



Asset Care Counts

More Efficiency – Better Results – Wireless Strain Gauge Analysis

In all fields it remains incumbent on suppliers alike to drive forward the value of their service offering.

ALS remains a leader in continuous improvement, combining engineering skill with technology to deliver greater confidence in asset condition assessments.

This case study discusses the application of wireless strain gauging to allow synchronous measurement of operating shafts in a dragline, giving unparalleled interpretation of the simultaneous stress states of the shafts in real time.



The Challenge!

Our client had suffered repeat failures on swing pinions on its dragline. These failures were due to fatigue cracking.

Various theories were postulated as to the possible cause of the failures, theories that were identified by ALS as able to be further investigated by strain measurement during operation.

However traditional wired data loggers were unable to be utilised due to the need to synchronously log strain data across all four rotating shafts.

The client requirement was to allow synchronous logging of strain data from all shafts for which ALS utilised a wireless telemetry monitoring system.



The Solution

ALS utilised a wireless telemetry monitoring system consisting of four transmitters and one base station. This system could log data simultaneously across four measured shafts.

The review of simultaneous strain data from the swing shafts allowed ALS to identify motor control algorithm issues that led to large amplitude strain oscillations whilst swinging and braking. Such oscillations would translate into high stresses present in the shafts. They were assessed as a significant risk factor to operational life.

Wear and damage to the support structures in the dragline were also identified as contributing factors.

The Outcomes

As a result of the analysis, our client was able to identify structural and motor control issues and remove them on the basis of the findings.

Our client has asked for further strain gauge analysis to confirm the change to the stresses experienced in the shafts after carrying out structural modifications.

Not only did the client gain greater confidence in their machine behaviour, they were able to do so with an efficient data logging solution that provided savings over traditional techniques.

Our Engineering Teams

Giving Greater Confidence in Your Assets

Across Australia, ALS engineering teams have been designing innovative solutions to help our clients understand their assets since 1957.

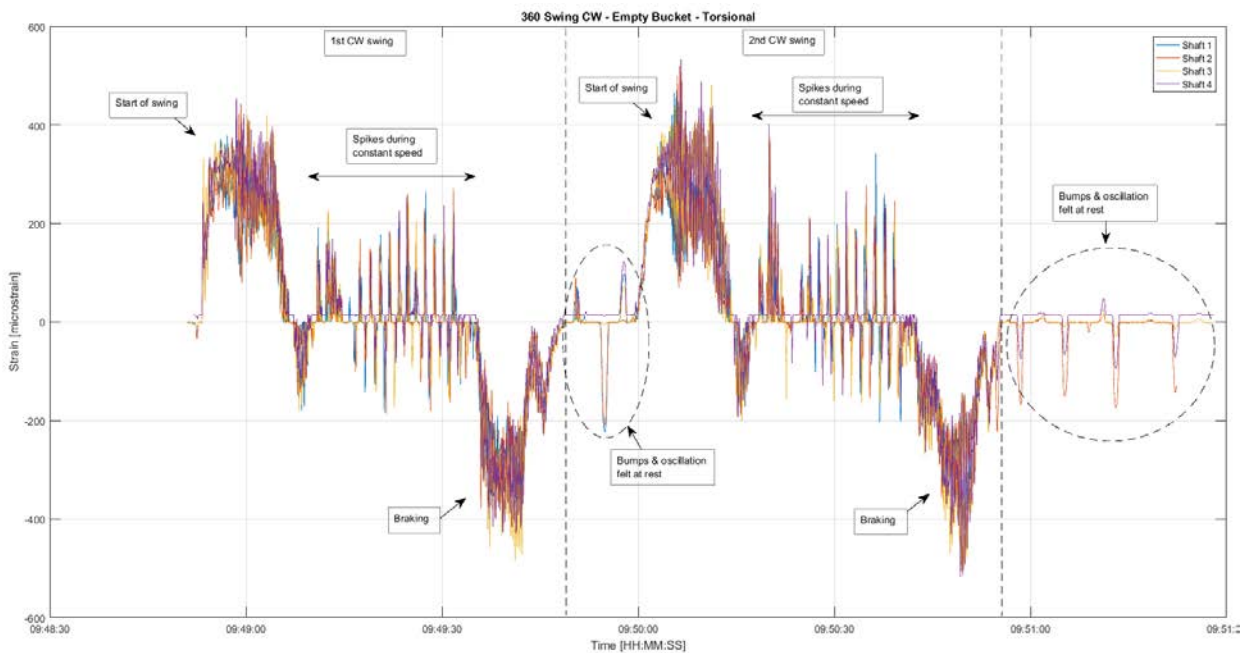
We maintain expertise across:

- Mechanical engineering,
- Integrity engineering,
- Materials engineering,
- Civil engineering,
- Inspection,
- NDT,
- Condition monitoring,

and more!

Contact us today to speak to our experts at:

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Strain Gauge Data across the four shafts analysis

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