

InSide

GustoMSC

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“Maersk Resilient” strengthens Maersk Contractors’ offshore fleet >

First **DSS21** drilling semi-submersible for Maersk Contractors

Rack & Pinion jacking systems for the CJ projects

Kizomba Twins called for duty



GustoMSC

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Preface from the management

At the end of this first quarter we are pleased to see that the prospects for 2008 are looking as good if not better than GustoMSC's all time record of 2007. We managed to further increase our portfolio of projects in hand and we continue to work hard to ensure we meet the high expectations for all these projects, which range from consultancy and design studies through conversion engineering and design packages to EPC projects for large equipment supplies, such as 4,000 & 5,000 ton offshore cranes. Currently more than 45 construction projects are being carried out to our Proprietary Designs, several of which involve either ourselves or one of the sister companies in the SBM Offshore Group as the main contractor.

Driven by these interesting and challenging projects, we have been able to increase our workforce capacity for engineering and procurement services to over 600 employees, spread over the three GustoMSC companies in The Netherlands and Houston and various construction yards all over the world.

This large and experienced workforce also enables us to keep up with and to push forward on the developments the industry needs for the operations in even deeper waters, offshore wind farm installation concepts, sustainable solutions in challenging environments like the Arctic, not to mention offshore LNG operations and emission reduction solutions. We like to position ourselves exactly there, as a frontrunner in sustainable technology developments creating value from that position for both our customers and the company.

In this Inside you can read more about some of above developments, the construction projects as well as the design studies and conversion engineering with which we are involved.

Marketing and Sales at GustoMSC now has some new faces:

Han Tiebout took a new position with the SBM Offshore Group, Gerrit Schepman has taken over as Manager Marketing and Sales Coordination for the GustoMSC Alliance.

Jan Mark Meeuwisse recently joined GustoMSC as Sales Manager.



We will be very happy to tell and show you more of the above at the OTC Conference & Exhibition from 5 to 8 May 2008. Together with the other SBM Offshore Group companies we have a brand new large booth where we will be very happy to welcome you.

We all look forward to meeting you at the OTC in Houston!

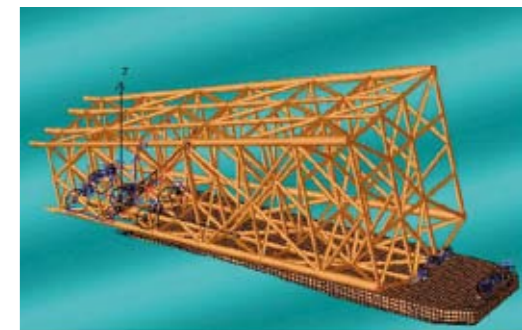
Marco Beenen
Managing Director – GustoMSC Inc.





Apart from the extensive load out and launch analysis, a great deal of effort was put into the structural design, so as to properly design the barge for the extraordinary loads resulting from the intended operations: load out at extreme draught variation, launching at extreme draughts and extreme trim angles, huge load concentration at the stern and high uniform deck loads. The load concentration at the aft end is caused by the tilting of the jacket during the launch. To prevent the jacket from buckling, the load is spread by means of a rocker arm, supporting the jacket when tilting. On the barge side this load is concentrated onto one point. This special hinge point was designed as an all-welded construction.

The operation profile desired by COOEC demanded a highly sophisticated remotely controlled ballast system with a large capacity to meet the extreme variations at the different load out yards. The JLB has been designed to be able to meet the requirements without any shore support. A very demanding aspect for the system engineering team was to keep the barge equipment operational at the large trims it may encounter during launching. Tank ventilation, equipment cooling and draining ballast tanks all required special solutions.



1. AQWA simulation



2. First block



3. Yard in action



4. In dock



5. 8 kW jacket

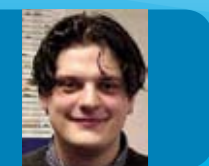
COOEC's second Jacket Launch Barge up for delivery

After the successful cooperation between COOEC and GustoMSC for a Jacket Launch Barge with a jacket launching capacity of 8,000 t, COOEC wanted to expand their fleet with a large capacity Jacket Launch Barge. In the planned development projects, COOEC looked for more flexibility in installation and launching requirements, resulting in a launch barge of 30,000 t capacity. This makes the barge the largest of its kind. After the Basic Design by GustoMSC, the Barge "JLB-30,000" was constructed at Qingdao Beihai Shipyards in China. The first section was put in the drydock in July 2007 and the barge, over 20,000 t of steel, was completed within 8 months to meet the end of February 2008 delivery deadline.

Challenging aspects for the design were the specific infrastructures at the Chinese construction yards and the fact that the Barge should be able to launch any 30,000 t jacket, where launch barges are normally designed for one specific jacket. Jacket size is very important for the barge design, since the behavior of the jacket and barge during launching varies for jackets of different sizes. An extensive analysis was performed to ensure the desired launching capacity, and the launch operation was simulated in full in AQWA.

