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Johnson Crane Hire Undertakes Heavy Lifts At Shell & Bp's Sapref Refinery

Johnson Crane Hire was contracted by SAPREF to undertake the heavy lifts associated with maintenance work that was required on two columns of its North Zone Unit during the biannual turnaround undertaken at the Durban refinery in 2015. As part of scope of work, Johnson Crane Hire was contracted to supply an extended fleet of cranes required to perform the extensive maintenance work that was executed during the turnaround.

The biannual turnaround involved shutting down the Central Zone of the refinery and performing scheduled maintenance work, statutory inspections, repair work where needed and the execution of project modifications. Work on the turnaround started on 4 May 2015 and continued through to the end of July. Johnson Crane Hire supplied 65 cranes on the turnaround, mostly dedicated to general plant maintenance tasks, as well 14 additional operators to facilitate night shift works.

Harry Haripursad, KwaZulu-Natal regional manager for Johnson Crane Hire, says that the ability to manage multiple lifts simultaneously is a major differentiator for Johnson Crane Hire, and the company has a longstanding relationship with SAPREF, which he attributes to the provision of reliable lifting services of a consistently high standard.

Concurrently with the general maintenance work that was to be executed during the turnaround, it was decided to use the planned shutdown as an opportunity to carry out necessary repairs on two columns that form part of the North Zone Unit. A number of heavy lifts were required as part of the repair work and Johnson Crane Hire utilised its Liebherr LR-1600/2 to execute the work. This crane has a SWL capacity of 600 metric ton and is only one of several large capacity crawler cranes operated as part of the Johnson Crane Hire's fleet of crawler and lattice boom cranes.

Grant Parker, project manager at Johnson Crane Hire, says that the team worked closely with the SAPREF project team from the early stages of the project.

According to Parker the single most challenging aspect that they faced was the extremely limited space available to both assemble and operate this huge crane. The assembly and operation of the crane within such constraints required skill, careful planning and attention to detail.

A specially constructed crane pad was built to accommodate the crane and allow facilitation of the crawler crane's movement during the lifting activities. Crane assembly was undertaken over an 11 day period and thereafter the heavy lifts were completed in just over two weeks. A further 11 days were required to dismantle the crane.

"The first lift comprised the offloading of a new prefabricated 'can' section with a mass of 13 metric tons. The 'can' section was then lifted into a temporary support structure that was specifically built for attaching the 'can' section to the existing top section of the column. The top section of the existing C 4101 column was then removed and placed on top of the temporary support structure to facilitate assembly, alignment and welding of the new 'can' section to the existing top section.

"The corroded section was removed from the existing column and placed on the ground for subsequent removal by a 100 ton LTR 1100 hydraulic crawler crane, also supplied by Johnson Crane Hire. "The newly constructed top, with a calculated mass of 143 metric tons, was lifted into position at a lift radius of 43 metres," Parker explains.

The smaller second column was located in a constricted area of the plant that required a boom reach of 41 metres. The existing column was removed and replaced with a new column which had been prefabricated and pre-dressed on site. This lift was performed concurrently with the repair of the larger column.

Gavin Jacobs, branch manager for Johnson Crane Hire Durban, says that teamwork played a vital role in the successful execution of the turnaround. "Having 65 cranes on site was a challenging task and good planning was a key to our success."

"Safety is a major focus for all our lifts, irrespective of complexity. We hold regular site meetings and daily toolbox talks to create awareness and assess and mitigate risks. The successful completion of the recent SAPREF turnaround and project is testament to the tenacity and flexibility of our team. Careful and systematic planning, a pool of trained and experienced operators, as well as well-maintained current technology cranes, allowed us to handle any logistical issues with aplomb," Haripursad concludes.

SAPREF SHUTDOWN LIFTS PIC 01 : Johnson Crane Hire was contracted by SAPREF to undertake the heavy lifts associated with maintenance work that was required on two columns of its North Zone Unit during the biannual turnaround undertaken at the Durban refinery.

SAPREF SHUTDOWN LIFTS PIC 02 : A number of heavy lifts were required as part of the repair work and Johnson Crane Hire utilised its Liebherr LR-1600/2 to execute the work.

SAPREF SHUTDOWN LIFTS PIC 03 :The Johnson Crane Hire team worked closely with the SAPREF project team from the early stages of the project.

SAPREF SHUTDOWN LIFTS PIC 04 : The single most challenging aspect that Johnson Crane Hire faced was the extremely limited space available to both assemble and operate this huge crane.

SAPREF SHUTDOWN LIFTS PIC 05 : The first heavy lift comprised the offloading of a new prefabricated 'can' section with a mass of 13 metric tons.

SAPREF SHUTDOWN LIFTS PIC 05 : A number of smaller lifts were conducted by Johnson Crane Hire during the same period.

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