

INDUSTRY ALERT - Crane Failure

A 2 tonne SWL, wire rope bridge crane failed at a mill, causing the lifting frame and hooks to fall . narrowly missing 2 people working in the area.

The crane was being utilised to remove a partially used hard roll (approx 700kg mass) from a backstand. The operator placed the lifting hooks into the roll spindles and operated the up/down switch. It was then noticed that the chucks holding the roll in place during the operation were still inserted in the spindles. The crane was stopped and the operator started back to the operating panel when the failure occurred. The cross beam fell 2.5 metres onto the top of the roll and then onto the platform in front of the operator. The crane was purchased new 12 months ago and the load mass was within the crane's safe working limits. Following the incident, the electronic load sensor was tested and found to be operating correctly.

The crane assembly was purchased from a specialist engineering organisation who assembled it from pre-fabricated components supplied by the manufacturer.

The crane manufacturer was contacted and advised to attend and inspect the failed crane and other similar cranes across the site. All similar cranes were inspected by the manufacturer and found to be OK. The failed crane was examined by the manufacturer and showed a failure of the rotating hook assembly between the lifting frame and pulley block. Inspection of the rotating hook assembly showed a failed weld that allowed the hook assembly to fall from the pulley block. The failed weld was a 10mm long tack weld.

It is believed that the crane failed due to incorrect fabrication of the hook assembly and pulley block. The straight shaft hook assembly was held into the pulley by the 10mm long tack weld. This meant the entire load was being supported by the tack weld only. The weld should have extended around the entire circumference of the hook shaft. Similarly designed cranes more commonly use a threaded hook shaft that screws into the pulley block. Then the screw heads carry the load and the single tack weld is used to prevent the hook from unscrewing out of the pulley block. This is an acceptable practice.

The pulley block and hook assembly were replaced with new items on the failed crane. A load test was performed and the crane recertified for use. The roll lifting frame and hooks were inspected and approved for use.



For further information please contact Denise Campbell-Burns

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