Barge particulars

	JLB-30,000	JLB-8,000
Year built	2008	2004
Shipyards	Qingdao Beihai Shipyards, China	Dalian Shipyards, China
Launching capacity	30,000	8,000 t
Length	215.0	142.0 m
Breadth	52.5	36.0 m
Depth	14.75	9.75 m
Draught	10.45	7.6 m
Transport capacity	60,000	21,000 t
Installed power	2,820	1,100 kW
Pump capacity	4x3,500	3x1,500 m ³ /h



by Sjoerd Hendriks



FIG 1



FIG 2

Since the last edition of Inside, significant progress has been booked on both FPSO's destined for ExxonMobil. The FPSO Mondo has been delivered and has already produced first oil, and the FPSO Saxi Batuque is nearing completion and delivery is due for March. This article presents an update of both projects, including the latest highlights achieved on the Saxi Batuque project.

The FPSO Mondo was delivered in September 2007 and departed soon after for the transit from Singapore to Angola. The timely delivery of this unit has been a respectable achievement in a market which is ever becoming tighter and hence imposing severe constraints on the SBM/GustoMSC teams to complete the project (FIG 1). The FPSO rounded the Cape of Good Hope early October (FIG 2), impressive photographs of which were taken off the coast of South Africa. After the hook-up of the first set of risers and completion of umbilicals in December, first oil was successfully produced just after New Year of 2008. With exceptional speed, the FPSO was producing at almost full capacity within just a few weeks, reinforcing the client's confidence in SBM's FPSO track record.

In the meantime, the FPSO Saxi Batuque is nearing completion at the Keppel Shipyard in Singapore. Commissioning activities are progressing well after the extensive hull refurbishment (FIG 3 and 4). The installation of all the topsides modules had been completed in January 2008 with the lifting of module 04 – main gas compression - marking a first within the FPSO tradition of SBM. What made module 04, and the rest of the topsides, so special is the significant amount of high pressure gas compression lines rated up to 10,000 psi. Exemplary is the wall thickness of 70mm for a 12" line pipe, which runs from the gas compression and treatment modules through the pipe rack back to the turret.

Kizomba Twins called for duty

The lift preparation and first lifting studies commenced in January 2007 by GustoMSC's engineering team, almost a year in advance to the lifting itself. At that time it was already evident that the weight of the module would require special attention in the sense of a well developed lifting and rigging arrangement. Lifting of module 04 was critical with respect to the maximum capacity of the available floating sheer legs and the allowable tolerance of the C.O.G. of the module. Due to the already highly loaded lifting pad eyes and the overall stability of the module during lifting, a very tight shift in C.O.G. was allowed. Therefore all equipment was weighed at the module fabrication yard just prior to installation on the module itself. This was done to verify once more the as-built of the main gas compressors and auxiliaries such as scrubbers, filters and coolers. This operation proved fruitful, as the actual weighing of the module prior to the lift showed that the weighed weights were just below the calculated weights and that the measured C.O.G. hardly deviated from the nominal calculated position. A special six-point lifting arrangement requiring newly fabricated spreader bars was developed, to ensure a statically determined equilibrium at all times.

The lifting weight of module 04 was approx. 1,850 tonnes of which 500 tonnes represent piping weight, the majority of which are high pressure lines.

The lifting and installation of the module (FIG 5) was completed smoothly, appropriate preparations were made to receive the module on board the vessel. Despite its impressive appearance, module 04 was still dwarfed by the size of the FPSO itself and the tower cranes of the shipyard as can be seen in the accompanying pictures (FIG 6).

The fabrication and lifting of module 04 clearly marked the spin-off of using an integrated project management system "PDMS" whereby the complete topsides and vessel upper deck were fully modeled. It was the first time that new design software had been implemented at such a scale on a project.

A permanent boarding tower was designed and fabricated (FIG 7) for the transfer of personnel from fast service boats to the FPSO. Prior to sail away, the tower will be installed at the shipyard against the PS side shell, being the leeward-side at the Kizomba C Block 15 field, thus providing shelter from wind waves during operation of the unit.

The majority of the systems have been commissioned and the last hook-ups between topsides and turret are being completed ready for the Naming Ceremony on March 9, after which the inclining test will take place immediately. Sail away to Angola is planned for the second half of March.

Once arrived offshore Angola, the FPSO Saxi Batuque will complement the Kizomba C Twins contributing to ExxonMobil's prosperous project scheme.



FIG 3



FIG 4



FIG 5



FIG 6



FIG 7



by Taco Terpstra



Fixation system

Early 2008, the drilling jack-up “Maersk Resilient” was added to Maersk Contractors’ fleet of technically advanced jack-up rigs. “Maersk Resilient” is the first of four new high efficiency jack-up rigs that Keppel FELS is delivering to Maersk Contractors. The other three jack-ups are due for delivery at six month intervals.

Built to the GustoMSC CJ50 design, “Maersk Resilient” has been customised for high efficiency drilling. The rig is classed with ABS and can operate in water depths of up to 350 ft and drill high-pressure wells to a depth of 30,000 ft.

“Maersk Resilient” is equipped with a GustoMSC XY-cantilever, combining high drilling load with outstanding well centre reach in both longitudinal and transverse direction. Efficient drilling operation is guaranteed with a Maritime Hydraulics drilling package for simultaneous drill pipe and casing racking as well as fully mechanised dual pipe handling.



