

ADD-ON EQUIPMENT DRILLING JACK-UPS

OPTIMIZING OPERATIONAL EFFICIENCY

Modern day drilling jack-ups are highly specialized machines aimed at drilling wells in the most efficient way. But they are also built to a certain price point and thus cannot always do everything an owner might want to do with it when it is delivered from the yard, or after some years in service. For this reason GustoMSC has developed add-on equipment that will allow the existing jack-up to be used more effectively, increase capability or enable operations beyond the original design conditions.

SmartCrane

The GustoMSC SmartCrane offers unique features that directly address the call for cost reduction from operators, while providing drilling contractors with a means to distinguish themselves. Focus of this equipment was to increase efficiency by enabling simultaneous operations (SIMOPS) independently of any operation in progress on the drill floor and enabling access for safe and efficient material handling underneath the cantilever and between the work platform and drill rig. The economical step change is found in rig day savings in plug and abandonment operations, which 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 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 ton 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 (<20mt) from the main deck of the rig to underneath the cantilever and vice versa.

Because of its electrical drive system, the SmartCrane requires little maintenance. It can be installed on a new build 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 dismountable enabling full reach and combined load capability for cantilever operations when needed. It is even possible to use the SmartCrane on different rigs of the same type when the same integration point is used on similar rigs in the drilling contractor jack-up fleet.

Texas deck

A Texas deck provides the ability to vertically support the riser or conductor from a separate platform, instead of from the rotary or top drive and move transversely along the stern of the rig. During transit the Texas deck is folded up vertically against the stern and while elevated it is lowered into its horizontal working position. The Texas deck enables the rig when it is working on subsea templates to temporarily hang off a marine riser with subsea BOP, such that it can install the subsea Xmas tree and pick up the riser again right after installation of the Xmas tree. This type of operation saves valuable time and thus increases the efficiency of the jack-up significantly. The Texas deck can also be used as an access platform to a fixed

platform and can take part in the material handling route towards the platform, since it can be skidded within reach of the rig main cranes.

Add-on spudcans

When a jack-up is assessed for suitability to work on a certain site but fails certain criteria of the site specific assessment, all is not lost. There is always one mitigating measure that can be taken, which is to reduce the VDL and/or combined load acting at the cantilever. But if that is not enough or not desirable there remains one more option: modification of the spudcan. A jack-up always relies on the soil for its stability by preloading the legs up to and beyond the expected maximum survival vertical leg reaction. This can then lead to severe penetration and cause too much leg to protrude below the hull. Another issue that can appear is lack of soil fixity, whereby the original spudcan cannot generate enough soil fixity to relieve the leg-hull interface. Both issues can be solved by enlarging the existing spudcan or fitting it with a skirt or a combination of these, either by using a temporary or a permanent welded structure, or by fitting add-on spudcans. These add-on spudcans are completely pre-fabricated spudcans that are attached to the lower end of the leg chords with a dedicated clamping mechanism. The advantage of using add-on spudcans is that they require very minimal non-productive time of the jack-up since it only needs a marine mating operation that does not even have to take place in a drydock. The add-on will usually be designed with a specific field in mind, enabling the jack-up that was previously unable to do the job to pass the site specific assessment and start working on that field.



Optimizing operational efficiency by integration of new equipment



GustoMSC SmartCrane