

Hydralift crane slew bearing change out

ASSET

Floating, Storage, and Offloading (FSO) vessel

LOCATION

Brazil

Specialist engineering support to modify your existing designs ensures you have equipment that is fit-for-purpose in the most cost effective way

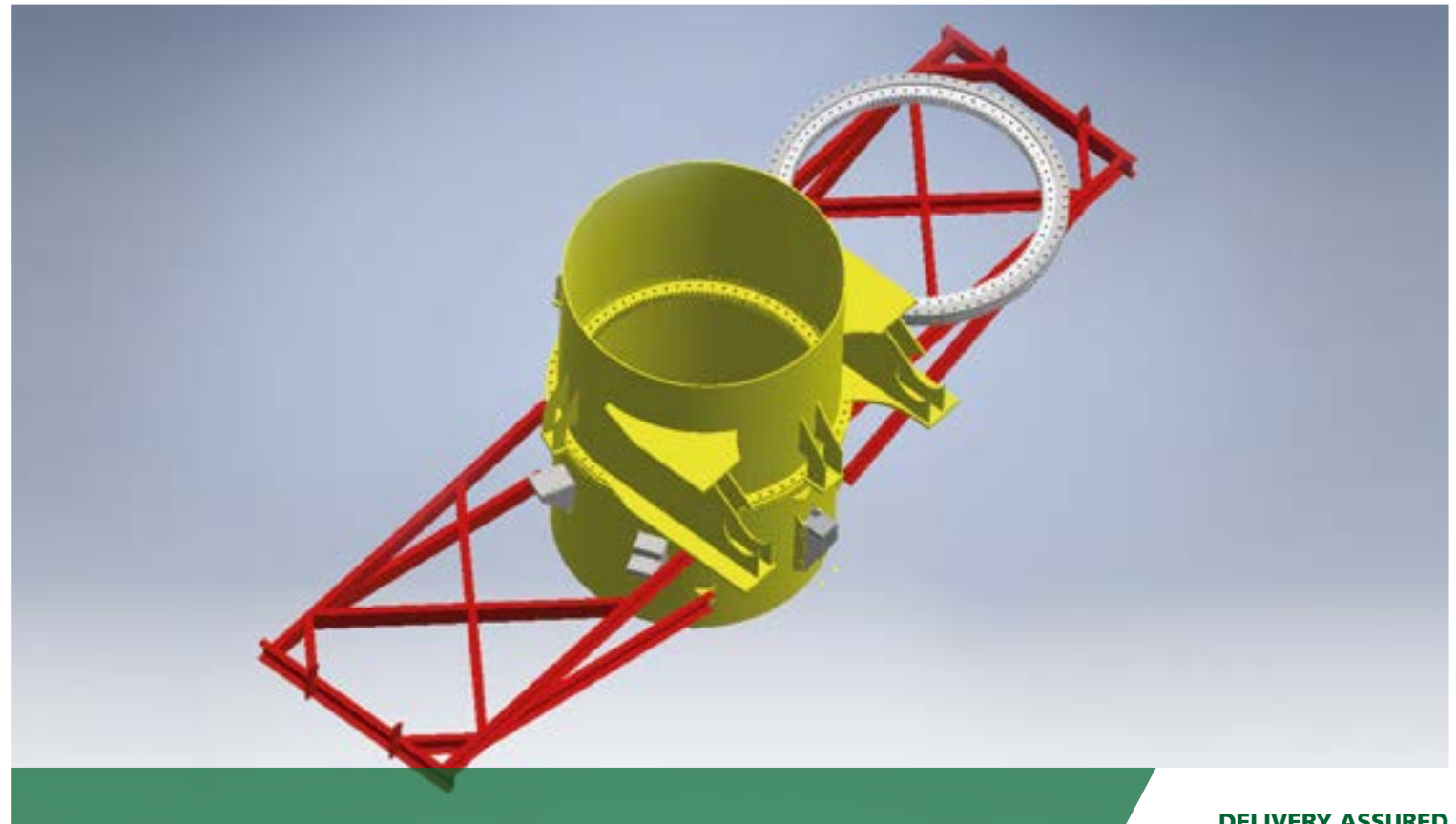
BENEFITS

Safe solution complying with standards

Utilised in-house engineering expertise

Work scope completed on time

Adapted existing equipment to save costs



DELIVERY ASSURED

CHALLENGE

We were approached by our customer to engineer a scheme for changing out the slew bearing of the hydralift crane on board a FSO vessel.

They had changed out the slew bearing on a similar hydralift crane on another platform during 2014. We reviewed the skid frame and jacking blocks used for that change out to determine if these items could be reused for the newly-requested work scope in order to save costs. The previous crane was heavier with a larger slew ring, however this one was being mounted on a vessel which actually generates larger loadings.

We were asked to consider modifying the existing design of any compatible items and to redesign any as a last resort.

SOLUTION

- After reviewing the dimensions, loadings and the jacking / slew ring change out procedure used on the 2014 work scope, we verified that it could also be used on this crane with minimal modifications.
- We calculated the new design loads imposed on the skid frame by the selfweight of the slew ring and discovered the frame was suitable to be reused. The loads on each individual jacking position took several factors into consideration such as vessel dynamics, altering wind directions and removing jacking supports to allow the slew ring to be replaced with a new one.
- The dimensions of the pedestal adaptor brackets were checked, showing three different types. Two were dimensionally suitable to be used and one had to be redesigned to fit this crane. 3D Finite Element Analysis (FEA) models were created of each adaptor bracket and analysed in ANSYS to verify their suitability. It was also established that the hydraulic jacks required upgrading.
- Additionally, the welds on the jacking point attachments on the crane were checked for the design loads calculated along with all bolted connections.
- Following all checks and calculations the work scope was completed safely and on time costing the customer less money than it would have to engineer a completely new scheme.
- In this specific work scope we checked, modified and verified the existing jacking system as requested. We have, however, completed numerous slew ring replacements on a variety of cranes over the years using our own systems which are of modular construction and can be adapted to suit most cranes up to 250 Te in weight. These standard Sparrows Group systems have a proven track record in safety and efficiency and in most cases this proves to be the most cost effective option to change out a slew ring.

SUMMARY

- Jacking procedure for the crane
- Slew ring change out procedure
- Design loads based on wind and vessel dynamics
- Analysis of skid frame and jacking blocks
- Weld and bolt calculations
- Specification of jacks
- Methodology review
- Technical support
- Project management

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