“Maersk Resilient” strengthens Maersk Contractors’ offshore fleet

For GustoMSC, the concept design phase of “Maersk Resilient” started in 2004. In close cooperation with Maersk Contractors’ in-house engineering department, the proven innovative features of the Maersk Contractors XL-rigs (GustoMSC CJ70) were incorporated into the design. In March 2005, Maersk contractors decided to award the contract for the fabrication to Keppel FELS. At the same time, Keppel FELS awarded the basic design contract for the rigs to GustoMSC. In addition, an order was placed for the supply of GustoMSC fixation and XY-cantilever skidding systems.

The rig’s basic design work was performed in 2005, resulting in ABS’ basic class approval in November 2005. This cleared the way for Keppel FELS’ detailed design and fabrication. The yard’s detailed engineering was supported by GustoMSC engineers. In 2006 and 2007, GustoMSC engineers visited the yard regularly to get a feel for the real steel and provide further construction assistance.

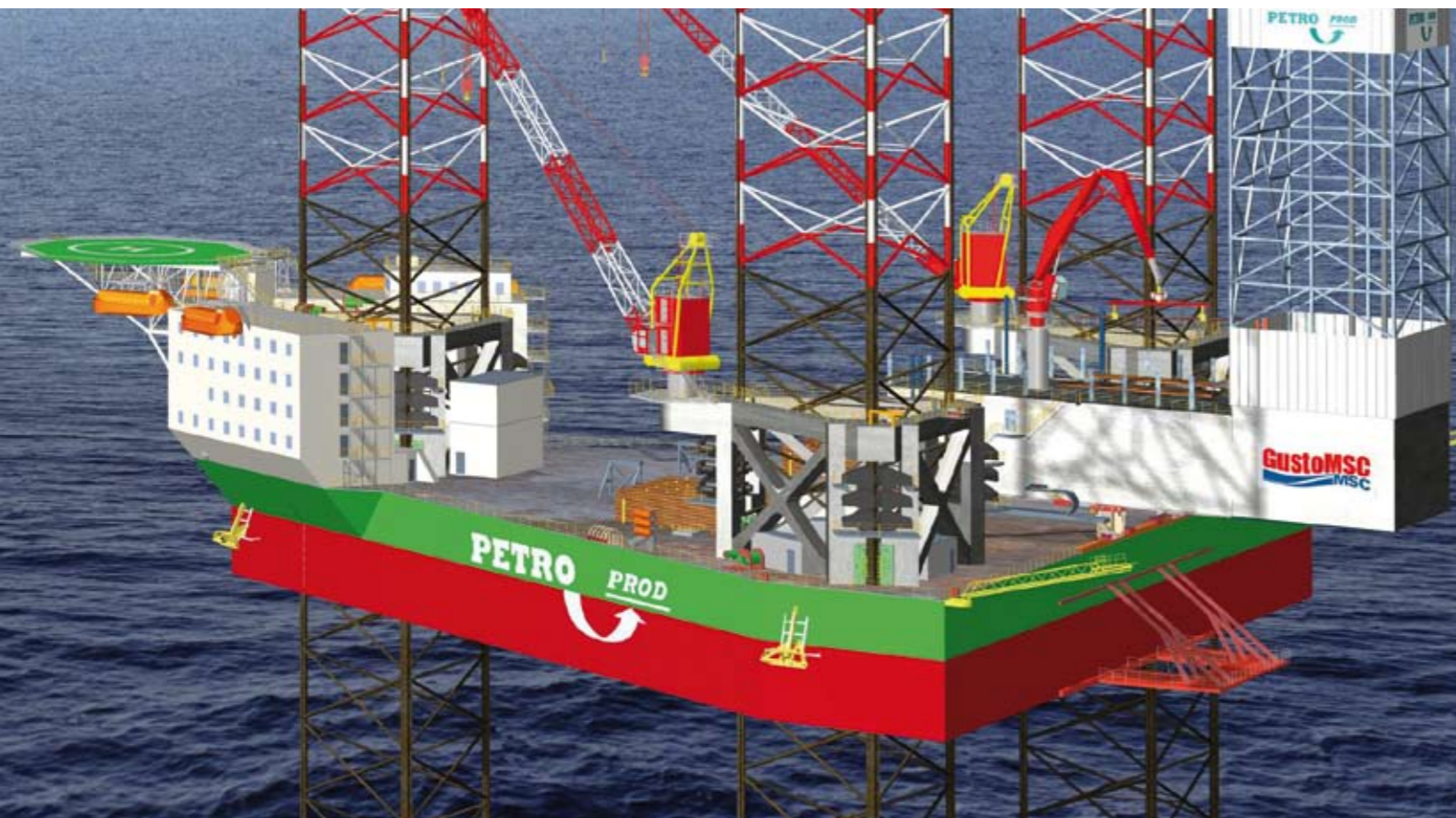
GustoMSC takes this opportunity to congratulate Keppel FELS and Maersk Contractors on the successful completion and delivery of “Maersk Resilient” and wishes the rig and her crew a safe and prosperous future.

Technical specifications of “Maersk Resilient” are:

Water depth	350 ft
Wave height	17 m
Wind speed	100 knots
Airgap	12.5 m
Total variable load	4,740 t
Hook/rotary load	680 t
Well centre reach	70 ft longitudinal 2 x 23 ft transverse
Bulk mud	300 m ³
Bulk cement	200 m ³
Active/reserve mud	1,000 m ³
Mudpumps	3 x 2,200 hp (7,500 psi)
Rig power	10 MW
Hull dimensions	70 x 68 x 9.5 m
Leg length	146.3 m
Accommodation capacity	120 persons



by Eric Snijders



PetroProd no 1, GustoMSC CJ70-X150-A

Striking first steel of the CJ70-X150-A

PetroProd of Norway ordered the first GustoMSC CJ70-X150-A from Jurong Shipyard last year July 2007. The delivery of the unit is scheduled for 3rd quarter 2010.

