

# REVOLUTIONISING PLATFORM LIFE OPTIMISATION: AN ADVANCED STRAIN MONITORING SYSTEM

In the dynamic offshore environment of the Gulf of Mexico, a prominent operator is embarking on a significant production riser tieback project to enhance the capabilities of their semi-submersible platform, securely anchored in 2000 meters of water depth. The integration of new production equipment onto this platform has understandably raised concerns regarding the structural integrity of the platform's deck structure.

Recognizing the paramount importance of ensuring the platform's stability and safety, the operator has turned to Pulse, a structural monitoring brand in Acteon's Data and Robotics division for a cutting-edge solution. Pulse has been tasked with the development and deployment of an advanced monitoring system capable of continuously tracking incremental strains at specific points across the platform. This monitoring will commence prior to the equipment installation, continue throughout the installation process, and persist beyond it, providing real-time insights into the platform's response to these transformative

## THE CHALLENGE

The operators' platform has been in service since 2009. To improve the production capacity of the platform, they have decided to tieback additional production capacity from three wells in 2022. This tieback made it necessary to add the required processing capacity to the production deck on the platform. The additional weight placed on the production platform raised concerns if the platform structure was able to support the equipment without additional costly reinforcement that would have caused delays and additional costs to complete the project.

During the feed stage of the project, the customer became aware of the challenges and reached out to Pulse, to design an innovative monitoring system to meet their challenging demands.

## CUSTOMER GOAL

The customer sought to gain a comprehensive understanding of the incremental loads impacting specific structural components of their production platform. They required the development of a load monitoring system capable of delivering continuous strain data from discrete locations across the production platform. This system needed to be easily deployable in the field, offering high precision, accuracy, and resolution to effectively capture even the slightest variations in platform response caused by incremental equipment weight and dynamic environmental factors. The data acquired through this system would serve the dual purpose of ensuring platform integrity throughout equipment installation procedures and providing invaluable long-term integrity data for life optimisation programmes.

## OUR SOLUTION AND ITS COMMERCIAL BENEFITS TO THE PROJECT

### Market-leading services and integrated solutions.

- We designed, developed, tested, and qualified a robust strain monitoring system using Fiber Bragg Grating (FBG) strain monitoring devices.
- We utilised our market-leading sensing portfolio consisting of INTEGRIpod Data Acquisition Hub and INTEGRIstrain FBG strain sensors to measure local tension, bending and shear loads at discrete locations across the platform.

### Work at scale with a proven track record for delivery.

- We applied the extensive experience in monitoring structure fatigue that Pulse has successfully demonstrated for the past 20 years. Our team has worked to design similar systems on several oil and gas platforms.



**Optimise the project to increase the commercial value.**

- The data from the monitoring campaigns is being used to validate platform response, local fatigue damage and accumulation and ultimately ensure that it is fit for purpose for the duration of the project.
- The monitoring campaign potentially mitigates the need for additional structural reinforcements and streamlines the installation efforts.
- The data will be used to validate the platform response and aid future life extension/optimisation efforts.

**Minimise the environmental impact.**

- The system provided results in reduced inspection intervals, therefore reducing the overall project footprint.
- The system mitigated the need for replacing components and has the potential to play a part in a long-term asset life extension strategy.

**Combine digital technology and data to enhance our expertise.**

- We leveraged our unique product and service portfolio to deliver a tailored and cost-effective monitoring solution combined with Pulse's data processing engines to form a powerful solution architecture.

“We developed, designed, built, installed, and commissioned a ground-breaking platform strain monitoring system. The tailored solution will deliver comprehensive data to provide the operator with the insight they need to benchmark platform loading fatigue predictions, validate the system and help them to make strategic decisions for future operations.”

Mark Towell - Managing Director,  
Asset Integrity and Monitoring, Acteon

**PRODUCTS USED**

- INTEGRIpod – Data Hub
- INTEGRIstrain FBG Sensing Technology
- Integrated Vessel Monitoring System



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