be used for horizontal transport of monopiles

in excess of 90 meters in length or jacket type of foundations. In addition, the multi-purpose deck allows for a wide range of other offshore construction activities.

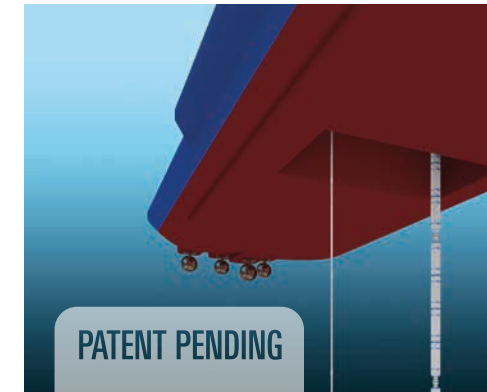
Both DP, either DP2 or optional DP3, and the optional mooring system enable the vessel to perform deep-water and shallow-water operations at wind-farm construction sites and in close vicinity of platforms.

Minimized resistance, Tier IV readiness and optional use of LNG as fuel offer a future-proof reduction of the environmental footprint and operating cost.

Wouter Anink
Project Manager Vessels



EURYALE MOON POOL
FULLY
REDUNDANT
DUAL DRILLING



The Euryale moon pool is a perfect example of pioneering engineers. Breaking with traditional naval architectural thinking patterns, the performance window for a drillship is stretched by the Euryale moon pool. The Euryale moon pool is a transversely oriented moon pool allowing the well centers to be transversely arranged, and providing full accessibility to both well centers at the drill floor from forward and aft deck areas. In combination with the right accessibility at moon pool level, all advantages of full dual drilling and full redundancy on a drillship have been achieved.

By reducing the moon pool length, the Euryale moon pool technology mitigates sloshing phenomena during transit of the vessel. The calm water creates a safer working environment for personnel and capital-intensive equipment, as well a fuel cost savings and emission reduction.

The Euryale moon pool is integrated in the ship's construction, ensuring vessel integrity. The moon pool is designed without sensitive mechanical parts, neither submerged nor dry, and does not have any protruding parts risking damage to the riser.

Sjoerd Hendriks
Design Manager Vessels

NEW DRILLING DERRICK DESIGN SUBSTANTIAL INCREASE IN OVERALL CAPACITY, UPTIME AND SAFETY

The primary mission of a drilling jack-up is performed at the extreme end of the unit: the cantilever. Increasing the cantilever capacity therefore directly adds to the rig's earning capacity. We have combined our operational knowledge and extensive jack-up experience to develop a new type of drilling derrick, providing a substantial increase in overall cantilever capacity, uptime and safety. This has resulted in a 50% increase in allowable combined load (set back plus hook load) for the extreme cantilever reaches of the CJ70 jack-up design. It consists of an orthogonal shape instead of the conventional rectangular shape, constructed from welded extra high tensile steel pipes. Due to its shape, construction method and material, the wind loads and total weight of the derrick are reduced and the ability of derrick winterization is greatly improved. The result is an allowable combined load at 110 ft reach of 800 t instead of 500 t for derricks that are presently available.

Our main objective for developing this new derrick design is to challenge the industry to design derricks of minimum weight in order to improve the GustoMSC CJ design capabilities. GustoMSC will not supply derricks directly to the market. Drilling equipment suppliers can at their convenience make use of the design of this derrick for integration with their drilling equipment components. Suppliers can construct and supply complete drilling packages, including the derrick, for the GustoMSC designed drilling rigs.

The design parameters for the GustoMSC derrick are based on the high-end capacities as used for the CJ70 built in the last years.

MAIN DESIGN PARAMETERS

Hookload	2,000 kips (below top drive)
Setback	2,300 kips (1,000 kips during field tow)
Stand length in setback	135 ft
Top drive torque	120,000 ft-lbs

Kees Verdouw
Consultant Jack-ups

Welded structure instead of a bolted structure
Construction of pipes instead of H-beams