The scope of delivery of GustoMSC for this unit is the full basic design package, Rack and Pinion jacking systems, Fixation systems and XY cantilever skidding boxes.

In the second half of 2007, GustoMSC's engineering team was mainly involved in the preparation of the basic design package, while Larsen Oil and Gas started with the detailed design.

The engineering teams for the hardware components started work in the 4rd quarter of 2007, and will deliver the equipment to the shipyard in accordance with the agreed schedules.

The GustoMSC CJ70-X150-A is one of the largest drilling jack up units, capable of working in up to 150 m water depth in the North Sea. The present unit is number three in the CJ70 series of units.

The first two units are owned by Maersk Contractors and are working in the North Sea, one as a drilling unit and the other as a drilling and production unit.

The first milestone of the construction phase was the "striking first steel", which took place on February 18th 2008.

The project manager for PetroProd, Geir Eik, performed the first cutting operation. Gerrit Schepman and Richard Akkermans were present during this ceremony to represent GustoMSC.

The building schedule allows for a one-year period in the building dock at Jurong shipyard starting in July 2008. From July 2009 the final erection of the hull will be completed and installation of major equipment components will take place. After commissioning of all equipment and systems, the delivery is scheduled for 3rd quarter 2010.

Some particulars of the GustoMSC CJ70-X150-A

Hull dimensions: 88.6 x 97.2 m
Leg length: 205 m

Variable load capacity: 8,000 Mt plus 1,400 Mt combined load

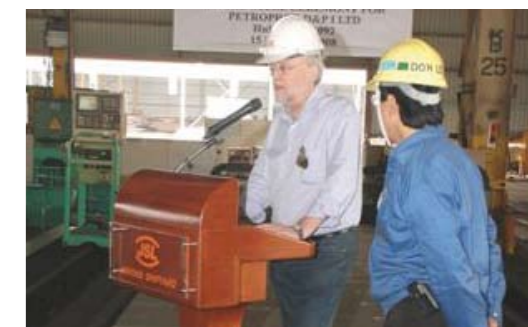
Survival conditions:
Water depth: 150 m
Max wave height: 29 m
Current speed: 1 m/s
Windspeed: 49 m/s



Don Lee, General Manager of Jurong Shipyard addresses Geir Eik



Don Lee's speech



Geir Eik thanks Don Lee



First cutting performed by Geir Eik



The CJ70 team



by Richard Akkermans and Gerrit Schepman

MSC SEA-2000

– Project update

GustoMSC is providing the basic design and supplying the hydraulic positive engagement jacking system for 4 GustoMSC SEA-2000 jack-ups for Self Elevating Platforms.

The design of the GustoMSC SEA-2000 jack-up has already been discussed in previous issues of Inside.

For reference some particulars of the units

Dimensions	
– Length	55.5 m
– Breadth	32.2 m
– Leg length	73.2 m

Survival conditions	
– Water depth	40 m
– Max. wave height	15.0 m
– Current	1 m/s
– Windspeed	39 m/s

GustoMSC jacking system	
– 4 hydraulic positive engagement systems	
– Capacity	2,000 t each leg
– Variable load	max. 1,250 t

JB-109 and JB-110

As I write this article, the JB-109 and JB-110 are nearing completion at the Labroy shipyard in Batam. The transport of both units on the heavy lift vessel is planned for the beginning of April.

The hydraulic jacking systems for both the JB-109 and the JB-110 were successfully commissioned at the beginning of this year. The final phase was the full height test of the jack-ups. At the request of the yard, GustoMSC also supervised the inclining experiment carried out directly after the full height test.

JB-114 and JB-115

Construction of the JB-114 and JB-115 is in full swing. The design of the JB-114 is slightly changed compared to the other jack-ups. The JB-114 will not be equipped with the pedestal crane and the helideck. The main deck is being re-inforced to accommodate a 400 t crawler crane.

The units are scheduled for delivery in the third quarter of 2008.



Full height test JB-110 at Labroy Shipyard in Batam



Building of the JB-115



Trial fit jacking ring



AHC system delivered to Saipem

In Inside no 9 (April 2007), we presented details about the turnkey delivery of an Active Heave Compensator to our Client Saipem. The project was carried out in a consortium of GustoMSC and Bosch Rexroth BV, where the GustoMSC scope of supply included the design and fabrication of the heave compensator skid, air vessel racks and rope sheaves.

By the end of last year the system had been tested in Holland prior to transport to the vessel Saipem S3000 for installation onboard. The picture above shows the complete system during the test period.



by René de Bruijn



by Jelle van Dam



History

GustoMSC rack and pinion jacking systems go back to the 1970's, when hydraulic as well as electric direct driven systems were installed on drilling rigs such as Maersk Explorer, Maersk Endeavor, Kolskaja and Sahalinskaja (both for arctic conditions) and on Saudi Aramco's well servicing and maintenance barges.

