



MILITARY/DEFENCE CASE STUDY

LLOYDS BRITISH - DSDA GOSPORT

Located throughout the UK and Northern Germany DSDA manages a range of storage, processing and distribution tasks on behalf of its customers in Defence and industry. Their main customer's are the Integrated Project Teams (IPTs) that manage the introduction of defence materials to the MoD.

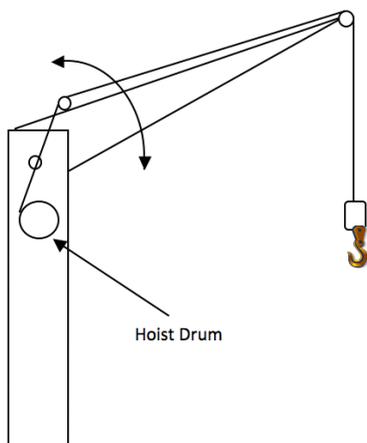
The brief

The customer has two luffing dockside cranes, each with a rated SWL of 3.0 tonnes. Motions include hoist, luff up and down, slew and travel. The cranes are used for loading live ordnance onto barges on the jetty. With such sensitive loads, more information was required for the drivers of the cranes to ensure safe use of the cranes.

They required equipment fitted to the cranes to provide a display in the drivers cab indicating:

1. The load on the hoist rope
2. The angle of the jib arm
3. The radius at which the load was suspended

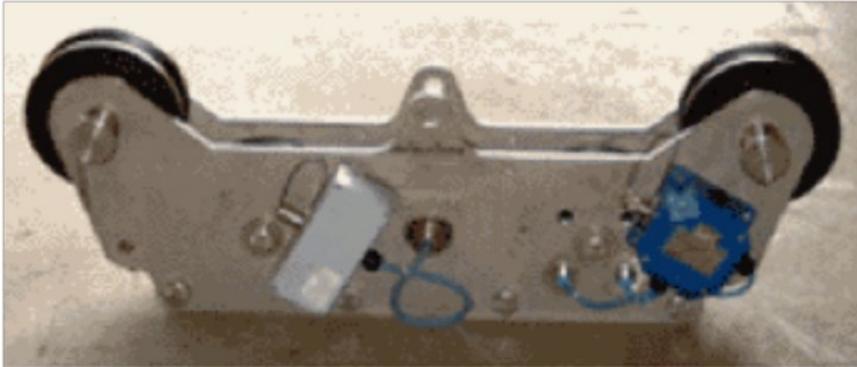
Each crane has a minimum/maximum luff angle of 5/60 degrees which equates to 1.4/24.0 metres load radius. The rope comes off the hoist drum as a single fall, over the end of the jib arm to the hook. Below is a pictorial representation.



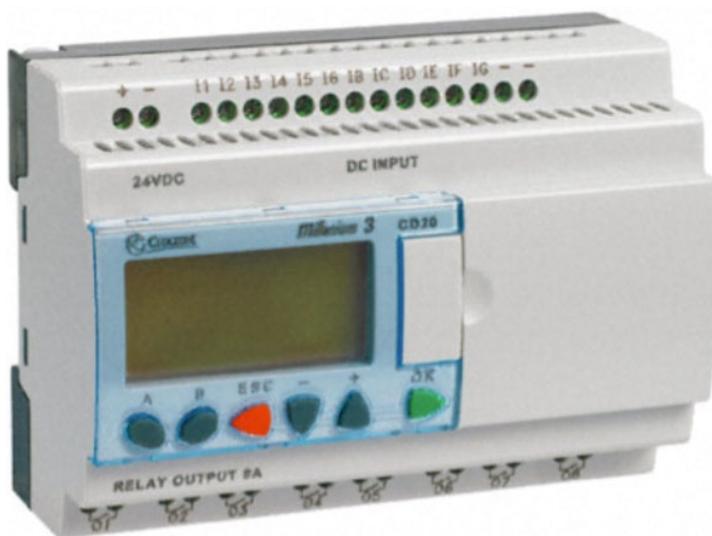
As there is only one fall of rope from the drum, measuring the load in the rope presented a problem since the rope is always moving and there are no static anchor points for load measurement.

The solution

1. A running line monitor was suspended below the top diverter sheave at the end of the jib arm and the rope was diverted through the three pulley system in the device. As the load on the rope increases, the rope tries to straighten out. A load cell fitted to the centre pulley can then accurately measure this load using the displacement of the centre pulley. The unit outputs a 4-20 mA signal proportional to the load on the rope.



2. In order to measure the angle of the jib arm, a high precision inclinometer was mounted on the jib which again, gave a signal output of 4-20 mA, depending on the angle at which it was tilted.
3. The signals were then processed by a Millennium 3 Logic Controller with bespoke software designed by Crane Services. This equipment not only processed the signals to display units, but also carried out the relevant trigonometrical calculations to allow the load radius to be displayed, as well as the jib angle. The unit provided trip outputs in the case of an overload at 110 % of the rated load and gave an indication when the load reached 90% of the safe working load. As an additional feature, the logic controller also provided monitoring and data logging of all motions of the crane, as well as fault logging. This information could then be accessed via an integral key pad and LCD screen on the logic controller.



The result

The system has proved to be extremely reliable and accurate, giving the operator easy reference of the load and its position, together with protection of the crane and a record of its use.

For all your lifting and crane service enquiries contact Sales on 01384 370318