



# FUGRO ON LINE MONITORING

**The number of ageing platforms is increasing globally and a substantial number are facing operation beyond their intended life. A reliable system to detect structural failures allows the operating life of ageing jackets to be optimised.**

## PROTECTING AGEING ASSETS

Many of the jacket structures around the world are now reaching or have exceeded their original design life and this presents new challenges for structural integrity management.

The use of online monitoring (OLM) can complement ongoing inspections as part of an overall Structural Integrity Management (SIM) plan.

This is consistent with recommended practices API RP2A, API RP2SIM, HSE RR684 and HSE RR685, helping to reduce long term costs and increase asset reliability.

## SOLUTION

OLM ensures that structural problems are promptly identified and addressed which allows jacket structures to continue performing their required function whilst protecting health, safety and the environment. OLM can be installed as a permanent or temporary installation.

## BENEFITS

- Allows immediate detection of brace failures
- Improves personnel and environmental safety
- Improves structural reliability
- Long term cost reduction



*Integrity monitoring of ageing jackets improves reliability and reduces costs.*



## STRUCTURAL INTEGRITY MONITORING

By monitoring the natural frequencies of a structure, the OLM system identifies significant structural events such as a brace failure quickly and notifies the operator of these changes.

This helps to reduce the amount of time the structure remains in a weakened state and can extend the life of a structure.

Active monitoring of offshore structures can be used to confirm that structural integrity is maintained after significant events such as hurricanes, earthquakes or collisions and reduces the requirement for expensive visual inspections.

To cover a large number of platforms, a transportable solution (tOLM) can be deployed. tOLM allows a more cost-effective way to introduce monitoring into a structural integrity management plan and has variants for use in safe or hazardous areas.

## APPLICATION

- Low redundancy structures
- Structures with low fatigue lives
- Structures operating beyond design life
- Critical members of high redundancy structures
- Structures operating in regions with less well-developed inspection infrastructure
- Structures in seismically active areas
- Unmanned structures



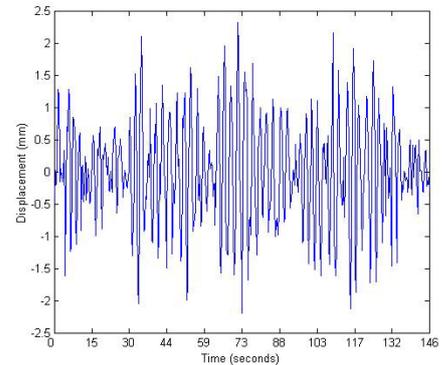
Repair of damaged platform

## TYPICAL INSTALLATION

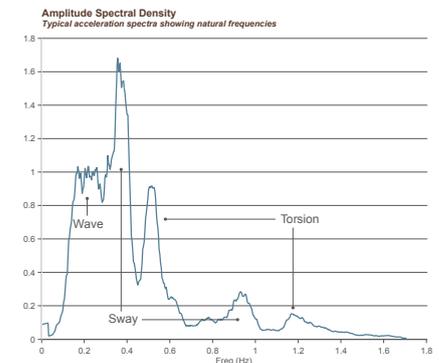
The sensors deployed on a platform consist of accelerometers at various locations and an optional wave-radar to help correlate structural motions with wave conditions.

The sensors monitor the sway and torsion natural frequencies of the platform. Any significant change in these values from the long-term averages could indicate a loss in stiffness due to brace failure and hence require further investigation. The OLM system can be interrogated daily from onshore. Key parameters are checked for any significant changes and an instant assessment can be made of the data trends.

Fugro offer interpretative reporting of measured data to extract the key operating parameters of the structure – including natural frequency identification, modal analysis and displacement response to wave loading.



Platform response time series



Calculated natural frequencies

## Fugro GEOS

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