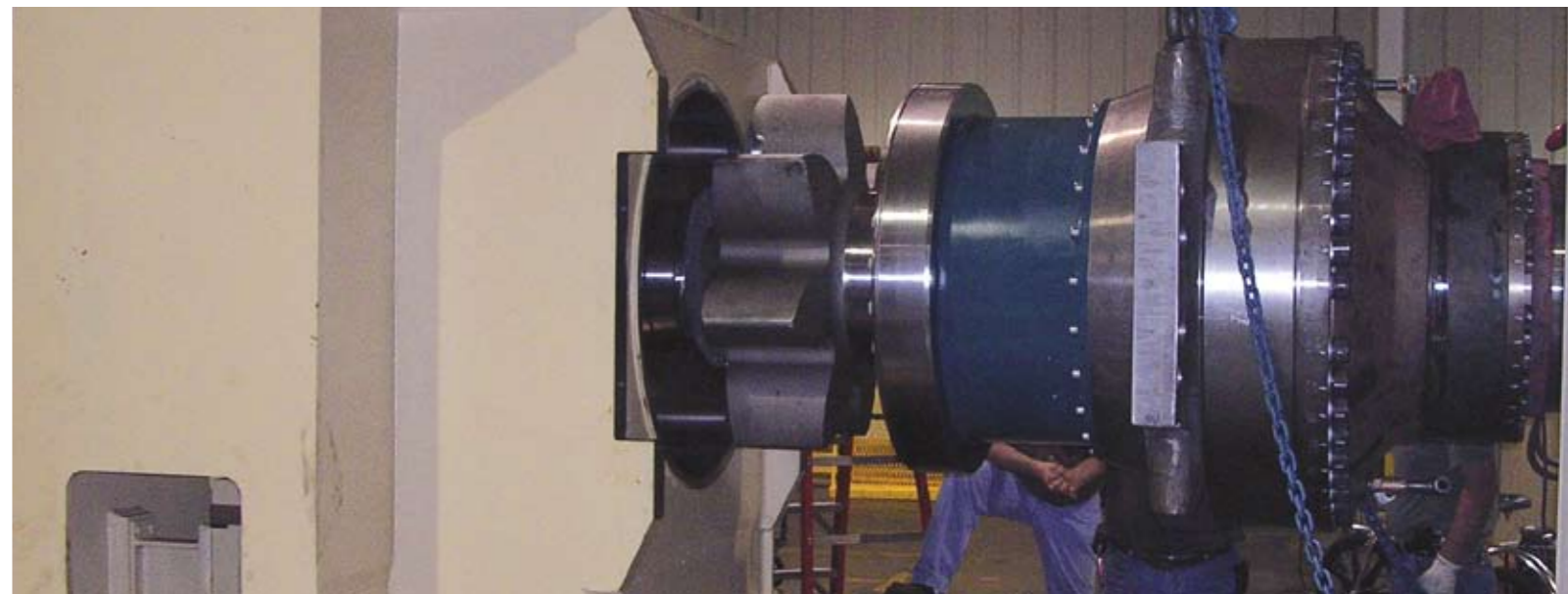
In 2006, GustoMSC signed a contract with Labroy Offshore Ltd. for the delivery of new-generation jacking systems for two GustoMSC CJ46-X100-D drilling rigs, followed by a contract for rigs 3 & 4 later that year.

System description

The system of each rig comprises 54 jacking units, consisting of a specially designed 7 tooth pinion, driven by an electric motor through an input and planetary gearbox. The pinions engage with the racks on the jackup legs.

The electric motors are driven by individual Variable Speed Drives, allowing for stepless speed control between zero and maximum speed. The system automatically distributes the loads equally over the drive units and retorquing can be performed automatically by the VSD control.

The drive units were mounted in a purpose-made steel support frame, load was applied using a dummy rack section.



Mounting of jacking unit into frame for full load test

Assembly pinion onto gearbox

Rack & Pinion jacking systems for the CJ projects



3D model of jacking unit

Other features of the system are:

- Automatic platform leveling during lifting and lowering
- Failsafe brakes with brake monitoring devices
- Leg position indication
- Rack phase difference indication
- Redundant PLC system
- Control from central and local control consoles

Status of the CJ46 jacking systems

Design and fabrication of the jacking system components was initiated in 2006. As part of the design validation under ABS Rules, a prototype test was carried out under overload. The first part of the test consisted of testing the gearboxes in a back-to-back arrangement, applying both static and dynamic overload conditions.

After each test, the test gearbox was completely dismantled and inspected. The tests and inspections confirmed the robustness of the system, obtained by applying ample safety margins on strength and lifetime, and resulted in ABS type approval of the gearboxes as well as a product design assessment certificate for the unit as a whole.

In parallel, the electric & control system was engineered, tested and built in conjunction with Siemens. Computer simulations were carried out, followed by an elaborate test in the workshop to optimize all settings and reduce site and offshore work to a minimum. The control console has been developed in concert with operators. All relevant system information can be displayed on the two 17" screens.



Central Control Console

At this moment, full ABS approval has been obtained, the equipment for the first 2 rigs has been delivered, delivery for rig 3 is ongoing, and delivery of the systems for rig 4 is planned for completion in April 2008. The first units are being assembled at the yard and will be installed on the rig shortly.

