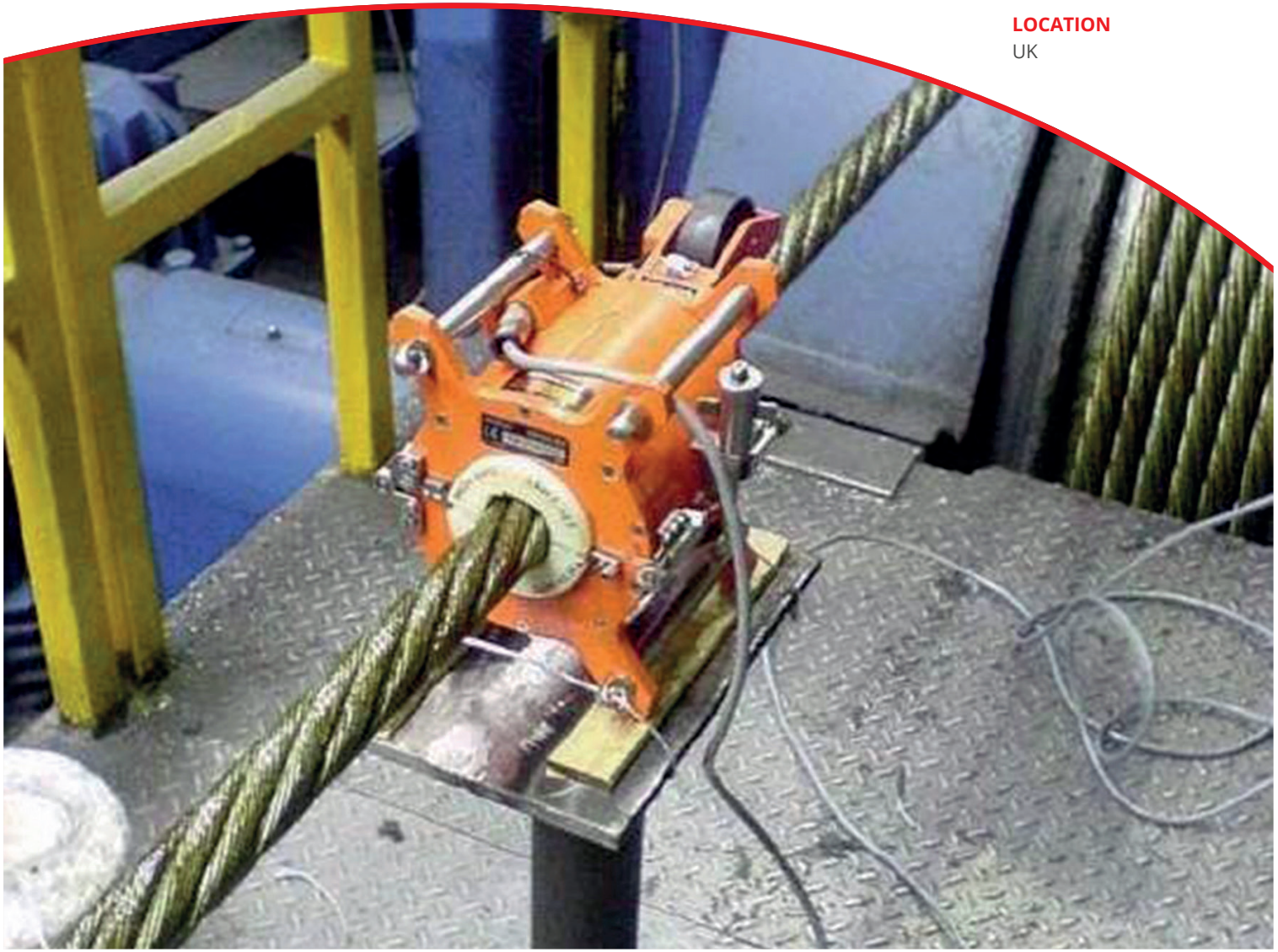
SPARROWS

CASE STUDY

WIRE ROPE LIFE EXTENSION ANALYSIS

ASSET
Offshore platforms

LOCATION
UK



Extending the life of critical equipment ensures reliability and minimises downtime while avoiding unnecessary costs

BENEFITS

Life extension of wire ropes from one year to two years of service

Enhanced knowledge and understanding of rope wear versus usage rate

Cost saving of £50-60K per crane analysed on each rope replacement

Recommended pressure lubrication to aid life extension

Continued overleaf...