Orthogonal shape instead of rectangular shape

Extra high tensile steel instead of high strength steel



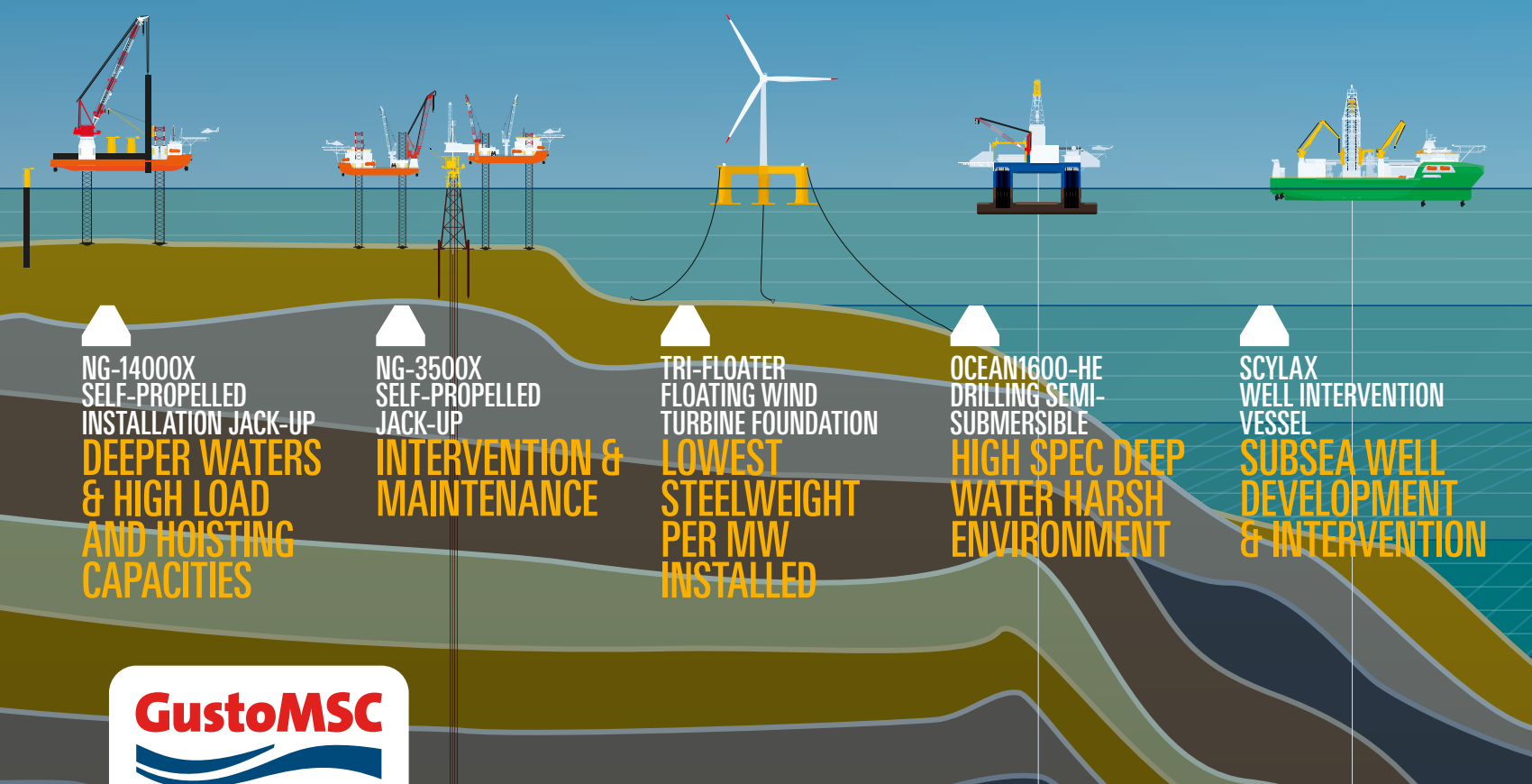
SCYLLA INSTALLING 67 MONOPILES AT THE VEJA MATE 400 MW WIND FARM



Sooner than expected, Seajacks Scylla finished her first job for Offshore WindForce: the transport and installation of 67 monopiles at the consented Veja Mate wind farm. These monopiles are 85 m in length and exceed 1,300 tonnes in weight. Based on the GustoMSC NG-14000X design, the Seajacks Scylla is the most capable and efficient wind turbine installation jack-up for future wind farms in deeper waters and further offshore. Thanks to an impressive 1,500 tonne high-reach offshore leg crane and large open deck space in combination with a high variable load capacity.

The Veja Mate wind farm is projected to be 400 MW. With a production of approximately 1.6 TWh per year, once completed, it will be amongst the largest offshore wind farms in the world.

THE PIONEERS OF OFFSHORE ENGINEERING



NG-14000X
SELF-PROPELLED
INSTALLATION JACK-UP
**DEEPER WATERS
& HIGH LOAD
AND HOISTING
CAPACITIES**

NG-3500X
SELF-PROPELLED
JACK-UP
**INTERVENTION &
MAINTENANCE**

TRI-FLOATER
FLOATING WIND
TURBINE FOUNDATION
**LOWEST
STEELWEIGHT
PER MW
INSTALLED**

OCEAN1600-HE
DRILLING SEMI-
SUBMERSIBLE
**HIGH SPEC DEEP
WATER HARSH
ENVIRONMENT**

SCYLAX
WELL INTERVENTION
VESSEL
**SUBSEA WELL
DEVELOPMENT
& INTERVENTION**

GustoMSC

GustoMSC is an independent, world renowned and leading design and engineering company, thanks to the vast knowledge and expertise of our dedicated professionals and our close relationships with the most influential players in the offshore market. We serve the offshore industry by providing best in class solutions for mobile offshore units.

GustoMSC

Karel Doormanweg 35
3115 JD Schiedam
The Netherlands
+31 (0)10 288 30 00

GustoMSC US

840 West Sam Houston Pkwy North
City Center 4 - Suite 410
Houston, TX 77024 USA
+1 713 380 2600

www.gustomsc.com