Other ongoing jacking system projects

Besides the jacking systems for the above-mentioned CJ46 drilling rigs, jacking systems are under construction for 4 other GustoMSC design 4-legged service platforms for Seajacks and for one large CJ70-X150-A drilling jack-up for PetroProd.



3D-model of two jacking units



As-built jacking unit (before painting)



Test of 2 jacking units in back-to-back configuration

In the second part of the test, overload was applied to one complete drive unit (pinion, gearbox and electric motor).



by Jack Dalmaijer



GustoMSC has provided the basic design package comprising concept design, stability analysis, dynamic positioning and mooring analysis, motion analysis, structural strength FEM analysis and all basic scantling plans, plus full documentation for class approval. During the design and engineering process GustoMSC worked closely with the DTG office in Singapore in order to integrate the latest project information into the design package. Thus the GustoMSC basic design package was the correct basis for the shipyard engineering and production. The complete GustoMSC design package for the DSS21 has been reviewed and approved by ABS.

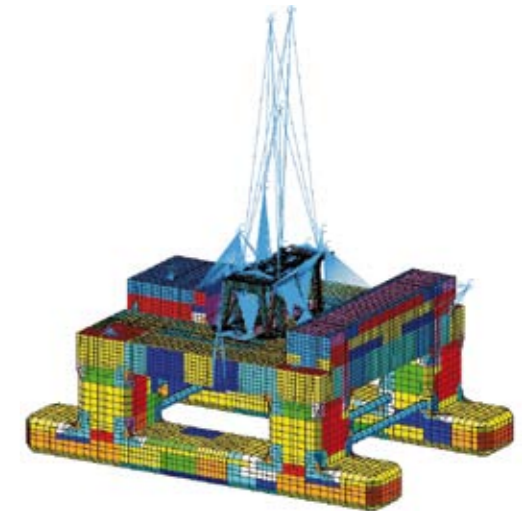
The DSS21 design is from the same DSS series of semi-submersibles designs as the DSS20-CAS-M drilling semi-submersible Maersk Explorer. The Maersk Explorer was also jointly designed by Keppel FELS and GustoMSC and built by Keppel FELS and CSCC in 2003 for operation in the Caspian Sea.

Besides the three DSS21 rigs for Maersk Contractors, a further three units from the DSS series are also under construction:

- DSS51 (Development Driller III) drilling semi-submersible for Transocean
- DSS38 drilling semi-submersible for Queiroz Galvão Óleo e Gás (QGOG)
- DSS20NS DP3 accommodation semi-submersible for Floatel



Picture of the first DSS21 - with two GustoMSC CJ50 jack-ups - also for Maersk Contractors



First DSS21 drilling semi-submersible for Maersk Contractors

Maersk Contractors has three deepwater development drilling semi-submersibles on order at Keppel FELS Ltd in Singapore. The first unit is almost completed and will be delivered in 2008.

The drilling semi-submersibles are of the DSS21 design, which was jointly developed by Deepwater Technology Group (DTG) of Keppel FELS and GustoMSC. The DSS21 drilling semi-submersible is one of the largest in its class.

The basic design of the DSS21 is such that a very efficient lay-out of the drilling equipment and systems is possible, whereby the final lay-out of the drilling equipment was set up in close consultation with Maersk Contractors, so achieving optimum drilling efficiency. In the initial development phase, Maersk Contractors, supported by Keppel FELS and GustoMSC engineers, held many meetings with operators and manufacturers to discuss the layout aspects for exploration and development drilling. The rigs are able to operate at water depths of up to 10,000 ft in moderate environmental conditions such as West Africa, Brazil, Gulf of Mexico and South East Asia. A dynamic positioning system with eight azimuthing thrusters is fitted, as well as the ability to attach to a pre-laid mooring system. The accommodation on board each rig is laid out for 180 people.

DSS21 / DSS51	
Currently under construction	4
Deck size	78 x 78.5 m
Displacement	53,718 Mt
Draft	20.5 m
Var. deck & column load	8,500 Mt
Pontoon consumables	5,000 Mt
Total payload	13,500 Mt
Double derrick	2,000 kips
Mud capacity (pontoons)	9,500 bbls
Mud pumps	4 x 2,200 hp
Vertical riser storage	100 nos x 75 ft
Power generation	8 x 4,840 kW
Station keeping	DPS2

DSS38	
Currently under construction	1
Deck size	69.5 x 69.5 m
Displacement	39,162 Mt
Draft	20.5 m
Var. deck & column load	5,622 Mt
Pontoon consumables	4,000 Mt
Total payload	9,622 Mt
Single derrick	2,000 kips
Mud capacity (pontoons)	2,880 bbls
Mud pumps	4 x 2,200 HP
Vertical riser storage	100 nos x 75 ft
Horizontal riser storage	20 nos x 75 ft
Power generation	10 x 3,560 kW
Station keeping	DPS2

DSS20-NS-DP3	
Currently under construction	1
Deck size	63.5 x 64.5 m
Displacement	28,850 Mt
Draft	18 m
Var. deck & column load	2,200 Mt
Pontoon consumables	3,000 Mt
Total payload	5,200 Mt
Power generation	6 x 3,680 kW
Thrusters	6 x 3,200 kW
Station keeping	DP3
Mooring system	8 x 490 Mt winches
Accommodation	440 POB



by Robbert Kant

MOPUstor on Yme field

MOPUstor introduction

The MOPUstor is a self-installing platform, integrating well support, production and storage. The main components are the substructure with caisson and the jack-up production deck or MOPU.

