



## Diverless Riser Hang-off System-Wolly Butt

LICEngineering A/S was contracted by NKT Flexibles to carry out development and prototype testing of a new type of hang-off for the bend restrictor system on flexible risers

The system consists of a machined steel male part and a female rolled and welded receptacle part. After full scale testing had been carried out successfully on the proto- type, LIC got the contract for delivery off six female hang-off nits for the Wollybutt FPSO project including three 6" and three 2.5" risers. The FPSO is operated by Agip Australia Ltd. in waters offshore Australia. The work was carried out in close cooperation with NKT Flexibles and other involved contractors as well as the end user client company. The development work was initiated based on a primary desire to develop a new and robust female hang-off system. Existing systems had typically utilised many small hooks placed low in the female pull-in bellmouth, and with complicated and delicate movement and lock pattern.

The new female system is based on two simple and very strong lock claws placed opposite directly in the lower J-tube itself just above the bellmouth. The hang-off system is self locking when the flexible with the male part attached is pulled past and landed on top of the claws. A spring system with neoprene fender elements provides secondary locking and keeps the claws positioned before the flexible is pulled in.

The system also includes a manual lock mechanism consisting of two lockbolts which can be engaged by ROV after the riser has been pulled in.

Furthermore, the lock claws are connected to a cantilevered spindle drive placed on the front of the female unit. The spindle can be operated by the ROV to lock the claws into open position which is required when the flexible riser is to be disconnected and retracted. The female part is strengthened by welded ring stiffeners and vertical stiffener plates to allow for the large cut-outs for the claws.

For more information:

Hans Jørgen Riber, Head of Business Development

hjr@liceng.dk

+45 51 51 29 16



Prototype Testing



Lock Mechanism



Hellerup Office

Ehlersvej 24

2900 Hellerup

Denmark

+ 45 39 62 16 42

Esbjerg Office

Kirkegade 25

6700 Esbjerg

Denmark

+ 45 75 18 16 88

Svendborg Office

Kulinggade 31E

5700 Svendborg

Denmark

+ 76 10 94 30