CHALLENGE

One of our key customers requested that we carry out a research project to analyse the usage and wear rates of their crane wire ropes, with a view to extending their life from one year to two years. They recognised the potential cost savings in materials, manpower and crane downtime that could result from extending the life of their wire ropes, but required a sound technical justification to mitigate the risks before sanctioning such a change. To ensure that they received quality specialist advice, they engaged us, who have been their incumbent mechanical handling specialists for over 50 years, to carry out the research.

We assigned one of our research students at Robert Gordon's University to lead the study.

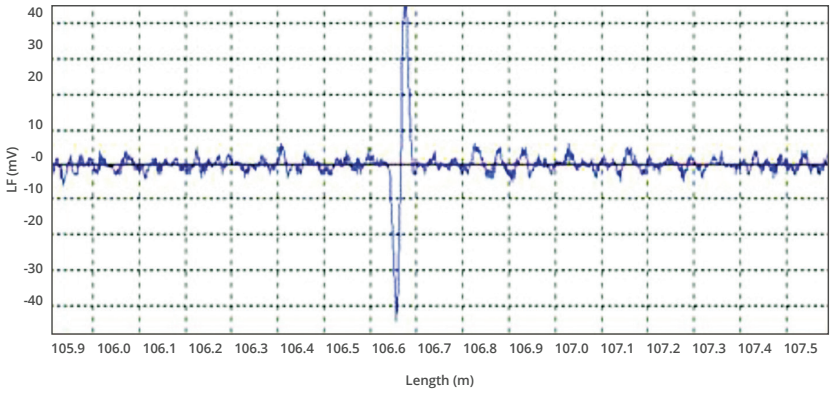
SOLUTION

- Utilising our knowledge and understanding of crane wire rope construction, we compiled a list of all rope types that were to feature in our analysis project. We then engaged with the technical specialists from the rope manufacturer, Bridon, to better understand the manufacturing process.
- Each time a rope was returned following use, it was subjected to a detailed magnetic inspection with a specific focus on broken wires and loss of metallic area at that point. The results were compared against the discard criteria set out in ISO 4309-2010 to establish if the rope was fit for further use.
- For each rope tested, the usage rate of the crane over it's operating life was reviewed to identify trends and aid in the evaluation for extended use.
- The results were then compared against those of cranes of similar construction and usage rate that have been operating with a two year wire rope life to provide assurance that our evaluation was not only theoretically based.
- Our findings showed that out of the 50 ropes tested, 47 (94%) were deemed fit for continued use, while the remaining three were shown to have suffered mechanical damage outside normal operating conditions.
- The analysis report was reviewed and accepted by both the wire rope Original Equipment Manufacturer (OEM) and the customer. It offers them further opportunity to continue this analysis approach to support potential future life extension.

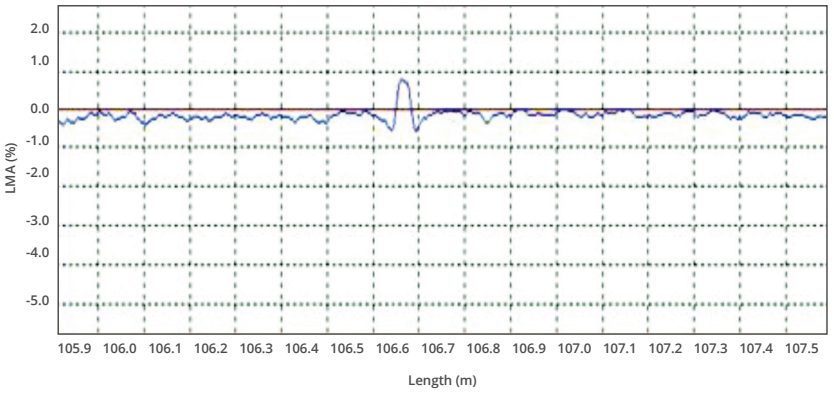
SUMMARY

- Technical literature review for wire ropes
- Non-Destructive Testing (NDT) equipment
- MIPEG load history
- Historical rope inspection data.

Example LF trace



Example LMA trace



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