Talisman Energy awarded SBM a FEED study in September 2006 for the development of the Yme field offshore Norway based on the MOPUstor concept. This resulted in a contract early 2007 for the design, construction and installation of the unit.



Column lift

Substructure

The substructure consists of the sub-sea storage tank, the caisson, and the columns and bracing that support the MOPU legs.

The produced oil is stored in the steel, bottom-supported, sub-sea storage tank. The storage tank also provides the foundation for the entire platform. Skirts penetrate the seafloor for resistance against sliding.

The well conductors including the well heads and risers are supported by a tubular caisson. This caisson protects the well conductors and risers from wave loading and provides the lateral and vertical support that is required.

The processed oil will be exported by means of an oil offloading pipeline laid on the seabed and a Submerged Loading System (SLS), to be installed in the vicinity of the MOPUstor.

Particulars:	
Water depth	93 m
Storage tank size	66 m x 54 m x 18 m
Overall height	123 m
Storage capacity	300,000 bbl
Steel weight	14,000 t
Total dry weight	42,700 t

The substructure, except for the caisson, is currently being built at MMHE in Malaysia and is nearing completion. The caisson is under construction in Belgium. The substructure will be transported to Rotterdam in April 2008, where the caisson will be installed. The substructure will be wet-towed to the Westcon yard in Norway, where 25,000 t of fixed ballast is to be installed inside the storage tank. Installation at the Yme field will take place in mid 2008.

MOPU

The MOPU supports the process modules and accommodation and provides storage for consumables. The hull is of a typical self-floating, stiffened plate construction. The MOPU is outfitted with three circular legs, each leg is provided with a GustoMSC jacking system.

Particulars hull:		Particulars topside:	
Hull size	66 m x 54 m x 7 m	Produced oil rate	62,000 bpd
Hull steel weight	3,000 t	Produced water rate	82,000 bpd
Design elevated weight	14,200 t	Gross produced liquids	103,000 bpd
Jacking capacity per leg	4,600 t	HP gas compression	21 MMscfd
Holding capacity per leg	7,800 t	HP gas dehydration	21 MMscfd
		Gas re-injection	21 MMscfd
		Gas lift allowance	10 MMscfd
		Sea water deaeration	62,000 MMscfd
		Water injection	82,000 MMscfd

The MOPU hull and topside are being built by Adyard in the Middle East. The MOPU will be installed on the substructure in 2009 and ready for production in 2009.

Certification and classification

A typical aspect of the certification and classification is that the MOPUstor is designed within the Framework §3 regulations at the PSA. This allows Mobile Units to be designed to recognized marine standards instead of the standards referenced in the Norwegian regulations. The MOPUstor will be flagged and classed by DNV. In flagging and classing the unit, a number of the NORSOK Rules can be replaced by DNV codes and NMD Regulations.



Construction of caisson



Hull construction



Hydraulic jacks



Hydraulic jacking system SIRI



Artist impression of Yme MOPUstor



by Cees Wallenburg

European Offshore Wind Conference & Exhibition

GustoMSC participated with a booth at the 2007 edition of the European Offshore Wind Conference & Exhibition, which was held in Berlin, Germany, from 4 – 6 December. We promoted our new house style under the header “GustoMSC – Technology Creating Value”.

The conference was well attended, attracting more than 2,500 delegates. These did not come just from Europe; many other countries sent representatives since renewable energy is now on the sustainability agenda of almost every country.

Our Client, Bard Offshore, hosted a hospitality event devoted to their offshore wind developments in the German sector of the North Sea. They encouraged their guests to visit the GustoMSC booth where we had the scale model of the “Wind Lift I” on display, a self-propelled jack-up installation vessel. The model also showed the Bard VM 5 MW offshore wind turbine which is currently being prototype tested. The jack-up vessel will be owned and operated by Bard and supports a 500 ton GustoMSC crane for the installation of wind turbines at sea. The vessel is currently under construction in Lithuania and will be delivered in 2009. An animated movie was shown to demonstrate the versatility of this vessel. It included a detailed sequence of our new double-acting hydraulic jacking system which provides excellent efficiencies for this type of application.



SPE/IADC 2008 Drilling Conference & Exhibition

This event was held from 4-6 March 2008 in Orlando, FL with some 1,500 delegates in attendance. The conference theme was “Sustainable Strategies for Today’s Realities” which was further discussed in three plenary sessions. In one of the Technical Sessions devoted to Deepwater Drilling, our own Sjoerd Hendriks gave a presentation together with Mr. Borre Fossli of Ocean Riser Systems on the design of the Oribis PRD 12,000 drillship. The presentation included an animation showing the intricate details behind the innovative pressure drilling system developed by Ocean Riser Systems and how this has enabled GustoMSC to customize the PRD12,000 design for that application.

Astrid Schuurmans had organised our booth which attracted a lot of visitors, partly because we had a scale model of the Bully version of the PRD12,000 drillship on display. People had read about this joint venture project between Frontier Drilling and Shell but had not been able to see the vessel. For those of you who missed it, a second opportunity will be given at the upcoming OTC 2008 in Houston.



by Han Tiebout

EnCana Deep Panuke Project



EnCana Corporation has decided to develop the Deep Panuke Offshore Gas Development Project, located approximately 250 km southeast of Halifax, Nova Scotia (approx. 47 km west of Sable Island).

