

LCM4670 55te Telemetry Load Shackles

Application

Heavy lift load distribution monitoring

Features

- Manufactured using a Crosby G2130 bow shackle
- Existing load shackle pin used for added traceability
- Supplied with load centralising bobbin for optimal accuracy
- Transmission distance of 500m (clear line of sight)
- Supplied with free T24LOG 100 software for viewing and logging of load shackle data
- Complete system supplied fully calibrated and issued with certificates traceable to UKAS Standards
- Environmentally sealed to IP67

Design Brief

Larsen & Toubro, a leading Indian engineering and construction contractor, were commissioned to build a nuclear containment building at Kakrapar Atomic Power Plant. As part of the project they needed to lift and position a 47 metre diameter and 8.25 metre high inner containment dome liner, which had been built as a single unit. Because of the unique geometry of the dome and its 365 tonne weight, a balanced lift with equally distributed loads was vital to ensure a safe and successful lift. Eighteen lifting lugs were integrated into the dome liner, which were each fitted with



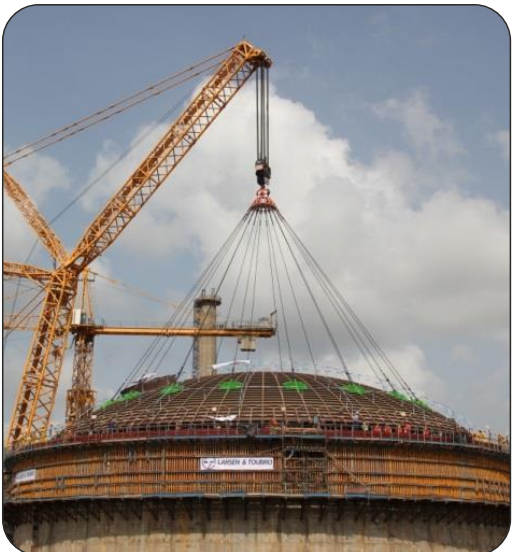
a 55te wireless load shackle. At the customer's request, a Crosby G2130 was used, rather than the smaller standard TELSHACK-B 55te, as it afforded a better fit within the lifting lugs.

LCM Systems also supplied a telemetry base station that detected the telemetry signals from the load shackles and transmitted them to a laptop, where engineers were able to view the loads on each lifting lug to ensure they remained uniformly loaded throughout the lift. With only 200mm clearance to work with, the Larsen & Toubro team lifted and placed the dome into position on top of the inner containment wall in just two hours, with alignment and anchoring taking a further three hours, after which the crane was released.

Larsen & Toubro commented "During test runs the turnbuckles were rotated according to the load displayed on all 18 load shackles to distribute the loads equally. This test was demonstrated to our client and the regulatory board, who were then happy to give their permission to lift the dome on the very next day."

Main Criteria

- The load shackle must utilise the Crosby G2130 shackle series
- Data from each load cell to be displayed on a laptop PC
- The system must be completely wireless
- Load shackle construction robust enough for heavy lifting environment
- Full material traceability required
- Load shackles to be calibrated to traceable standards



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APPLICATION NOTE

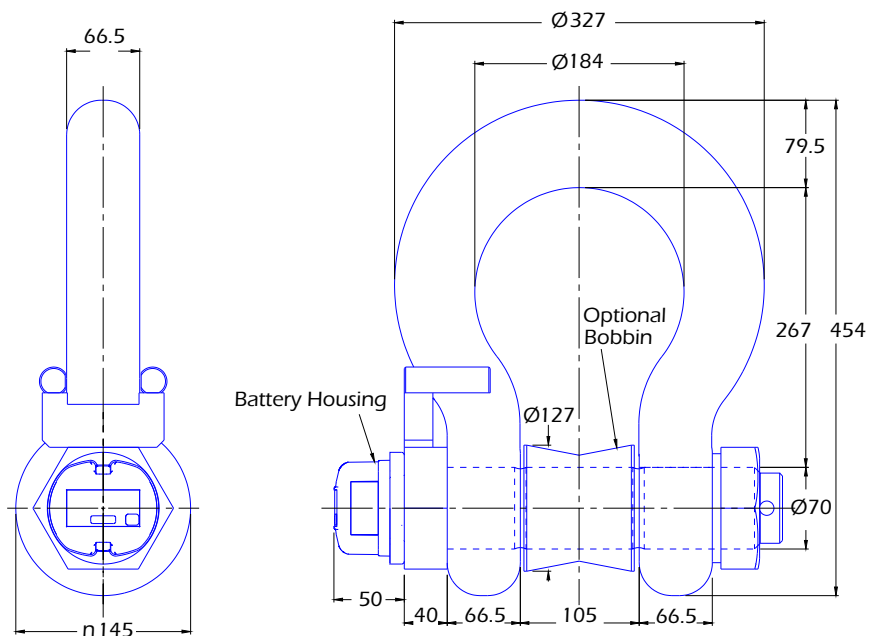
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Specification

Rated load (tonnes)	55te
Proof load	200% of rated load
Ultimate breaking load	>300% of rated load
Non-linearity	<±1% of rated load (typically)
Non-repeatability	<±0.1% of rated load
Transmission distance	Up to 500 metres (clear line of sight)
Battery life	200 hours typically (continuous use)
Battery	AAA Alkaline x 2
Operating temperature range	-20 to +60°C
Environmental protection level	IP67

Dimensions



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AP112

Issue date: 14/09/2016

APPROVED

(unapproved if printed)