The project utilizes a jack-up type production field center (PFC), which is a newly built unit designed to produce gas at a rate of 300 MMscfd/day.

Raw gas will be produced from sub-sea wells using dedicated flow lines and associated umbilicals tied back to the PFC and treated offshore. The Deep Panuke reservoir fluids contain H₂S and CO₂, which will be separated from the gas and disposed of into a dedicated acid gas injection well. Produced condensate can be used as a primary source of energy for power supply to the process and utility systems.

The market-ready processed gas will be exported to shore via a single sub-sea pipeline with landfall close to Goldboro, Nova Scotia and onward interconnection with the M&NP for markets in Canada and the United States. The export pipeline will be approximately 176 km in length.

The project started early in 2007, with a bid competition phase, where SBM was in direct competition with Modec.

The SBM bid was based on the GustoMSC MOPU concept, a four-legged jack-up with tubular legs and hydraulic pin-in-hole jacking/locking system. Large footings are needed to obtain good soil fixity and bearing capacity to withstand the high near-breaking waves at the Deep Panuke location.

SBM's bid was successful and resulted in EnCana awarding a contract to SBM which consisted of:

- 1) the engineering, procurement, construction, installation, and commissioning of the PFC
- 2) the charter of the PFC for a fixed period of 8 years with options for extensions
- 3) an operating services agreement, which covers the operation of the entire field on behalf of EnCana

The design and fabrication of the PFC must be in compliance with the Canada-Nova Scotia Offshore Petroleum Board regulations and all the applicable Canadian codes and standards.

The engineering of the project has been organized as follows:

- SBM Malaysia will design and engineer the topsides
- GustoMSC Schiedam will design and engineer the jack-up and associated systems

In addition to the design, GustoMSC will supply the jacking/locking hardware kit to the project.

First gas from the project is expected in the fourth quarter of 2010.

Main particulars of the jack-up are:

Hull dimensions	62 x 52 x 7 m
Number of legs	4
Leg length (including footing)	90 m
Leg diameter	4 m
Jacking system capacity/leg	7,000 t

LQ capacity	75 persons
Helicopter deck	suitable for EH101

Airgap	23 m
Maximum wave height	25.6 m
Wind velocity	53.3 m/sec



by Pieter de Man

RECENT PROJECTS

EXPLORATION MARKET

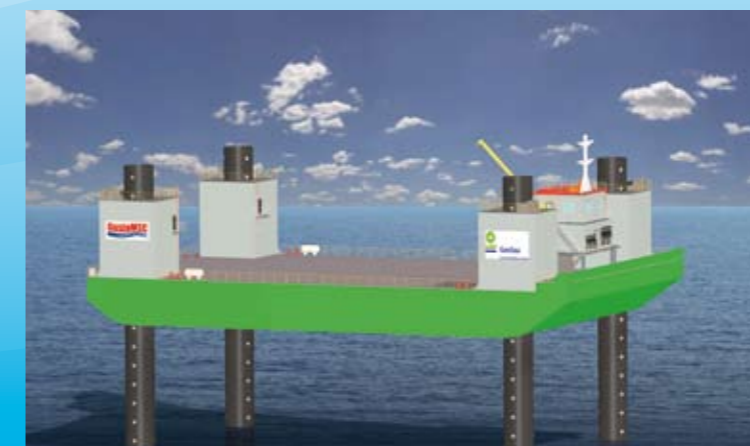
- Basic design of a P10,000 NG drillship, under a license agreement with HHI, for an undisclosed Client
- Basic design of a PRD 12,000 drillship, under a license agreement with Frontier Drilling
- Supply of a thruster retrieval system for Frontier Drilling
- Conversion engineering for cantilever for GPS Drilling
- Design studies for arctic jack-up for undisclosed Client
- Design of an NG2500X jack-up for Gulf Marine Services, including delivery of a jacking system
- Upgrade engineering for Atwood Falcon semi-submersible drilling rig
- Leg spud can reanalysis for Atwood Vicksburg
- Parker Drilling rig 262 train module structure re-analysis

CONSTRUCTION MARKET

- Design of a crane jack-up for Cuxhaven
- Basic design of a crane jack-up for MPI
- Supply of a series of handling tools for the "Wind Lift I" wind turbine installation jack-up for Bard Engineering
- Basic design of a SEA2750 for Self Elevating Platforms NV, including delivery of the jacking system
- Basic design of a SEA2000 for GEOSEA NV, including delivery of the jacking system

PRODUCTION MARKET

- Basic design of an FPSO for SBM
- Engineering for P-57
- Design review of the P-56 for Keppel FELS



Artist impression SEA2000

IMPORTANT DATES

5 – 8 May 2008

OTC, Houston

15 – 20 June 2008

OMAE 2008, 27th International Conference on Offshore Mechanics and Arctic Engineering, Estoril

3 – 6 November 2008

Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), Abu Dhabi

3 – 5 December 2008

Deep Offshore Technology (DOT) International Asia / Pacific Conference & Exhibition, Perth

COLOFON

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